PUBLIC VERSION - NON PUBLIC DATA HAS BEEN EXCISED

In the Matter of
CenterPoint Energy Natural Gas Innovation Act (NGIA)
Innovation Plan

Reply Comments of CenterPoint Energy

EXHIBIT E: REVISED PORTFOLIO
(Combined workbook of Petition Exhibits N and P, updated to reflect revised Plan)

Docket No. G-008/M-23-215

15-Mar-23

PUBLIC VERSION

Exhibit E is filed separately as an Excel file. CenterPoint Energy has designated information in Exhibit E as trade secret. The information meets the definition of trade secret in Minn. Stat. § 13.37, subd. 1(b), as follows: (1) the information was supplied by CenterPoint Energy, the affected organization; (2) we have taken all reasonable efforts to maintain the secrecy of the information, including protecting it from disclosure in this proceeding; and (3) the protected information contains a complex spreadsheet calculation tool developed by ICF for CenterPoint Energy's use, which derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means, by other persons who could obtain economic value from its disclosure or use. Note that in addition to certain non-public information, there is proprietary value in the calculations in the tool and interaction between cells, so CenterPoint Energy is filing a public version of this Exhibit, with certain information redacted and certain calculations removed.

NGIA Portfolio Summary

Draft Innovation Plan Portfolio Summary

Primary Innovation Category	#	Pilot	Pilot Size Selected for Portfolio	Annual GHG Emission Reductions, Cumulative Level Achieved by Year 5		Lifetime GHG Savings		Utility Costs Towards NGIA Budget - without Portfolio Costs		Utility Costs Towards NGIA Budget - with Portfolio Costs Split between Pilots by Cost		Lifetime Utility Emission Reduction Cost - with Portfolio Costs	Total (Net) Pilot Cost Perspective Emission Reduction Cost - with Portfolio Costs	Upfront Equipment and Installation Costs	Share of Portfolio Costs Allocated to this Pilot	Net Lifetime Utility Costs by Pilot (includes costs outside 5 year period, as well as commodity cost savings for all years of pilot life, not just within 5 year NGIA window)	Total Lifetime Utility Costs by Pilot - with Portfolio Costs		Total Net Costs	Total Net Costs with Portfolio Costs	Equipment and Installation Costs only
				tCO2e/yr	% in Portfolio	tCO2e	% in Portfolio	$	% in Portfolio	$	% in Portfolio	$/tCO2e	$/tCO2e	$/tCO2e							
Renewable Natural Gas (RNG)	1	RNG Proposal - Anaerobic Digestion of Organic Materials	None	-	0%	-	0%	-	0%	$ -	0%	#DIV/0!	#DIV/0!	#DIV/0!	$ -	$0	$0		$0	$0	$0
	2	RNG Proposal - Anaerobic Digestion of East Metro Food Waste	B	9,241	11%	92,414	8%	5,856,724	6%	$ 6,520,485	6%	$190	$139	$185	$ 663,761	$16,874,730	$17,538,491		$12,153,095	$12,816,856	$17,132,589
	3	RNG Archetype - Wastewater Resource Recovery Facility	B	2,656	3%	26,556	2%	3,654,524	3%	$ 4,068,702	4%	$317	$265	$295	$ 414,179	$8,005,946	$8,420,125		$6,628,834	$7,043,012	$7,837,457
	4	RNG Archetype - Dairy Manure	B	1,979	2%	19,790	2%	3,982,161	4%	$ 4,433,472	4%	$461	$409	$433	$ 451,311	$8,668,974	$9,120,285	$ 83,367,472	$7,642,700	$8,094,011	$8,570,462
	5	RNG Archetype - Food Waste	B	25,474	31%	254,739	23%	17,584,578	17%	$ 19,577,493	19%	$159	$107	$160	$ 1,992,915	$38,482,478	$40,475,393		$25,272,428	$27,265,343	$40,670,011
	6	RNG Archetype - Landfill Gas	B	12,205	15%	122,049	11%	10,950,684	10%	$ 12,191,759	12%	$208	$156	$206	$ 1,241,075	$24,110,594	$25,351,669		$17,781,502	$19,022,578	$25,137,695
Power-to-Hydrogen	7	Green Hydrogen Blending into Natural Gas Distribution System	B	1,400	2%	27,993	2%	4,173,901	4%	$ 4,646,943	4%	$824	$770	$265	$ 473,041	$22,580,664	$23,053,705		$21,090,559	$21,563,601	$7,414,364
	8	Green Hydrogen Archetype for Industrial or Large Commercial Facility	A	2,817	3%	56,330	5%	1,039,041	1%	$ 1,156,798	1%	-$12	$871	$175	$ 117,758	-$776,797	-$659,039	$ 2,720,474	$48,943,556	$49,061,313	$9,835,832
Carbon Capture	9	Industrial Methane and Refrigerant Leak Reduction Program	A	6,753	8%	33,763	3%	1,120,803	1%	$ 1,247,828	1%	$34	-$24	$17	$ 127,024	$1,005,621	$1,132,645		-$949,755	-$822,731	$582,305
	10	Urban Tree Carbon Offset Program	A	1,000	1%	4,500	0%	295,780	0%	$ 329,301	0%	$67	$12	$49	$ 33,522	$266,387	$299,909		$21,437	$54,958	$219,226
	11	Carbon Capture Archetype for Industrial or Large Commercial Facility	A	2,419	3%	50,865	4%	2,368,665	2%	$ 2,637,113	2%	$66	$303	$60	$ 268,448	$3,111,065	$3,379,513		$15,129,574	$15,398,023	$3,036,224
	13	Carbon Capture Rebates for Commercial Buildings	A	1,165	1%	23,757	2%	550,040	1%	$ 612,377	1%	$1	-$23	$226	$ 62,338	-$31,857	$30,481		-$617,258	-$554,920	$5,371,918
District Energy	14	New Networked Geothermal Systems Pilot	C	2,421	3%	107,355	9%	10,442,470	10%	$ 11,625,947	11%	$393	$402	$232	$ 1,183,478	$41,040,700	$42,224,178		$41,947,284	$43,130,762	$24,879,156
	15	Decarbonizing Existing District Energy Systems	B	5,401	7%	124,030	11%	537,839	1%	$ 598,794	1%	-$28	-$34	$40	$ 60,955	-$3,480,860	-$3,419,905		-$4,224,461	-$4,163,506	$4,933,706
	16	New District Energy System	B	1,339	2%	40,882	4%	193,692	0%	$ 215,644	0%	-$19	$371	$463	$ 21,952	-$806,364	-$784,412		$15,148,784	$15,170,736	$18,932,519
Strategic Electrification	17	Industrial Electrification Incentive Program	A	543	1%	11,896	1%	453,086	0%	$ 504,436	0%	$10	$2	$32	$ 51,350	$61,758	$113,108		-$27,132	$24,217	$374,861
	18	Commercial hybrid heating pilot	B	1,633	2%	25,609	2%	6,349,045	6%	$ 7,068,602	7%	$217	$204	$100	$ 719,557	$4,825,812	$5,545,369		$4,496,484	$5,216,041	$2,555,827
	19	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	B	1,985	2%	66,760	6%	12,231,409	12%	$ 13,617,633	13%	$159	$390	$383	$ 1,386,224	$9,203,949	$10,590,172		$24,672,280	$26,058,504	$25,536,912
Energy Efficiency	20	Small/medium business GHG audit pilot	B	241	0%	4,380	0%	1,793,719	2%	$ 1,997,007	2%	$387	$376	$346	$ 203,288	$1,490,893	$1,694,181		$1,442,579	$1,645,867	$1,516,278
	21	Residential Gas Heat Pump	A	16	0%	235	0%	342,001	0%	$ 380,761	0%	$1,464	$1,358	$707	$ 38,760	$305,063	$343,823		$280,305	$319,065	$165,994
	22	Gas Heat Pump for Commercial Buildings	A	144	0%	2,154	0%	673,172	1%	$ 749,464	1%	$295	$207	$152	$ 76,293	$558,837	$635,129		$370,502	$446,795	$328,003
	24	Solar Thermal Heating for C&I	None	-	0%	-	0%	-	0%	$ -	0%	$0	$0	$0	$ -	$0	$0		$0	$0	$0
	25	Industrial and Large Commercial GHG Audit Pilot	A	1,716	2%	35,560	3%	853,737	1%	$ 950,494	1%	-$7	-$51	$38	$ 96,757	-$338,994	-$242,238		-$1,899,861	-$1,803,104	$1,362,270
Total Pilot Portfolio				82,545	100%	1,131,617	100%	$ 85,447,069	81%	$ 95,131,053	90%	$163	$216	$182		$ 175,158,598	$ 184,842,581		$ 235,303,436	$ 244,987,419	$ 206,393,610
Additional Portfolio Costs		Additional Portfolio Administrative Costs	N/A	N/A	N/A	N/A	N/A	$ 9,683,983	9%	$ -	0%						$ -			$ -	$ -
		R&D Projects - Low Carbon Fuels (15%)	15%	N/A	N/A	N/A	N/A	$ 1,585,569	2%	$ 1,585,569	1.5%						$ 1,585,569			$ 1,585,569	$ 1,585,569
		R&D Projects - Other (85%)	85%	N/A	N/A	N/A	N/A	$ 8,984,893	9%	$ 8,984,893	8.5%						$ 8,984,893			$ 8,984,893	$ 8,984,893
Total Portfolio (incl. R&D)				82,545		1,131,617		$ 105,701,515	100%	$ 105,701,515	100%	$173	$226	$192			$ 195,413,043			$ 255,557,881	$ 216,964,071

Estimated NGIA Cost Cap (including bonus money): $105,704,618.35

Unused budget: $ 3,104

Low-Carbon Fuels Percentage: 51.26%

These calculated values represent CenterPoint Energy's revised NGIA portfolio. The changes have been described in Reply Comments. Some changes involve different pilot sizes being selected in column D above (or cancelled Hennepin County RNG project being left out of portfolio). Other changes have been made within the Measure Profiles, which are also included in this tab (what was Exhibit N in the original Petition). Changes within the measure profiles might increase or decease participation for a specific pilot, or adjust other aspects of the pilot quantification.

More specifically the pilot profile tabs in this file with changes are CNP02, CNP06, CNP07, CNP13, and CNP20.

Results Summary

Pilots / Overview of Key Results

Lookup ID	Program	Customer Class/ Sector:	Measure Code	Pilot Name	Pilot Size	Participation	Total Utility Incremental Costs	Utility Budget Towards CIP (5-Year Costs)	Lifetime GHG Savings	Total (Net) Pilot Impacts - Including environmental component	Emission Reduction Cost From Utility Perspective	Emission Reduction Cost from Total (Net) Pilot Cost Perspective
			Reference from Measure Workbook			Units Vary by Pilot	($)	($)	(tCO2e)	($)	($/tCO2e)	($/tCO2e)
		Do not Delete Row		Do not Delete Row					Do not Delete Row			
1	0	C&I & Res	CNP01	RNG Proposal - Anaerobic Digestion of Organic Materials	A	8,288	$ 1,817,629	$ 638,187	5,644	$ (1,529,254)	322	271
2	0	C&I & Res	CNP01	RNG Proposal - Anaerobic Digestion of Organic Materials	B	41,440	$ 7,467,229	$ 2,596,016	28,221	$ (6,025,354)	265	214
3	0	C&I & Res	CNP01	RNG Proposal - Anaerobic Digestion of Organic Materials	C	82,880	$ 14,529,229	$ 5,043,303	56,442	$ (11,645,479)	257	206
4	0	C&I & Res	CNP02	RNG Proposal - Anaerobic Digestion of East Metro Food Waste	A	18,168	$ 3,716,064	$ 1,296,681	17,603	$ (2,816,705)	211	160
5	0	C&I & Res	CNP02	RNG Proposal - Anaerobic Digestion of East Metro Food Waste	B	95,383	$ 16,874,730	$ 5,856,724	92,414	$ (12,153,095)	183	132
6	0	C&I & Res	CNP02	RNG Proposal - Anaerobic Digestion of East Metro Food Waste	C	190,767	$ 33,129,552	$ 11,489,719	184,829	$ (23,686,282)	179	128
7	0	C&I & Res	CNP03	RNG Archetype - Wastewater Resource Recovery Facility	A	10,000	$ 1,881,892	$ 861,726	5,311	$ (1,606,470)	354	302
8	0	C&I & Res	CNP03	RNG Archetype - Wastewater Resource Recovery Facility	B	50,000	$ 8,005,946	$ 3,654,524	26,556	$ (6,628,834)	301	250
9	0	C&I & Res	CNP03	RNG Archetype - Wastewater Resource Recovery Facility	C	300,000	$ 44,676,486	$ 20,362,839	159,335	$ (36,413,811)	280	229
10	0	C&I & Res	CNP04	RNG Archetype - Dairy Manure	A	10,000	$ 4,397,374	$ 2,021,726	9,895	$ (3,884,237)	444	393
11	0	C&I & Res	CNP04	RNG Archetype - Dairy Manure	B	20,000	$ 8,668,974	$ 3,982,161	19,790	$ (7,642,700)	438	386
12	0	C&I & Res	CNP04	RNG Archetype - Dairy Manure	C	100,000	$ 40,733,414	$ 18,703,559	98,952	$ (35,602,043)	412	360
13	0	C&I & Res	CNP05	RNG Archetype - Food Waste	A	10,000	$ 2,142,114	$ 981,726	11,579	$ (1,541,658)	185	133
14	0	C&I & Res	CNP05	RNG Archetype - Food Waste	B	220,000	$ 38,482,478	$ 17,584,578	254,739	$ (25,272,428)	151	99
15	0	C&I & Res	CNP05	RNG Archetype - Food Waste	C	500,000	$ 86,785,496	$ 39,622,118	578,953	$ (56,762,655)	150	98
16	0	C&I & Res	CNP06	RNG Archetype - Landfill Gas	A	128,750	$ 13,628,721	$ 6,216,927	68,694	$ (10,066,445)	198	147
17	0	C&I & Res	CNP06	RNG Archetype - Landfill Gas	B	228,750	$ 24,110,594	$ 10,950,684	122,049	$ (17,781,502)	198	146
18	0	C&I & Res	CNP06	RNG Archetype - Landfill Gas	C	900,000	$ 92,936,826	$ 42,140,677	480,191	$ (68,035,482)	194	142
19	0	C&I & Res	CNP07	Green Hydrogen Blending into Natural Gas Distribution System	A	1	$ 8,223,288	$ 2,262,567	5,599	$ (8,404,282)	1,469	1,501
20	0	C&I & Res	CNP07	Green Hydrogen Blending into Natural Gas Distribution System	B	1	$ 22,580,664	$ 4,173,901	27,993	$ (21,090,559)	807	753
22	0	C&I	CNP08	Green Hydrogen Archetype for Industrial or Large Commercial Facility	A	1	$ (776,797)	$ 1,039,041	56,330	$ (48,943,556)	(14)	869
23	0	C&I	CNP08	Green Hydrogen Archetype for Industrial or Large Commercial Facility	B	2	$ (1,589,775)	$ 2,144,707	112,661	$ (96,029,014)	(14)	852
24	0	C&I	CNP08	Green Hydrogen Archetype for Industrial or Large Commercial Facility	C	3	$ (2,263,123)	$ 3,503,946	168,991	$ (160,182,041)	(13)	948
25	0	C&I	CNP09	Industrial Methane and Refrigerant Leak Reduction Program	A	50	$ 1,005,621	$ 1,120,803	33,763	$ 949,755	30	(28)
26	0	C&I	CNP09	Industrial Methane and Refrigerant Leak Reduction Program	B	125	$ 1,879,194	$ 2,430,341	84,408	$ 2,867,010	22	(34)
27	0	C&I	CNP09	Industrial Methane and Refrigerant Leak Reduction Program	C	250	$ 3,431,762	$ 4,500,534	168,816	$ 6,060,647	20	(36)
28	0	C&I & Res	CNP10	Urban Tree Carbon Offset Program	A	4,500	$ 266,387	$ 295,780	4,500	$ (21,437)	59	5
29	0	C&I & Res	CNP10	Urban Tree Carbon Offset Program	B	9,000	$ 485,613	$ 539,530	9,000	$ 4,288	54	(0)
30	0	C&I & Res	CNP10	Urban Tree Carbon Offset Program	C	18,000	$ 924,064	$ 1,027,030	18,000	$ 55,739	51	(3)
31	0	C&I	CNP11	Carbon Capture Archetype for Industrial or Large Commercial Facility	A	1	$ 3,111,065	$ 2,368,665	50,865	$ (15,129,574)	61	297
32	0	C&I	CNP11	Carbon Capture Archetype for Industrial or Large Commercial Facility	B	2	$ 6,019,353	$ 4,522,144	101,731	$ (30,056,372)	59	295
33	0	C&I	CNP11	Carbon Capture Archetype for Industrial or Large Commercial Facility	C	3	$ 8,926,507	$ 6,674,372	152,596	$ (44,982,035)	58	295
43	0	C&I	CNP15	Decarbonizing Existing District Energy Systems	A	1	$ (1,804,476)	$ 550,040	62,015	$ 2,217,990	(29)	(36)
44	0	C&I	CNP15	Decarbonizing Existing District Energy Systems	B	2	$ (3,480,860)	$ 2,120,450	124,030	$ 4,224,461	(28)	(34)
45	0	C&I	CNP15	Decarbonizing Existing District Energy Systems	C	3	$ (4,959,448)	$ 4,157,095	186,044	$ 5,918,336	(27)	(32)
46	0	C&I & Res	CNP16	New District Energy System	A	1	$ (388,916)	$ 2,674,336	20,441	$ (7,717,071)	(19)	378
47	0	C&I & Res	CNP16	New District Energy System	B	2	$ (806,364)	$ 5,560,189	40,882	$ (15,148,784)	(20)	371
48	0	C&I & Res	CNP16	New District Energy System	C	3	$ (1,176,741)	$ 10,442,470	61,323	$ (22,387,457)	(19)	365
49	0	C&I	CNP17	Industrial Electrification Incentive Program	A	3	$ 61,758	$ 153,768	11,896	$ 27,132	5	(2)
50	0	C&I	CNP17	Industrial Electrification Incentive Program	B	6	$ (69,244)	$ 537,839	23,792	$ 205,474	(3)	(9)
51	0	C&I	CNP17	Industrial Electrification Incentive Program	C	9	$ (240,243)	$ 1,236,794	35,688	$ 423,812	(7)	(12)
52	0	C&I	CNP18	Commercial hybrid heating pilot	A	70	$ 2,922,014	$ 108,316	13,279	$ (2,749,264)	220	207
53	0	C&I	CNP18	Commercial hybrid heating pilot	B	135	$ 4,825,812	$ 193,692	25,609	$ (4,496,484)	188	176
54	0	C&I	CNP18	Commercial hybrid heating pilot	C	200	$ 6,729,611	$ 344,531	37,940	$ (6,243,703)	177	165
55	0	C&I & Res	CNP19	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	A	119	$ 4,966,934	$ 453,086	33,380	$ (12,701,099)	149	381
56	0	C&I & Res	CNP19	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	B	238	$ 9,203,949	$ 728,661	66,760	$ (24,672,280)	138	370
57	0	C&I & Res	CNP19	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	C	357	$ 13,440,964	$ 960,149	100,139	$ (36,643,461)	134	366
58	0	C&I	CNP20	Small/medium business GHG audit pilot	A	992	$ 1,252,919	$ 3,736,792	3,504	$ (1,214,268)	358	347
59	0	C&I	CNP20	Small/medium business GHG audit pilot	B	1,240	$ 1,490,893	$ 6,349,045	4,380	$ (1,442,579)	340	329
60	0	C&I	CNP20	Small/medium business GHG audit pilot	C	1,488	$ 1,728,867	$ 8,961,298	5,256	$ (1,670,891)	329	318
61	0	Residential	CNP21	Residential Gas Heat Pump	A	6	$ 305,063	$ 6,515,106	235	$ (280,305)	1,299	1,193
62	0	Residential	CNP21	Residential Gas Heat Pump	B	10	$ 493,859	$ 12,231,409	391	$ (452,596)	1,262	1,156
63	0	Residential	CNP21	Residential Gas Heat Pump	C	20	$ 810,010	$ 17,947,712	783	$ (727,483)	1,035	929
64	0	C&I	CNP22	Gas Heat Pump for Commercial Buildings	A	3	$ 558,837	$ 1,502,005	2,154	$ (370,502)	259	172
65	0	C&I	CNP22	Gas Heat Pump for Commercial Buildings	B	6	$ 898,698	$ 1,793,719	4,307	$ (527,688)	209	123
66	0	C&I	CNP22	Gas Heat Pump for Commercial Buildings	C	9	$ 1,294,884	$ 2,085,434	6,461	$ (741,199)	200	115
70	0	C&I	CNP24	Solar Thermal Heating for C&I	A	10	$ 41,354	$ 673,172	7,687	$ (655,836)	5	85
71	0	C&I	CNP24	Solar Thermal Heating for C&I	B	15	$ 35,612	$ 1,124,278	11,531	$ (957,335)	3	83
72	0	C&I	CNP24	Solar Thermal Heating for C&I	C	25	$ 24,128	$ 1,635,385	19,218	$ (1,560,333)	1	81
73	0	C&I	CNP25	Industrial and Large Commercial GHG Audit Pilot	A	5	$ (338,994)	$ 307,401	35,560	$ 1,899,861	(10)	(53)
74	0	C&I	CNP25	Industrial and Large Commercial GHG Audit Pilot	B	10	$ (1,282,915)	$ 431,961	71,120	$ 4,404,648	(18)	(62)
75	0	C&I	CNP25	Industrial and Large Commercial GHG Audit Pilot	C	15	$ (2,226,836)	$ 681,083	106,680	$ 6,909,436	(21)	(65)

Cost-Effectiveness Calculation Results

Lookup ID	UCT Benefits	UCT Costs	UCT Net Benefit	RIM Benefits	RIM Costs	RIM Net Benefit	PCT Benefits	PCT Costs	PCT Net Benefit
	($)	($)	($)	($)	($)	($)	($)	($)	($)
			Do not Delete Row					Do not Delete Row	
1	$ -	$ 1,817,629	$ (1,817,629)	$ -	$ 561,192	$ (561,192)	$ -	$ -	$ -
2	$ -	$ 7,467,229	$ (7,467,229)	$ -	$ 2,280,820	$ (2,280,820)	$ -	$ -	$ -
3	$ -	$ 14,529,229	$ (14,529,229)	$ -	$ 4,430,356	$ (4,430,356)	$ -	$ -	$ -
4	$ -	$ 3,716,064	$ (3,716,064)	$ -	$ 1,139,586	$ (1,139,586)	$ -	$ -	$ -
5	$ -	$ 16,874,730	$ (16,874,730)	$ -	$ 5,144,829	$ (5,144,829)	$ -	$ -	$ -
6	$ -	$ 33,129,552	$ (33,129,552)	$ -	$ 10,092,481	$ (10,092,481)	$ -	$ -	$ -
7	$ -	$ 1,881,892	$ (1,881,892)	$ -	$ 769,956	$ (769,956)	$ -	$ -	$ -
8	$ -	$ 8,005,946	$ (8,005,946)	$ -	$ 3,263,230	$ (3,263,230)	$ -	$ -	$ -
9	$ -	$ 44,676,486	$ (44,676,486)	$ -	$ 18,178,744	$ (18,178,744)	$ -	$ -	$ -
10	$ -	$ 4,397,374	$ (4,397,374)	$ -	$ 1,806,078	$ (1,806,078)	$ -	$ -	$ -
11	$ -	$ 8,668,974	$ (8,668,974)	$ -	$ 3,556,716	$ (3,556,716)	$ -	$ -	$ -
12	$ -	$ 40,733,414	$ (40,733,414)	$ -	$ 16,703,259	$ (16,703,259)	$ -	$ -	$ -
13	$ -	$ 2,142,114	$ (2,142,114)	$ -	$ 877,141	$ (877,141)	$ -	$ -	$ -
14	$ -	$ 38,482,478	$ (38,482,478)	$ -	$ 15,700,934	$ (15,700,934)	$ -	$ -	$ -
15	$ -	$ 86,785,496	$ (86,785,496)	$ -	$ 35,374,706	$ (35,374,706)	$ -	$ -	$ -
16	$ -	$ 13,628,721	$ (13,628,721)	$ -	$ 5,551,879	$ (5,551,879)	$ -	$ -	$ -
17	$ -	$ 24,110,594	$ (24,110,594)	$ -	$ 9,775,236	$ (9,775,236)	$ -	$ -	$ -
18	$ -	$ 92,936,826	$ (92,936,826)	$ -	$ 37,611,108	$ (37,611,108)	$ -	$ -	$ -
19	$ 240,255	$ 8,463,543	$ (8,223,288)	$ 240,255	$ 2,259,814	$ (2,019,559)	$ -	$ -	$ -
20	$ 1,201,275	$ 23,781,939	$ (22,580,664)	$ 1,201,275	$ 4,985,749	$ (3,784,473)	$ -	$ -	$ -
22	$ 2,417,356	$ 1,640,559	$ 776,797	$ 2,417,356	$ 3,342,891	$ (925,534)	$ 7,836,169	$ 52,321,422	$ (44,485,253)
23	$ 4,634,660	$ 3,044,885	$ 1,589,775	$ 4,634,660	$ 6,360,178	$ (1,725,517)	$ 15,393,164	$ 102,750,781	$ (87,357,617)
24	$ 6,668,468	$ 4,405,345	$ 2,263,123	$ 6,668,468	$ 9,248,919	$ (2,580,451)	$ 4,002,995	$ 151,361,903	$ (147,358,908)
25	$ 415,786	$ 1,421,407	$ (1,005,621)	$ 415,786	$ 1,700,136	$ (1,284,350)	$ 264,069	$ 163,310	$ 100,759
26	$ 919,109	$ 2,798,304	$ (1,879,194)	$ 919,109	$ 3,442,617	$ (2,523,508)	$ 610,423	$ 402,047	$ 208,376
27	$ 1,838,219	$ 5,269,981	$ (3,431,762)	$ 1,838,219	$ 6,558,608	$ (4,720,390)	$ 1,220,847	$ 804,094	$ 416,753
28	$ -	$ 266,387	$ (266,387)	$ -	$ 266,387	$ (266,387)	$ -	$ -	$ -
29	$ -	$ 485,613	$ (485,613)	$ -	$ 485,613	$ (485,613)	$ -	$ -	$ -
30	$ -	$ 924,064	$ (924,064)	$ -	$ 924,064	$ (924,064)	$ -	$ -	$ -
31	$ -	$ 3,111,065	$ (3,111,065)	$ 944,832	$ 3,111,065	$ (2,166,233)	$ -	$ 14,259,346	$ (14,259,346)
32	$ -	$ 6,019,353	$ (6,019,353)	$ 1,889,664	$ 6,019,353	$ (4,129,689)	$ -	$ 28,518,692	$ (28,518,692)
33	$ -	$ 8,926,507	$ (8,926,507)	$ 2,834,496	$ 8,926,507	$ (6,092,011)	$ -	$ 42,778,038	$ (42,778,038)
43	$ 3,094,630	$ 1,290,153	$ 1,804,476	$ 3,094,630	$ 3,399,836	$ (305,206)	$ 1,743,557	$ 4,647,715	$ (2,904,158)
44	$ 5,933,158	$ 2,452,298	$ 3,480,860	$ 5,933,158	$ 6,560,907	$ (627,749)	$ 3,395,579	$ 9,258,327	$ (5,862,748)
45	$ 8,536,780	$ 3,577,331	$ 4,959,448	$ 8,536,780	$ 9,579,924	$ (1,043,144)	$ 4,960,872	$ 13,865,799	$ (8,904,928)
46	$ 723,780	$ 334,864	$ 388,916	$ 723,780	$ 911,456	$ (187,676)	$ 576,592	$ 8,146,654	$ (7,570,062)
47	$ 1,387,662	$ 581,298	$ 806,364	$ 1,387,662	$ 1,704,212	$ (316,550)	$ 1,122,914	$ 16,041,149	$ (14,918,235)
48	$ 1,996,603	$ 819,862	$ 1,176,741	$ 1,996,603	$ 2,460,416	$ (463,813)	$ 1,640,555	$ 23,700,940	$ (22,060,386)
49	$ 582,058	$ 643,816	$ (61,758)	$ 582,058	$ 1,040,619	$ (458,561)	$ 327,940	$ 875,331	$ (547,391)
50	$ 1,115,947	$ 1,046,703	$ 69,244	$ 1,115,947	$ 1,819,476	$ (703,530)	$ 638,663	$ 1,767,591	$ (1,128,929)
51	$ 1,649,836	$ 1,409,593	$ 240,243	$ 1,649,836	$ 2,558,337	$ (908,501)	$ 949,386	$ 2,659,851	$ (1,710,466)
52	$ 691,191	$ 3,613,205	$ (2,922,014)	$ 691,191	$ 4,100,167	$ (3,408,976)	$ 416,793	$ 953,276	$ (536,483)
53	$ 1,323,379	$ 6,149,191	$ (4,825,812)	$ 1,323,379	$ 7,084,175	$ (5,760,796)	$ 800,257	$ 1,837,403	$ (1,037,147)
54	$ 1,955,567	$ 8,685,178	$ (6,729,611)	$ 1,955,567	$ 10,068,184	$ (8,112,617)	$ 1,183,721	$ 2,721,531	$ (1,537,810)
55	$ 921,804	$ 5,888,738	$ (4,966,934)	$ 921,804	$ 6,676,174	$ (5,754,370)	$ 787,436	$ 10,131,112	$ (9,343,676)
56	$ 1,843,608	$ 11,047,557	$ (9,203,949)	$ 1,843,608	$ 12,622,429	$ (10,778,821)	$ 1,574,872	$ 20,262,224	$ (18,687,352)
57	$ 2,765,412	$ 16,206,376	$ (13,440,964)	$ 2,765,412	$ 18,568,683	$ (15,803,271)	$ 2,362,308	$ 30,393,336	$ (28,031,028)
58	$ 151,501	$ 1,404,420	$ (1,252,919)	$ 151,501	$ 1,510,915	$ (1,359,414)	$ 318,863	$ 464,646	$ (145,783)
59	$ 189,376	$ 1,680,269	$ (1,490,893)	$ 189,376	$ 1,813,388	$ (1,624,012)	$ 398,579	$ 580,807	$ (182,228)
60	$ 227,251	$ 1,956,118	$ (1,728,867)	$ 227,251	$ 2,115,861	$ (1,888,609)	$ 478,294	$ 696,968	$ (218,674)
61	$ 12,406	$ 317,469	$ (305,063)	$ 12,406	$ 329,348	$ (316,941)	$ 11,879	$ -	$ 11,879
62	$ 20,677	$ 514,537	$ (493,859)	$ 20,677	$ 534,335	$ (513,657)	$ 19,798	$ -	$ 19,798
63	$ 41,355	$ 851,365	$ (810,010)	$ 41,355	$ 890,960	$ (849,606)	$ 39,596	$ -	$ 39,596
64	$ 118,659	$ 677,495	$ (558,837)	$ 118,659	$ 758,388	$ (639,729)	$ 69,236	$ -	$ 69,236
65	$ 227,498	$ 1,126,195	$ (898,698)	$ 227,498	$ 1,283,733	$ (1,056,236)	$ 134,838	$ -	$ 134,838
66	$ 336,336	$ 1,631,220	$ (1,294,884)	$ 336,336	$ 1,865,404	$ (1,529,067)	$ 200,439	$ -	$ 200,439
70	$ 332,361	$ 373,714	$ (41,354)	$ 332,361	$ 606,706	$ (274,345)	$ 192,557	$ 1,210,707	$ (1,018,151)
71	$ 498,541	$ 534,153	$ (35,612)	$ 498,541	$ 883,640	$ (385,099)	$ 288,835	$ 1,816,061	$ (1,527,226)
72	$ 830,902	$ 855,029	$ (24,128)	$ 830,902	$ 1,437,508	$ (606,606)	$ 481,392	$ 3,026,769	$ (2,545,377)
73	$ 1,565,286	$ 1,226,292	$ 338,994	$ 1,565,286	$ 2,323,589	$ (758,302)	$ 906,866	$ 1,218,111	$ (311,245)
74	$ 3,130,573	$ 1,847,658	$ 1,282,915	$ 3,130,573	$ 4,042,251	$ (911,678)	$ 1,813,732	$ 2,436,223	$ (622,490)
75	$ 4,695,859	$ 2,469,023	$ 2,226,836	$ 4,695,859	$ 5,760,913	$ (1,065,054)	$ 2,720,598	$ 3,654,334	$ (933,736)

Lookup ID	UCT	RIM	PCT	UCT					RIM					PCT				
	2024 -2028	2024 -2028	2024 -2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028
	Do not Delete Row			Do not Delete Row					Do not Delete Row					Do not Delete Row				
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	0.03	0.11	-	-	-	0.44	-	-	-	-	0.32	-	-	-	-	-	-	-
20	0.05	0.24	-	-	-	0.99	-	-	-	-	0.55	-	-	-	-	-	-	-
22	1.47	0.72	0.15	-	-	1.71	-	-	-	-	0.78	-	-	-	-	0.15	-	-
23	1.52	0.73	0.15	-	-	1.71	1.62	-	-	-	0.78	0.74	-	-	-	0.15	0.15	-
24	1.51	0.72	0.03	-	-	1.71	1.62	1.40	-	-	0.78	0.74	0.68	-	-	0.03	0.03	0.03
25	0.29	0.24	1.62	0.51	0.47	-	-	-	0.38	0.36	-	-	-	1.65	1.58	-	-	-
26	0.33	0.27	1.52	0.51	0.47	0.31	0.28	0.20	0.38	0.36	0.25	0.23	0.17	1.65	1.58	1.51	1.45	1.39
27	0.35	0.28	1.52	0.56	0.51	0.33	0.30	0.21	0.41	0.38	0.26	0.25	0.18	1.65	1.58	1.51	1.45	1.39
28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	-	0.30	-	-	-	-	-	-	-	-	0.33	-	-	-	-	-	-	-
32	-	0.31	-	-	-	-	-	-	-	-	0.33	-	-	-	-	-	-	-
33	-	0.32	-	-	-	-	-	-	-	-	0.33	-	-	-	-	-	-	-
43	2.40	0.91	0.38	-	2.62	-	-	-	-	0.94	-	-	-	-	0.38	-	-	-
44	2.42	0.90	0.37	-	2.56	2.48	-	-	-	0.93	0.90	-	-	-	0.38	0.36	-	-
45	2.39	0.89	0.36	-	2.56	2.42	2.35	-	-	0.93	0.90	0.87	-	-	0.38	0.36	0.34	-
46	2.16	0.79	0.07	-	2.84	-	-	-	-	0.87	-	-	-	-	0.07	-	-	-
47	2.39	0.81	0.07	-	2.84	2.59	-	-	-	0.87	0.83	-	-	-	0.07	0.07	-	-
48	2.44	0.81	0.07	-	2.84	2.59	2.46	-	-	0.87	0.83	0.80	-	-	0.07	0.07	0.07	-
49	0.90	0.56	0.37	-	1.23	-	-	-	-	0.67	-	-	-	-	0.37	-	-	-
50	1.07	0.61	0.36	-	1.23	1.29	-	-	-	0.67	0.68	-	-	-	0.37	0.35	-	-
51	1.17	0.64	0.36	-	1.23	1.38	-	-	-	0.67	0.70	-	-	-	0.37	0.35	-	-
52	0.19	0.17	0.44	0.18	0.19	0.18	0.21	0.20	0.16	0.17	0.16	0.18	0.17	0.48	0.46	0.44	0.42	0.40
53	0.22	0.19	0.44	0.20	0.22	0.21	0.22	0.21	0.18	0.19	0.18	0.19	0.18	0.48	0.46	0.44	0.42	0.40
54	0.23	0.19	0.43	0.22	0.24	0.22	0.23	0.22	0.19	0.20	0.19	0.20	0.19	0.48	0.46	0.44	0.42	0.40
55	0.16	0.14	0.08	-	0.06	0.06	0.22	0.22	-	0.06	0.06	0.18	0.18	-	0.54	0.50	0.07	0.07
56	0.17	0.15	0.08	-	0.07	0.07	0.23	0.22	-	0.07	0.06	0.19	0.19	-	0.54	0.50	0.07	0.07
57	0.17	0.15	0.08	-	0.07	0.07	0.23	0.22	-	0.07	0.06	0.19	0.19	-	0.54	0.50	0.07	0.07
58	0.11	0.10	0.69	0.12	0.12	0.11	0.11	0.09	0.11	0.11	0.10	0.10	0.08	0.65	0.75	0.73	0.66	0.65
59	0.11	0.10	0.69	0.13	0.12	0.12	0.11	0.09	0.12	0.11	0.11	0.10	0.09	0.65	0.75	0.73	0.66	0.65
60	0.12	0.11	0.69	0.13	0.12	0.12	0.11	0.10	0.12	0.11	0.11	0.11	0.09	0.65	0.75	0.73	0.66	0.65
61	0.04	0.04	-	-	0.05	0.05	-	-	-	0.05	0.05	-	-	-	-	-	-	-
62	0.04	0.04	-	-	0.05	0.05	-	-	-	0.05	0.05	-	-	-	-	-	-	-
63	0.05	0.05	-	-	0.06	0.06	-	-	-	0.06	0.05	-	-	-	-	-	-	-
64	0.18	0.16	-	-	0.27	-	-	-	-	0.23	-	-	-	-	-	-	-	-
65	0.20	0.18	-	-	0.25	0.24	-	-	-	0.21	0.20	-	-	-	-	-	-	-
66	0.21	0.18	-	-	0.22	0.26	-	-	-	0.19	0.22	-	-	-	-	-	-	-
70	0.89	0.55	0.16	1.16	1.09	0.80	0.76	0.71	0.66	0.63	0.51	0.49	0.47	0.16	0.16	0.16	0.16	0.16
71	0.93	0.56	0.16	1.22	1.15	0.84	0.79	0.75	0.68	0.65	0.53	0.50	0.48	0.16	0.16	0.16	0.16	0.16
72	0.97	0.58	0.16	1.28	1.21	0.87	0.82	0.78	0.69	0.66	0.54	0.51	0.49	0.16	0.16	0.16	0.16	0.16
73	1.28	0.67	0.74	1.47	1.39	1.31	1.24	0.99	0.75	0.71	0.68	0.65	0.57	0.78	0.76	0.74	0.72	0.70
74	1.69	0.77	0.74	1.93	1.82	1.72	1.63	1.37	0.85	0.81	0.78	0.75	0.68	0.78	0.76	0.74	0.72	0.70
75	1.90	0.82	0.74	2.15	2.03	1.92	1.82	1.57	0.89	0.85	0.82	0.78	0.72	0.78	0.76	0.74	0.72	0.70

Calculations ENTIRE TAB IS TRADE SECRET

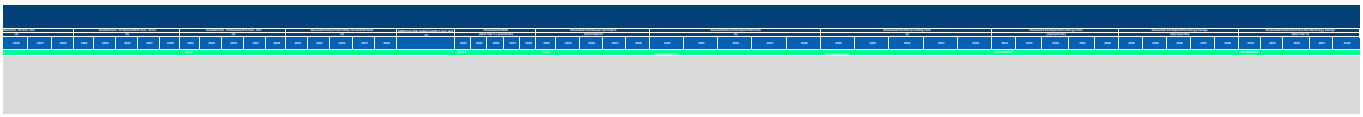
			Measure Code				Participating Units (Units)					Ave. Dth/Participant Saved	Ave. Non-Gas Fuel Units Saved/Participant	Peak Reduction Factor	Peak Demand Savings	Ave. Measure Life	Participant Non-Energy Savings ($/participant-project life)					Incentive Per Participant ($/participant)					Total Annual Utility Incremental Costs ($/year)					Costs Outside 5-year program (to align with li	ngoing Utility Costs Outsid	Variable O&M Costs ($/Dth)					Direct Participant Pilot Costs ($/participant-year)					Total Pilot Upfront C ($/participant-yea		
Lookup ID	Program	Customer Class/ Sector:	Reference from Measure Workbook	Measure Description	Participation Size	Grid Mix Scenario	2024	2025	2026	2027	2028	(Dth/Participant)	(kWh/Participant)	(%)	(Dth-Yr)	(Years)	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	Total $ (after year 5)	dditional Years post-yea	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026
Do not Delete			Do not Delete Row	Do not Delete Row								Do not Delete Row			Do not Delete Row							Do not Delete					Do not Delete Row												Do not Delete					Do not Delete		

		Third Party Funding					Participant Non-Energy Costs					Lifecycle GHG Intensity Savings								
		($/participant-year)					($)					Kg CO2e/participant - measure life					er Non-GHG Pollutants ($	Line Loss Factor	Non-Gas Fuel Cost	Net To Gross Ratio
2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	(%)	$/kWh	
		Do not Delete					Do not Delete										Do not Delete Row	Do not Delete Row	Do not Delete Row	Suggestive

			Total Gross Gas Savings					Total Net Gas Savings				
Gross Annual Ave. Gas Savings	Gross Annual Demand Savings	Gross Annual Ave Non Gas fuel Savings	(Dth)					(Dth)				
(DTh/Participant)	(DTh-Yr)	(kWh/Participant)	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028
		Do not Delete Row						Do not				

Total Gross Demand Savings					Total Net Demand Savings					Total Gross Non-Gas Savings					Total Net Non-Gas Savings				
(Dth)					(Dth)					(kWh)					(kWh)				
2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028
Do not					Do not					Do not					Do not				

Total Avoided Costs - PV DTh- Gross					Avo	
($)						
2024	2025	2026	2027	2028	2024	2025
					Do not Delete	



oided Costs - PV Dth - Net			Avoided Costs - PV Demand Dth-Year - Gross					Avoided Costs - PV Demand Dth-Year - Net				
($)			($)					($)				
2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028
								Do not				

Discounted Annual Total Utility Incremental Costs					Additional utility budget outside 5 year wind	Discounted VO&M					Discounted Incentive per participant				
($)					($)	(Base Year $ / project-life)					($/Participant)				
2024	2025	2026	2027	2028		2024	2025	2026	2027	2028	2024	2025	2026	2027	2028
						Do not					Do not				

Discounted Direct Participant Pilot Costs					Discounted Third Party Funding Costs				
($)					($)				
2024	2025	2026	2027	2028	2024	2025	2026	2027	2028
Do not Delete Row					Do not Delete Row				

Discounted Participant Non-Energy Costs					Discounted Participant Non-Energy Savings					Discounted Social Cost of Non-Gas Net Energy Savings				
($/project-life)					($/project-life)					(Base Year $)				
2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028
Do not Delete										Do not Delete				

PV Total Lost Revenue Gas- Gross for UCT & RIM ($)					PV Total Lost Revenue Gas- Gross for PCT ($)					PV Total Lost Revenue Gas - Net for UCT and RIM ($)					PV Total Lost Revenue Gas - Net for PCT ($)				
2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028
Do not Delete										Do not Delete									

PV Total Lost Revenue Non Gas- Gross for UCT & RIM ($)					PV Total Lost Revenue Non Gas- Gross for PCT ($)					PV Total Lost Revenue Non Gas - Net for UCT & RIM ($)					PV Total Lost Revenue Non Gas - Net for PCT ($)				
2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028
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For Portfolio Level Calculations						UCT					RIM					PCT					Electric Emissions Impact - (Metric Tons)		
UCT Benefits	UCT Costs	RIM Benefits	RIM Costs	PCT Benefits	PCT Costs	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026
Do not Delete						Do not Delete Row					Do not Delete Row					Do not Delete Row					Do not Delete Row		

Gross		Electric Emissions Impact - Net (Metric Tons)					NG Emissions Impact - Gross (Metric Tons)					NG Emissions Impact - Net (Metric Tons)					Lifecycle GHG Savings Impact - Net (Metric Tons)					Social Cost Carbon - Electricity ($)					Social Cost Carbon - NG ($)					TOTAL Lifecycle GHG Savings Impact - Net (Metric Tons)					TOTAL New Annual GHG Savings Impact - Net (Metric Tons)					TOTAL Cumulative Annual GHG Savings Impact - Net (Metric Tons)					Discounted Other Pollution Social Cost Savings - Net (Base Year $/project/life)					Total (Net) Pilot Impacts - Including Environmental components ($) ($)							Equipment and Installa (Base		
2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	5 Year Total	Pilot Lifetime Total (adjusted for costs outside 5 years)	2024	2025	2026
		Do not Delete Row					Do not Delete Row					Do not Delete Row					Do not Delete Row					Do not Delete Row					Do not Delete Row																																		

n Costs (No Utility Costs)					Additional Evaluation Criteria										
Year 5)			ity Costs Outside 5-year program (to align with lifet	Utility Costs to Account for Comitted Budget Outside 5 year program (to align with lifetime e	Annual GHG Emission Reductions, Cumulative Level Achieved by Year 5	Total Lifetime GHG Emission Reductions	Social Cost of Total Lifetime Carbon Reductions	Social Cost of Total Lifetime Non-GHG Emissions Reductions	Social Cost of Non-Gas Lifetime Energy Savings	Average Annual Utility NGIA Costs	Total (Net) Pilot Impacts - Year 5 Annual GHG Emission Reduction Cost	Total (Net) Pilot Impacts - GHG Emission Reduction Cost	Utility Cost Perspective -2025 Annual GHG Emission Reduction Cost	Utility Cost Perspective - GHG Emission Reduction Cost	Equipment + Installation Costs - Year 5 Annual GHG Emission Reduction Cost
2027	2028	5 Year Total	($)	Pilot Lifetime Total (adjusted for costs outside 5-years)	(Metric Ton CO2e/yr)	(Lifetime tCO2)	($)	($)	($)	($)	($/tCO2e/year)	($/Lifetime tCO2e)	($/tCO2e/year)	($/Lifetime tCO2e)	($/tCO2e/year)
		Do not Delete Row													

						Categories for Gas Rate Impacts																			
Equipment + Installation Cost - GHG Emission Reduction Cost	Public Co-Benefits	Water Pollution	Net Direct Job Creation	Net Indirect Job Creation	Net Induced Job Creation	Gas Supply Costs ($)					Capital Cost Recovery ($)					O&M Costs ($)					Utility Cost Savings ($)				
($/Lifetime tCO2e)	($)	($)	Total Net Direct Jobs	Total Net Indirect Jobs	Total Net Induced Jobs	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028

5-Year NGIA Budget

Pilot Project Code	Project size	5-yrs NGIA Plan Budget	Pilot Budget	Fixed O&M Cost ($)						Est. Annual Revenue Requirement for Capital Projects ($)						Incentives ($)						Participant Units					Variable O&M Cost ($)					Avg. Dth/Participant Saved	Average Lifetime for Savings / Pilot Tech	Total Incremental Natural Gas Savings (Dth)					Total Annual Natural Gas Savings (Dth)					5-yrs Natural Gas Savings ($)						Incremental Natural Gas Savings (Dth)					5-yrs Annual V O&M ($)						Peak Demand Savings (Dth)					5-yrs Annual Peak Demand Savings ($)					
				2024	2025	2026	2027	2028	Total	2024	####	2026	2027	2028	Total	2024	2025	2026	2027	2028	Total	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028			2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	Total	2024	2025	2026	2027	2028	####	2025	2026	2027	2028	Total	2024	2025	2026	2027	2028	2024	2025	2026	2027	2028	Total
Do not Delete Row					Do not Delete Row					Do not Delete Row																																																																	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Pilot Profile Inputs

Pilot Project Code	Project name	Project size	Customer Class	Low Income Community	Target Area	Primary Innovative Resource	Pilot Description	Implementation Approach	Other comments	Participating Units (units) 2024	2025	2026	2027	2028
Do not Delete Row				Do not Delete Row			Do not Delete Row		Do not Delete Row	Do not Delete Row				
CNP01	RNG Proposal - Anaerobic Digestion of Organic Materials	A	C&I & Res	N	Territory-wide	Renewable Natural Gas (RNG)	CenterPoint Energy proposes to b	This project is expect	Assumes offtake from developer or	-	-	8,288	-	-
CNP01	RNG Proposal - Anaerobic Digestion of Organic Materials	B	C&I & Res	N	Territory-wide	Renewable Natural Gas (RNG)	CenterPoint Energy proposes to b	This project is expect	Assumes offtake from developer or	-	-	41,440	-	-
CNP01	RNG Proposal - Anaerobic Digestion of Organic Materials	C	C&I & Res	N	Territory-wide	Renewable Natural Gas (RNG)	CenterPoint Energy proposes to b	This project is expect	Assumes offtake from developer or	-	-	82,880	-	-
CNP02	RNG Proposal - Anaerobic Digestion of East Metro Food Waste	A	C&I & Res	N	Territory-wide	Renewable Natural Gas (RNG)	CenterPoint Energy proposes to b	This project is expect	Assumes offtake from developer or	-	-	18,168	-	-
CNP02	RNG Proposal - Anaerobic Digestion of East Metro Food Waste	B	C&I & Res	N	Territory-wide	Renewable Natural Gas (RNG)	CenterPoint Energy proposes to b	This project is expect	Assumes offtake from developer or	-	-	95,383	-	-
CNP02	RNG Proposal - Anaerobic Digestion of East Metro Food Waste	C	C&I & Res	N	Territory-wide	Renewable Natural Gas (RNG)	CenterPoint Energy proposes to b	This project is expect	Assumes offtake from developer or	-	-	190,767	-	-
CNP03	RNG Archetype - Wastewater Resource Recovery Facility	A	C&I & Res	N	Territory-wide	Renewable Natural Gas (RNG)	For Pilots 3-6, the "RNG Archetyp	CenterPoint Energy w	For the purposes of this analysis, a	-	10,000	-	-	-
CNP03	RNG Archetype - Wastewater Resource Recovery Facility	B	C&I & Res	N	Territory-wide	Renewable Natural Gas (RNG)	For Pilots 3-6, the "RNG Archetyp	CenterPoint Energy w	For the purposes of this analysis, a	-	50,000	-	-	-
CNP03	RNG Archetype - Wastewater Resource Recovery Facility	C	C&I & Res	N	Territory-wide	Renewable Natural Gas (RNG)	For Pilots 3-6, the "RNG Archetyp	CenterPoint Energy w	For the purposes of this analysis, a	-	300,000	-	-	-
CNP04	RNG Archetype - Dairy Manure	A	C&I & Res	N	Territory-wide	Renewable Natural Gas (RNG)	For Pilots 3-6, the "RNG Archetyp	CenterPoint Energy w	For the purposes of this analysis, a	-	10,000	-	-	-
CNP04	RNG Archetype - Dairy Manure	B	C&I & Res	N	Territory-wide	Renewable Natural Gas (RNG)	For Pilots 3-6, the "RNG Archetyp	CenterPoint Energy w	For the purposes of this analysis, a	-	20,000	-	-	-
CNP04	RNG Archetype - Dairy Manure	C	C&I & Res	N	Territory-wide	Renewable Natural Gas (RNG)	For Pilots 3-6, the "RNG Archetyp	CenterPoint Energy w	For the purposes of this analysis, a	-	100,000	-	-	-
CNP05	RNG Archetype - Food Waste	A	C&I & Res	N	Territory-wide	Renewable Natural Gas (RNG)	For Pilots 3-6, the "RNG Archetyp	CenterPoint Energy w	For the purposes of this analysis, a	-	10,000	-	-	-
CNP05	RNG Archetype - Food Waste	B	C&I & Res	N	Territory-wide	Renewable Natural Gas (RNG)	For Pilots 3-6, the "RNG Archetyp	CenterPoint Energy w	For the purposes of this analysis, a	-	220,000	-	-	-
CNP05	RNG Archetype - Food Waste	C	C&I & Res	N	Territory-wide	Renewable Natural Gas (RNG)	For Pilots 3-6, the "RNG Archetyp	CenterPoint Energy w	For the purposes of this analysis, a	-	500,000	-	-	-
CNP06	RNG Archetype - Landfill Gas	A	C&I & Res	N	Territory-wide	Renewable Natural Gas (RNG)	For Pilots 3-6, the "RNG Archetyp	CenterPoint Energy w	For the purposes of this analysis, a	-	128,750	-	-	-
CNP06	RNG Archetype - Landfill Gas	B	C&I & Res	N	Territory-wide	Renewable Natural Gas (RNG)	For Pilots 3-6, the "RNG Archetyp	CenterPoint Energy w	For the purposes of this analysis, a	-	228,750	-	-	-
CNP06	RNG Archetype - Landfill Gas	C	C&I & Res	N	Territory-wide	Renewable Natural Gas (RNG)	For Pilots 3-6, the "RNG Archetyp	CenterPoint Energy w	For the purposes of this analysis, a	-	900,000	-	-	-
CNP07	Green Hydrogen Blending into Natural Gas Distribution System	A	C&I & Res	N	Territory-wide	Power-to-Hydrogen	CenterPoint Energy proposes to c	CenterPoint Energy w	Size A assumes an grid electricity	-	-	1	-	-
CNP07	Green Hydrogen Blending into Natural Gas Distribution System	B	C&I & Res	N	Territory-wide	Power-to-Hydrogen	CenterPoint Energy proposes to c	CenterPoint Energy w	Size A assumes an grid electricity	-	-	1	-	-
CNP07	Green Hydrogen Blending into Natural Gas Distribution System	C	C&I & Res	N	Territory-wide	Power-to-Hydrogen	CenterPoint Energy proposes to c	CenterPoint Energy w	Size A assumes an grid electricity	-	-	-	-	-
CNP08	Green Hydrogen Archetype for Industrial or Large Commercial Facility	A	C&I	N	Territory-wide	Power-to-Hydrogen	CenterPoint Energy would offer in	The projects would b	Possible that some participants co	-	-	1	-	-
CNP08	Green Hydrogen Archetype for Industrial or Large Commercial Facility	B	C&I	N	Territory-wide	Power-to-Hydrogen	CenterPoint Energy would offer in	The projects would b	Possible that some participants co	-	-	1	1	-
CNP08	Green Hydrogen Archetype for Industrial or Large Commercial Facility	C	C&I	N	Territory-wide	Power-to-Hydrogen	CenterPoint Energy would offer in	The projects would b	Possible that some participants co	-	-	1	1	1
CNP09	Industrial Methane and Refrigerant Leak Reduction Program	A	C&I	N	Territory-wide	Carbon Capture	CenterPoint Energy will hire a third	Large industrial and c	Pilot sizes differ depending on num	25	25	-	-	-
CNP09	Industrial Methane and Refrigerant Leak Reduction Program	B	C&I	N	Territory-wide	Carbon Capture	CenterPoint Energy will hire a third	Large industrial and c	Pilot sizes differ depending on num	25	25	25	25	25
CNP09	Industrial Methane and Refrigerant Leak Reduction Program	C	C&I	N	Territory-wide	Carbon Capture	CenterPoint Energy will hire a third	Large industrial and c	Pilot sizes differ depending on num	50	50	50	50	50
CNP10	Urban Tree Carbon Offset Program	A	C&I & Res	Y	Urban	Carbon Capture	Local non-profit Green Minneapo	Trees planted in area	Pilot size determined by number of	800	850	900	950	1,000
CNP10	Urban Tree Carbon Offset Program	B	C&I & Res	Y	Urban	Carbon Capture	Local non-profit Green Minneapo	Trees planted in area	Pilot size determined by number of	1,600	1,700	1,800	1,900	2,000
CNP10	Urban Tree Carbon Offset Program	C	C&I & Res	Y	Urban	Carbon Capture	Local non-profit Green Minneapo	Trees planted in area	Pilot size determined by number of	3,200	3,400	3,600	3,800	4,000
CNP11	Carbon Capture Archetype for Industrial or Large Commercial Facility	A	C&I	N	Territory-wide	Carbon Capture	CNP would offer incentives coveri	Program would begin	Possible that some participants co	-	-	1	-	-
CNP11	Carbon Capture Archetype for Industrial or Large Commercial Facility	B	C&I	N	Territory-wide	Carbon Capture	CNP would offer incentives coveri	Program would begin	Possible that some participants co	-	-	2	-	-
CNP11	Carbon Capture Archetype for Industrial or Large Commercial Facility	C	C&I	N	Territory-wide	Carbon Capture	CNP would offer incentives coveri	Program would begin	Possible that some participants co	-	-	3	-	-
CNP13	Carbon Capture Rebates for Commercial Buildings	A	C&I	N	Territory-wide	Carbon Capture	CenterPoint Energy proposes to p	Customer would own	CenterPoint Energy is currently pilo	3	8	18	38	73
CNP13	Carbon Capture Rebates for Commercial Buildings	B	C&I	N	Territory-wide	Carbon Capture	CenterPoint Energy proposes to p	Customer would own	CenterPoint Energy is currently pilo	73	148	148	148	148
CNP13	Carbon Capture Rebates for Commercial Buildings	C	C&I	N	Territory-wide	Carbon Capture	CenterPoint Energy proposes to p	Customer would own	CenterPoint Energy is currently pilo	148	298	298	298	298
CNP14	New Networked Geothermal Systems Pilot	A	C&I & Res	Y - preference for location in	Urban	District Energy	CenterPoint Energy proposes to d	The proposed approa	Metrics are applied on a per-ton ba	-	-	100	100	-
CNP14	New Networked Geothermal Systems Pilot	B	C&I & Res	Y - preference for location in	Urban	District Energy	CenterPoint Energy proposes to d	The proposed approa	Metrics are applied on a per-ton ba	-	-	200	300	-
CNP14	New Networked Geothermal Systems Pilot	C	C&I & Res	Y - preference for location in	Urban	District Energy	CenterPoint Energy proposes to d	The proposed approa	Metrics are applied on a per-ton ba	-	-	200	400	400
CNP15	Decarbonizing Existing District Energy Systems	A	C&I	N	Urban	District Energy	CenterPoint Energy proposes a tw	CenterPoint energy w	Note – for now this pilot has been	-	1	-	-	-
CNP15	Decarbonizing Existing District Energy Systems	B	C&I	N	Urban	District Energy	CenterPoint Energy proposes a tw	CenterPoint energy w	Note – for now this pilot has been	-	1	1	-	-
CNP15	Decarbonizing Existing District Energy Systems	C	C&I	N	Urban	District Energy	CenterPoint Energy proposes a tw	CenterPoint energy w	Note – for now this pilot has been	-	1	1	1	-
CNP16	New District Energy System	A	C&I & Res	Y	Territory-wide	District Energy	CenterPoint Energy proposes a tw	CenterPoint energy w	Program budget would be sized to	-	1	-	-	-
CNP16	New District Energy System	B	C&I & Res	Y	Territory-wide	District Energy	CenterPoint Energy proposes a tw	CenterPoint energy w	Program budget would be sized to	-	1	1	-	-
CNP16	New District Energy System	C	C&I & Res	Y	Territory-wide	District Energy	CenterPoint Energy proposes a tw	CenterPoint energy w	Program budget would be sized to	-	1	1	1	-
CNP17	Industrial Electrification Incentive Program	A	C&I	N	Territory-wide	Strategic Electrification	CenterPoint Energy proposes to n	Phase 1: The progran	0	-	3	-	-	-
CNP17	Industrial Electrification Incentive Program	B	C&I	N	Territory-wide	Strategic Electrification	CenterPoint Energy proposes to n	Phase 1: The progran	0	-	3	3	-	-
CNP17	Industrial Electrification Incentive Program	C	C&I	N	Territory-wide	Strategic Electrification	CenterPoint Energy proposes to n	Phase 1: The progran	0	-	3	6	-	-
CNP18	Commercial hybrid heating pilot	A	C&I	N	Territory-wide	Strategic Electrification	CenterPoint Energy proposes to p	The programmatic ap	Pilot sizes differ depending on num	10	15	15	15	15
CNP18	Commercial hybrid heating pilot	B	C&I	N	Territory-wide	Strategic Electrification	CenterPoint Energy proposes to p	The programmatic ap	Pilot sizes differ depending on num	15	30	30	30	30
CNP18	Commercial hybrid heating pilot	C	C&I	N	Territory-wide	Strategic Electrification	CenterPoint Energy proposes to p	The programmatic ap	Pilot sizes differ depending on num	20	45	45	45	45
CNP19	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	A	C&I & Res	Yes	Territory-wide	Strategic Electrification	CenterPoint Energy proposes a thr	The phase 1 building	Participation shown for years 4 and	-	7	7	35	70
CNP19	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	B	C&I & Res	Yes	Territory-wide	Strategic Electrification	CenterPoint Energy proposes a	The phase 1 building	Participation shown for years 4 and	-	14	14	70	140
CNP19	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	C	C&I & Res	Yes	Territory-wide	Strategic Electrification	CenterPoint Energy proposes a thr	The phase 1 building	Participation shown for years 4 and	-	21	21	105	210
CNP20	Small/medium business GHG audit pilot	A	C&I	N	Territory-wide	Energy Efficiency	CenterPoint Energy proposes to e	This NGIA pilot is env	Participant levels for pilot size B ch	176	192	208	208	208
CNP20	Small/medium business GHG audit pilot	B	C&I	N	Territory-wide	Energy Efficiency	CenterPoint Energy proposes to e	This NGIA pilot is env	Participant levels for pilot size B ch	220	240	260	260	260
CNP20	Small/medium business GHG audit pilot	C	C&I	N	Territory-wide	Energy Efficiency	CenterPoint Energy proposes to e	This NGIA pilot is env	Participant levels for pilot size B ch	264	288	312	312	312
CNP21	Residential Gas Heat Pump	A	Residential	N	Territory-wide	Energy Efficiency	CenterPoint Energy proposes to fu	For the different pilot	A minimum of 10 participants (size	-	3	3	-	-
CNP21	Residential Gas Heat Pump	B	Residential	N	Territory-wide	Energy Efficiency	CenterPoint Energy proposes to fu	For the different pilot	A minimum of 10 participants (size	-	5	5	-	-
CNP21	Residential Gas Heat Pump	C	Residential	N	Territory-wide	Energy Efficiency	CenterPoint Energy proposes to fu	For the different pilot	A minimum of 10 participants (size	-	10	10	-	-
CNP22	Gas Heat Pump for Commercial Buildings	A	C&I	Y	Territory-wide	Energy Efficiency	CenterPoint Energy proposes to fu	As the technology is r	Target candidates for the pilot will	-	3	-	-	-
CNP22	Gas Heat Pump for Commercial Buildings	B	C&I	Y	Territory-wide	Energy Efficiency	CenterPoint Energy proposes to fu	As the technology is r	Target candidates for the pilot will	-	3	3	-	-
CNP22	Gas Heat Pump for Commercial Buildings	C	C&I	Y	Territory-wide	Energy Efficiency	CenterPoint Energy proposes to fu	As the technology is r	Target candidates for the pilot will	-	3	6	-	-
CNP24	Solar Thermal Heating for C&I	A	C&I	N	Territory-wide	Energy Efficiency	This pilot would offer incentives fo	While incentive appro	The level of participating units inclu	2	2	2	2	2
CNP24	Solar Thermal Heating for C&I	B	C&I	N	Territory-wide	Energy Efficiency	This pilot would offer incentives fo	While incentive appro	The level of participating units inclu	3	3	3	3	3
CNP24	Solar Thermal Heating for C&I	C	C&I	N	Territory-wide	Energy Efficiency	This pilot would offer incentives fo	While incentive appro	The level of participating units inclu	5	5	5	5	5
CNP25	Industrial and Large Commercial GHG Audit Pilot	A	C&I	N	Territory-wide	Energy Efficiency	CenterPoint Energy proposes to e	This would build off t	For this initial estimate we establish	1	1	1	1	1
CNP25	Industrial and Large Commercial GHG Audit Pilot	B	C&I	N	Territory-wide	Energy Efficiency	CenterPoint Energy proposes to e	This would build off t	For this initial estimate we establish	2	2	2	2	2
CNP25	Industrial and Large Commercial GHG Audit Pilot	C	C&I	N	Territory-wide	Energy Efficiency	CenterPoint Energy proposes to e	This would build off t	For this initial estimate we establish	3	3	3	3	3

Pilot Project Code	Project size	Annual Total Utility Incremental Cost ($) 2024	2025	2026	2027	2028
CNP01	A	$ -	$ 10,094	$ 208,082	$ 208,896	$ 211,115
CNP01	B	$ -	$ 10,094	$ 852,823	$ 861,646	$ 871,453
CNP01	C	$ -	$ 10,094	$1,658,748	$1,677,584	$1,696,877
CNP02	A	$ -	$ 10,094	$ 425,235	$ 428,436	$ 432,916
CNP02	B	$ -	$ 10,094	$1,926,921	$1,948,777	$1,970,932
CNP02	C	$ -	$ 10,094	$3,781,945	$3,826,845	$3,870,835
CNP03	A	$ 12,250	$ 203,742	$ 212,477	$ 215,283	$ 217,974
CNP03	B	$ 12,250	$ 889,283	$ 905,402	$ 917,871	$ 929,718
CNP03	C	$ 12,250	$4,978,490	$5,052,429	$5,125,297	$5,194,372
CNP04	A	$ 12,250	$ 493,742	$ 502,477	$ 505,283	$ 507,974
CNP04	B	$ 12,250	$ 978,613	$ 991,958	$ 997,180	$1,002,160
CNP04	C	$ 12,250	$4,630,497	$4,662,807	$4,687,356	$4,710,649
CNP05	A	$ 12,250	$ 233,742	$ 242,477	$ 245,283	$ 247,974
CNP05	B	$ 12,250	$4,329,744	$4,361,580	$4,415,121	$4,465,883
CNP05	C	$ 12,250	$9,726,484	$9,842,051	$9,963,238	########
CNP06	A	$ 12,250	$1,545,993	$1,521,940	$1,553,435	$1,583,309

Planning Assumptions

Program Year 0	Base Year
2023	2023

General Inputs		Information Source
[illegible]	0.00%	
Demand Cost Escalation Rate	-5.250%	Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2027 to all users in the West North Central Region as estimated in the Energy Information Administration's 2023 Annual Energy Outlook https://www.eia.gov/outlook
[illegible]	-5.250%	Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2027 to all users in the West North Central Region as estimated in the Energy Information Administration's 2023 Annual Energy Outlook https://www.eia.gov/outlook
[illegible]	1.93%	Annual Escalation Rate calculated using the average annual percentage increase in Minnesota retail rates as reported by EIA between 2017 and 2021 from https://www.eia.gov/electricity/state/minnesota/
Utility and Societal Discount Rate	3.30%	Discount rate calculated using the United States Department of Treasury's 20-year Constant Maturity (CMT) Rate for 2022. The Treasury's 20-year Daily CMT Rate captures the market's expectations regarding inflation, along with small risk factor. https://home.treasury.gov/resource-ce
[illegible]	[illegible]	
Participant Discount Rate when customer class is C&I	6.45%	Participant discount rate for commercial and industrial customers is equal to the utility's after-tax weighted cost of capital. CenterPoint current 2021 rate case. GR 21-435
[illegible]	$5.41	CenterPoint. 24 months average cost per Dth of gas sales to non-exempt customers between May 2021-Apr 2023
[illegible]	$194.36	CenterPoint. Purchased Gas Adjustment (PGA)
Environmental Cost Values escalation rate for CO2	3.820%	Annual escalation rate calculated as the average of the 12-month percentage change in the "all items" customer price index available from the United States Bureau of Labor Statistics between 2018 and 2022. https://www.bls.gov/charts/consumer-price-index/consumer-price-index-b
Geologic Gas Natural Gas Emission Factor [illegible]	66.14	ICF's analysis of GREET 2022
Geologic Gas Natural Gas Emission Factor [illegible]	0.066	ICF's analysis of GREET 2022
Electricity Retail Rate($/kWh) - Residential	$0.14	2022 Annual average retail electricity rate for Minnesota calculated by the U.S. Energy Information Administration (EIA) (eia.gov)
[illegible]	$0.11	2022 Annual average retail electricity rate for Minnesota weighted by retail sales of electricity by sector. Calculated based on information from the U.S. Energy Information Administration (EIA) (eia.gov)
[illegible]	$0.10	2022 Annual average retail electricity rate for Minnesota calculated by the U.S. Energy Information Administration (EIA) (eia.gov)
[illegible]	$6.54	CenterPoint calculation following CIP calculator methodology and using 2021 CIP participation to aggregate into customer classes
[illegible]	$5.49	CenterPoint calculation following CIP calculator methodology and using 2021 CIP participation to aggregate into customer classes
Gas Retail Rate ($/Dth) - C&I	$4.73	CenterPoint calculation following CIP calculator methodology and using 2021 CIP participation to aggregate into customer classes

INPUT Grid Mix Scenarios Inputs (gCO2e/kWh)

Year	Xcel	Xcel wind 50/50	NREL	NREL wind 50/50
2025	197	197	249	125
2030	109	109	21	12
2035	109	109	15	9
2040	64	64	4	3
2045	42	42	26	14
2050	-	-	46	24

Information Source

2022 NREL technical report | Regional Energy Deployment System (ReEDS) Model Documentation: Version 2020 (nrel.gov)

Grid Mix Scenarios Inputs (Metric Tons/kWh)

Year	Xcel	Xcel wind 50/50	NREL	NREL wind 50/50
2025	0.0002	0.0002	0.0002	0.0001
2030	0.0001	0.0001	0.0000	0.0000
2035	0.0001	0.0001	0.0000	0.0000
2040	0.0001	0.0001	0.0000	0.0000
2045	0.0000	0.0000	0.0000	0.0000
2050	0.0000	0.0000	0.0000	0.0000

Variable O&M ($/Dth)

Plan Year	Year 1	Year 2	Year 3	Year 4	Year 5
$/Dth	$0.04738	$0.04489	$0.04253	$0.04030	$0.03818
% Change	n/a	-5.250%	-5.250%	-5.250%	-5.250%

Avoided Costs (at Generator)			Grid Mix Scenarios				DISCOUNTED Costs	
Year	Demand Cost	Gas	Xcel	Xcel wind 50/50	NREL	NREL wind 50/50	Discounted Demand Cost	Discounted Gas
	$/Dth-yr	$/Dth	Metric Tons CO2e/kWh	Metric Tons CO2e/kWh	Metric Tons CO2e/kWh	Metric Tons CO2e/kWh	$/Dth-yr	$/Dth
2023	$194.36	$5.410	0.000197	0.000197	0.000249	0.000125	$194.36	$5.41
2024	$184.16	$5.126	0.000197	0.000197	0.000249	0.000125	$178.28	$4.96
2025	$174.49	$4.857	0.000197	0.000197	0.000249	0.000125	$163.52	$4.55
2026	$165.33	$4.602	0.000197	0.000197	0.000249	0.000125	$149.99	$4.17
2027	$156.65	$4.360	0.000197	0.000197	0.000249	0.000125	$137.58	$3.83
2028	$148.42	$4.131	0.000197	0.000197	0.000249	0.000125	$126.19	$3.51
2029	$140.63	$3.914	0.000197	0.000197	0.000249	0.000125	$115.75	$3.22
2030	$133.25	$3.709	0.000109	0.000109	0.000021	0.000012	$106.17	$2.96
2031	$126.25	$3.514	0.000109	0.000109	0.000021	0.000012	$97.38	$2.71
2032	$119.63	$3.330	0.000109	0.000109	0.000021	0.000012	$89.32	$2.49
2033	$113.35	$3.155	0.000109	0.000109	0.000021	0.000012	$81.93	$2.28
2034	$107.39	$2.989	0.000109	0.000109	0.000021	0.000012	$75.15	$2.09
2035	$101.76	$2.832	0.000109	0.000109	0.000015	0.000009	$68.93	$1.92
2036	$96.41	$2.684	0.000109	0.000109	0.000015	0.000009	$63.23	$1.76
2037	$91.35	$2.543	0.000109	0.000109	0.000015	0.000009	$58.00	$1.61
2038	$86.56	$2.409	0.000109	0.000109	0.000015	0.000009	$53.20	$1.48
2039	$82.01	$2.283	0.000109	0.000109	0.000015	0.000009	$48.79	$1.36
2040	$77.71	$2.163	0.000064	0.000064	0.000004	0.000003	$44.76	$1.25
2041	$73.63	$2.049	0.000064	0.000064	0.000004	0.000003	$41.05	$1.14
2042	$69.76	$1.942	0.000064	0.000064	0.000004	0.000003	$37.65	$1.05
2043	$66.10	$1.840	0.000064	0.000064	0.000004	0.000003	$34.54	$0.96
2044	$62.63	$1.743	0.000064	0.000064	0.000004	0.000003	$31.68	$0.88
2045	$59.34	$1.652	0.000042	0.000042	0.000026	0.000014	$29.06	$0.81
2046	$56.23	$1.565	0.000042	0.000042	0.000026	0.000014	$26.65	$0.74
2047	$53.27	$1.483	0.000042	0.000042	0.000026	0.000014	$24.45	$0.68
2048	$50.48	$1.405	0.000042	0.000042	0.000026	0.000014	$22.42	$0.62
2049	$47.83	$1.331	0.000042	0.000042	0.000026	0.000014	$20.57	$0.57
2050	$45.32	$1.261	0.000000	0.000000	0.000046	0.000024	$18.87	$0.53
2051	$42.94	$1.195	0.000000	0.000000	0.000046	0.000024	$17.31	$0.48
2052	$40.68	$1.132	0.000000	0.000000	0.000046	0.000024	$15.87	$0.44
2053	$38.55	$1.073	0.000000	0.000000	0.000046	0.000024	$14.56	$0.41
2054	$36.52	$1.017	0.000000	0.000000	0.000046	0.000024	$13.35	$0.37
2055	$34.61	$0.963	0.000000	0.000000	0.000046	0.000024	$12.25	$0.34
2056	$32.79	$0.913	0.000000	0.000000	0.000046	0.000024	$11.24	$0.31
2057	$31.07	$0.865	0.000000	0.000000	0.000046	0.000024	$10.31	$0.29
2058	$29.44	$0.819	0.000000	0.000000	0.000046	0.000024	$9.45	$0.26
2059	$27.89	$0.776	0.000000	0.000000	0.000046	0.000024	$8.67	$0.24
2060	$26.43	$0.736	0.000000	0.000000	0.000046	0.000024	$7.95	$0.22
2061	$25.04	$0.697	0.000000	0.000000	0.000046	0.000024	$7.29	$0.20
2062	$23.73	$0.660	0.000000	0.000000	0.000046	0.000024	$6.69	$0.19
2063	$22.48	$0.626	0.000000	0.000000	0.000046	0.000024	$6.14	$0.17
2064	$21.30	$0.593	0.000000	0.000000	0.000046	0.000024	$5.63	$0.16
2065	$20.18	$0.562	0.000000	0.000000	0.000046	0.000024	$5.16	$0.14
2066	$19.12	$0.532	0.000000	0.000000	0.000046	0.000024	$4.74	$0.13
2067	$18.12	$0.504	0.000000	0.000000	0.000046	0.000024	$4.34	$0.12
2068	$17.17	$0.478	0.000000	0.000000	0.000046	0.000024	$3.98	$0.11
2069	$16.27	$0.453	0.000000	0.000000	0.000046	0.000024	$3.66	$0.10
2070	$15.41	$0.429	0.000000	0.000000	0.000046	0.000024	$3.35	$0.09
2071	$14.60	$0.406	0.000000	0.000000	0.000046	0.000024	$3.08	$0.09
2072	$13.84	$0.385	0.000000	0.000000	0.000046	0.000024	$2.82	$0.08
2073	$13.11	$0.365	0.000000	0.000000	0.000046	0.000024	$2.59	$0.07
2074	$12.42	$0.346	0.000000	0.000000	0.000046	0.000024	$2.37	$0.07
2075	$11.77	$0.328	0.000000	0.000000	0.000046	0.000024	$2.18	$0.06
2076	$11.15	$0.310	0.000000	0.000000	0.000046	0.000024	$2.00	$0.06
2077	$10.57	$0.294	0.000000	0.000000	0.000046	0.000024	$1.83	$0.05
2078	$10.01	$0.279	0.000000	0.000000	0.000046	0.000024	$1.68	$0.05
2079	$9.49	$0.264	0.000000	0.000000	0.000046	0.000024	$1.54	$0.04
2080	$8.99	$0.250	0.000000	0.000000	0.000046	0.000024	$1.41	$0.04
2081	$8.52	$0.237	0.000000	0.000000	0.000046	0.000024	$1.30	$0.04
2082	$8.07	$0.225	0.000000	0.000000	0.000046	0.000024	$1.19	$0.03
2083	$7.65	$0.213	0.000000	0.000000	0.000046	0.000024	$1.09	$0.03
2084	$7.24	$0.202	0.000000	0.000000	0.000046	0.000024	$1.00	$0.03
2085	$6.86	$0.191	0.000000	0.000000	0.000046	0.000024	$0.92	$0.03
2086	$6.50	$0.181	0.000000	0.000000	0.000046	0.000024	$0.84	$0.02
2087	$6.16	$0.172	0.000000	0.000000	0.000046	0.000024	$0.77	$0.02
2088	$5.84	$0.163	0.000000	0.000000	0.000046	0.000024	$0.71	$0.02
2089	$5.53	$0.154	0.000000	0.000000	0.000046	0.000024	$0.65	$0.02
2090	$5.24	$0.146	0.000000	0.000000	0.000046	0.000024	$0.60	$0.02
2091	$4.97	$0.138	0.000000	0.000000	0.000046	0.000024	$0.55	$0.02
2092	$4.71	$0.131	0.000000	0.000000	0.000046	0.000024	$0.50	$0.01

Information Source: Values updated to 2022 dollars. Values from 2022 to 2050 taken from Table 5 of the Commission's January 3, 2018 Order in Docket No. E-999/CI-14-643

Environmental Cost Values for CO2

Year	2022 Dollars per net short ton ($/Ton)	DISCOUNTED per metric ton ($/ton)
2022	$55.58	$57.41
2023	$56.71	$56.71
2024	$57.84	$55.99
2025	$58.97	$55.26
2026	$60.10	$54.52
2027	$61.24	$53.78
2028	$62.37	$53.03
2029	$63.50	$52.26
2030	$64.63	$51.49
2031	$65.76	$50.72
2032	$66.89	$49.95
2033	$68.02	$49.17
2034	$69.15	$48.39
2035	$70.28	$47.61
2036	$71.41	$46.83
2037	$72.54	$46.05
2038	$73.67	$45.28
2039	$74.81	$44.51
2040	$75.94	$43.74
2041	$77.07	$42.97
2042	$78.20	$42.21
2043	$79.33	$41.45
2044	$80.46	$40.70
2045	$81.59	$39.95
2046	$82.72	$39.21
2047	$83.85	$38.48
2048	$84.98	$37.75
2049	$86.11	$37.03
2050	$87.24	$36.32
2051	$90.58	$36.50
2052	$94.04	$36.69
2053	$97.63	$36.87
2054	$101.36	$37.06
2055	$105.23	$37.25
2056	$109.25	$37.44
2057	$113.42	$37.62
2058	$117.76	$37.81
2059	$122.25	$38.00
2060	$126.92	$38.20
2061	$131.77	$38.39
2062	$136.81	$38.58
2063	$142.03	$38.78
2064	$147.46	$38.97
2065	$153.09	$39.17
2066	$158.94	$39.37
2067	$165.01	$39.57
2068	$171.31	$39.77
2069	$177.86	$39.97
2070	$184.65	$40.17
2071	$191.71	$40.37
2072	$199.03	$40.57
2073	$206.63	$40.78
2074	$214.52	$40.99
2075	$222.72	$41.19
2076	$231.23	$41.40
2077	$240.06	$41.61
2078	$249.23	$41.82
2079	$258.75	$42.03
2080	$268.64	$42.24
2081	$278.90	$42.46
2082	$289.55	$42.67
2083	$300.61	$42.88
2084	$312.10	$43.10
2085	$324.02	$43.32
2086	$336.39	$43.54
2087	$349.25	$43.76
2088	$362.59	$43.98
2089	$376.44	$44.20
2090	$390.82	$44.42
2091	$405.75	$44.65
2092	$421.25	$44.87
2093	$437.34	$45.10

Base Set Up

Year	Unit	Discounted Unit Residential Rate	Discounted Unit C&I Rate
2023	1	1.00	1.00
2024	1	0.97	0.94
2025	1	0.94	0.88
2026	1	0.91	0.83
2027	1	0.88	0.78
2028	1	0.85	0.73
2029	1	0.82	0.69
2030	1	0.80	0.65
2031	1	0.77	0.61
2032	1	0.75	0.57
2033	1	0.72	0.54
2034	1	0.70	0.50
2035	1	0.68	0.47
2036	1	0.66	0.44
2037	1	0.63	0.42
2038	1	0.61	0.39
2039	1	0.59	0.37
2040	1	0.58	0.35
2041	1	0.56	0.32
2042	1	0.54	0.30
2043	1	0.52	0.29
2044	1	0.51	0.27
2045	1	0.49	0.25
2046	1	0.47	0.24
2047	1	0.46	0.22
2048	1	0.44	0.21
2049	1	0.43	0.20
2050	1	0.42	0.18
2051	1	0.40	0.17
2052	1	0.39	0.16
2053	1	0.38	0.15
2054	1	0.37	0.14
2055	1	0.35	0.14
2056	1	0.34	0.13
2057	1	0.33	0.12
2058	1	0.32	0.11
2059	1	0.31	0.11
2060	1	0.30	0.10
2061	1	0.29	0.09
2062	1	0.28	0.09
2063	1	0.27	0.08
2064	1	0.26	0.08
2065	1	0.26	0.07
2066	1	0.25	0.07
2067	1	0.24	0.06
2068	1	0.23	0.06
2069	1	0.22	0.06
2070	1	0.22	0.05
2071	1	0.21	0.05
2072	1	0.20	0.05
2073	1	0.20	0.04
2074	1	0.19	0.04
2075	1	0.18	0.04
2076	1	0.18	0.04
2077	1	0.17	0.03
2078	1	0.17	0.03
2079	1	0.16	0.03
2080	1	0.16	0.03
2081	1	0.15	0.03
2082	1	0.15	0.03
2083	1	0.14	0.02
2084	1	0.14	0.02
2085	1	0.13	0.02
2086	1	0.13	0.02
2087	1	0.13	0.02
2088	1	0.12	0.02
2089	1	0.12	0.02
2090	1	0.11	0.02
2091	1	0.11	0.01
2092	1	0.11	0.01

2027					2028						
Cum PV Xcel wind 50/50	Cum PV NREL	Cum PV NREL wind 50/50	Cum PV Demand cost per Dth-yr	Cum PV Gas per Dth	Measure Life	Cum PV Xcel	Cum PV Xcel wind 50/50	Cum PV NREL	Cum PV NREL wind 50/50	Cum PV Demand cost per Dth-yr	Cum PV Gas per Dth
Metric Tons CO2e/kWh	Metric Tons CO2e/kWh	Metric Tons CO2e/kWh	$/Dth-yr	$/Dth		ric Tons CO2e	Metric Tons CO2e/kWh	Metric Tons CO2e/kWh	Metric Tons CO2e/kWh	$/Dth-yr	$/Dth
0.000197	0.000249	0.000125	$137.58	$3.83	1	0.000197	0.000197	0.000249	0.000125	$126.19	$3.51
0.000395	0.000497	0.000250	$263.77	$7.34	2	0.000395	0.000395	0.000497	0.000250	$241.94	$6.73
0.000592	0.000746	0.000376	$379.52	$10.56	3	0.000504	0.000504	0.000519	0.000262	$348.11	$9.69
0.000702	0.000768	0.000387	$485.69	$13.52	4	0.000614	0.000614	0.000540	0.000274	$445.49	$12.40
0.000811	0.000789	0.000399	$583.07	$16.23	5	0.000723	0.000723	0.000562	0.000285	$534.82	$14.89
0.000920	0.000811	0.000411	$672.39	$18.72	6	0.000832	0.000832	0.000583	0.000297	$616.75	$17.17
0.001030	0.000832	0.000422	$754.32	$21.00	7	0.000942	0.000942	0.000605	0.000309	$691.90	$19.26
0.001139	0.000854	0.000434	$829.48	$23.09	8	0.001051	0.001051	0.000620	0.000317	$760.83	$21.18
0.001248	0.000869	0.000442	$898.41	$25.01	9	0.001160	0.001160	0.000635	0.000326	$824.06	$22.94
0.001358	0.000884	0.000451	$961.64	$26.77	10	0.001269	0.001269	0.000651	0.000335	$882.05	$24.55
0.001467	0.000899	0.000460	$1,019.63	$28.38	11	0.001379	0.001379	0.000666	0.000343	$935.25	$26.03
0.001576	0.000915	0.000468	$1,072.83	$29.86	12	0.001488	0.001488	0.000681	0.000352	$984.04	$27.39
0.001685	0.000930	0.000477	$1,121.62	$31.22	13	0.001551	0.001551	0.000685	0.000355	$1,028.80	$28.64
0.001749	0.000934	0.000480	$1,166.38	$32.47	14	0.001615	0.001615	0.000689	0.000358	$1,069.85	$29.78
0.001812	0.000938	0.000483	$1,207.43	$33.61	15	0.001679	0.001679	0.000693	0.000361	$1,107.50	$30.83
0.001876	0.000942	0.000486	$1,245.08	$34.66	16	0.001742	0.001742	0.000698	0.000364	$1,142.04	$31.79
0.001940	0.000946	0.000489	$1,279.62	$35.62	17	0.001806	0.001806	0.000702	0.000367	$1,173.72	$32.67
0.002003	0.000950	0.000492	$1,311.30	$36.50	18	0.001848	0.001848	0.000728	0.000381	$1,202.78	$33.48
0.002045	0.000977	0.000506	$1,340.36	$37.31	19	0.001890	0.001890	0.000755	0.000395	$1,229.43	$34.22
0.002087	0.001003	0.000521	$1,367.01	$38.05	20	0.001932	0.001932	0.000781	0.000410	$1,253.88	$34.90
0.002129	0.001030	0.000535	$1,391.46	$38.73	21	0.001974	0.001974	0.000808	0.000424	$1,276.31	$35.53
0.002172	0.001056	0.000549	$1,413.88	$39.36	22	0.002016	0.002016	0.000834	0.000438	$1,296.87	$36.10
0.002214	0.001083	0.000563	$1,434.45	$39.93	23	0.002016	0.002016	0.000881	0.000462	$1,315.74	$36.62
0.002214	0.001129	0.000587	$1,453.32	$40.45	24	0.002016	0.002016	0.000927	0.000486	$1,333.05	$37.11
0.002214	0.001176	0.000612	$1,470.62	$40.93	25	0.002016	0.002016	0.000973	0.000510	$1,348.92	$37.55
0.002214	0.001222	0.000636	$1,486.50	$41.38	26	0.002016	0.002016	0.001019	0.000535	$1,363.48	$37.95
0.002214	0.001268	0.000660	$1,501.06	$41.78	27	0.002016	0.002016	0.001066	0.000559	$1,376.83	$38.32
0.002214	0.001314	0.000684	$1,514.41	$42.15	28	0.002016	0.002016	0.001112	0.000583	$1,389.08	$38.67
0.002214	0.001361	0.000708	$1,526.66	$42.49	29	0.002016	0.002016	0.001158	0.000607	$1,400.32	$38.98
0.002214	0.001407	0.000732	$1,537.89	$42.81	30	0.002016	0.002016	0.001205	0.000631	$1,410.62	$39.26
0.002214	0.001453	0.000756	$1,548.20	$43.09	31	0.002016	0.002016	0.001251	0.000655	$1,420.08	$39.53
0.002214	0.001500	0.000780	$1,557.65	$43.36	32	0.002016	0.002016	0.001297	0.000679	$1,428.75	$39.77
0.002214	0.001546	0.000804	$1,566.32	$43.60	33	0.002016	0.002016	0.001344	0.000703	$1,436.70	$39.99
0.002214	0.001592	0.000829	$1,574.28	$43.82	34	0.002016	0.002016	0.001390	0.000727	$1,444.00	$40.19
0.002214	0.001639	0.000853	$1,581.57	$44.02	35	0.002016	0.002016	0.001436	0.000752	$1,450.69	$40.38
0.002214	0.001685	0.000877	$1,588.26	$44.21	36	0.002016	0.002016	0.001482	0.000776	$1,456.82	$40.55
0.002214	0.001731	0.000901	$1,594.40	$44.38	37	0.002016	0.002016	0.001529	0.000800	$1,462.45	$40.71
0.002214	0.001777	0.000925	$1,600.03	$44.54	38	0.002016	0.002016	0.001575	0.000824	$1,467.62	$40.85
0.002214	0.001824	0.000949	$1,605.19	$44.68	39	0.002016	0.002016	0.001621	0.000848	$1,472.35	$40.98
0.002214	0.001870	0.000973	$1,609.93	$44.81	40	0.002016	0.002016	0.001668	0.000872	$1,476.70	$41.10
0.002214	0.001916	0.000997	$1,614.27	$44.93	41	0.002016	0.002016	0.001714	0.000896	$1,480.68	$41.21
0.002214	0.001963	0.001021	$1,618.26	$45.04	42	0.002016	0.002016	0.001760	0.000920	$1,484.34	$41.32
0.002214	0.002009	0.001046	$1,621.91	$45.15	43	0.002016	0.002016	0.001807	0.000944	$1,487.69	$41.41
0.002214	0.002055	0.001070	$1,625.27	$45.24	44	0.002016	0.002016	0.001853	0.000969	$1,490.77	$41.50
0.002214	0.002102	0.001094	$1,628.34	$45.32	45	0.002016	0.002016	0.001899	0.000993	$1,493.59	$41.57
0.002214	0.002148	0.001118	$1,631.16	$45.40	46	0.002016	0.002016	0.001945	0.001017	$1,496.17	$41.65
0.002214	0.002194	0.001142	$1,633.75	$45.48	47	0.002016	0.002016	0.001992	0.001041	$1,498.55	$41.71
0.002214	0.002241	0.001166	$1,636.12	$45.54	48	0.002016	0.002016	0.002038	0.001065	$1,500.72	$41.77
0.002214	0.002287	0.001190	$1,638.30	$45.60	49	0.002016	0.002016	0.002084	0.001089	$1,502.72	$41.83
0.002214	0.002333	0.001214	$1,640.30	$45.66	50	0.002016	0.002016	0.002131	0.001113	$1,504.55	$41.88
0.002214	0.002379	0.001238	$1,642.13	$45.71	51	0.002016	0.002016	0.002177	0.001137	$1,506.23	$41.93
0.002214	0.002426	0.001262	$1,643.81	$45.76	52	0.002016	0.002016	0.002223	0.001161	$1,507.77	$41.97
0.002214	0.002472	0.001287	$1,645.35	$45.80	53	0.002016	0.002016	0.002270	0.001186	$1,509.19	$42.01
0.002214	0.002518	0.001311	$1,646.76	$45.84	54	0.002016	0.002016	0.002316	0.001210	$1,510.48	$42.04
0.002214	0.002565	0.001335	$1,648.06	$45.87	55	0.002016	0.002016	0.002362	0.001234	$1,511.67	$42.08
0.002214	0.002611	0.001359	$1,649.25	$45.91	56	0.002016	0.002016	0.002408	0.001258	$1,512.76	$42.11
0.002214	0.002657	0.001383	$1,650.34	$45.94	57	0.002016	0.002016	0.002455	0.001282	$1,513.76	$42.14
0.002214	0.002704	0.001407	$1,651.34	$45.96	58	0.002016	0.002016	0.002501	0.001306	$1,514.68	$42.16
0.002214	0.002750	0.001431	$1,652.26	$45.99	59	0.002016	0.002016	0.002547	0.001330	$1,515.52	$42.18
0.002214	0.002796	0.001455	$1,653.10	$46.01	60	0.002016	0.002016	0.002594	0.001354	$1,516.29	$42.21
0.002214	0.002842	0.001479	$1,653.87	$46.04	61	0.002016	0.002016	0.002640	0.001378	$1,517.00	$42.23
0.002214	0.002889	0.001504	$1,654.58	$46.06	62	0.002016	0.002016	0.002686	0.001403	$1,517.65	$42.24
0.002214	0.002935	0.001528	$1,655.23	$46.07	63	0.002016	0.002016	0.002733	0.001427	$1,518.25	$42.26
0.002214	0.002981	0.001552	$1,655.82	$46.09	64	0.002016	0.002016	0.002779	0.001451	$1,518.79	$42.28
0.002214	0.003028	0.001576	$1,656.37	$46.10	65	0.002016	0.002016	0.002825	0.001475	$1,519.29	$42.29

	GHG Benefit ($/kWh) NREL Wind 50/50					
2022	2023	2024	2025	2026	2027	2028
$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01
$0.03	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01
$0.03	$0.02	$0.02	$0.02	$0.02	$0.02	$0.01
$0.03	$0.03	$0.03	$0.03	$0.03	$0.02	$0.01
$0.03	$0.03	$0.03	$0.03	$0.03	$0.02	$0.01
$0.03	$0.04	$0.04	$0.03	$0.03	$0.02	$0.02
$0.03	$0.05	$0.04	$0.03	$0.03	$0.02	$0.02
$0.03	$0.05	$0.04	$0.03	$0.03	$0.02	$0.02
$0.03	$0.05	$0.04	$0.04	$0.03	$0.02	$0.02
$0.03	$0.05	$0.04	$0.04	$0.03	$0.02	$0.02
$0.03	$0.05	$0.04	$0.04	$0.03	$0.02	$0.02
$0.03	$0.05	$0.04	$0.04	$0.03	$0.02	$0.02
$0.03	$0.05	$0.04	$0.04	$0.03	$0.02	$0.02
$0.03	$0.05	$0.04	$0.04	$0.03	$0.02	$0.02
$0.04	$0.05	$0.04	$0.04	$0.03	$0.02	$0.02
$0.04	$0.05	$0.04	$0.04	$0.03	$0.02	$0.02
$0.04	$0.05	$0.05	$0.04	$0.03	$0.02	$0.02
$0.04	$0.05	$0.05	$0.04	$0.03	$0.03	$0.02
$0.04	$0.05	$0.05	$0.04	$0.03	$0.03	$0.02
$0.04	$0.05	$0.05	$0.04	$0.03	$0.03	$0.02
$0.04	$0.05	$0.05	$0.04	$0.03	$0.03	$0.02
$0.04	$0.05	$0.05	$0.04	$0.03	$0.03	$0.02
$0.04	$0.05	$0.05	$0.04	$0.03	$0.03	$0.02
$0.04	$0.05	$0.05	$0.04	$0.03	$0.03	$0.02
$0.05	$0.05	$0.05	$0.04	$0.04	$0.03	$0.02
$0.05	$0.05	$0.05	$0.04	$0.04	$0.03	$0.02
$0.05	$0.06	$0.05	$0.04	$0.04	$0.03	$0.03
$0.05	$0.06	$0.05	$0.04	$0.04	$0.03	$0.03
$0.05	$0.06	$0.05	$0.04	$0.04	$0.03	$0.03
$0.05	$0.06	$0.05	$0.05	$0.04	$0.03	$0.03
$0.06	$0.06	$0.05	$0.05	$0.04	$0.03	$0.03
$0.06	$0.06	$0.05	$0.05	$0.04	$0.04	$0.03
$0.06	$0.06	$0.05	$0.05	$0.04	$0.04	$0.03
$0.06	$0.06	$0.06	$0.05	$0.04	$0.04	$0.03
$0.06	$0.06	$0.06	$0.05	$0.04	$0.04	$0.03
$0.06	$0.06	$0.06	$0.05	$0.05	$0.04	$0.03
$0.07	$0.06	$0.06	$0.05	$0.05	$0.04	$0.03
$0.07	$0.07	$0.06	$0.05	$0.05	$0.04	$0.04
$0.07	$0.07	$0.06	$0.05	$0.05	$0.04	$0.04
$0.07	$0.07	$0.06	$0.05	$0.05	$0.04	$0.04
$0.07	$0.07	$0.06	$0.06	$0.05	$0.04	$0.04
$0.08	$0.07	$0.06	$0.06	$0.05	$0.05	$0.04
$0.08	$0.07	$0.06	$0.06	$0.05	$0.05	$0.04
$0.08	$0.07	$0.06	$0.06	$0.05	$0.05	$0.04
$0.08	$0.07	$0.07	$0.06	$0.05	$0.05	$0.04
$0.08	$0.07	$0.07	$0.06	$0.05	$0.05	$0.04
$0.09	$0.07	$0.07	$0.06	$0.06	$0.05	$0.04
$0.09	$0.07	$0.07	$0.06	$0.06	$0.05	$0.05
$0.09	$0.08	$0.07	$0.06	$0.06	$0.05	$0.05
$0.09	$0.08	$0.07	$0.06	$0.06	$0.05	$0.05
$0.09	$0.08	$0.07	$0.07	$0.06	$0.05	$0.05
$0.09	$0.08	$0.07	$0.07	$0.06	$0.06	$0.05
$0.10	$0.08	$0.07	$0.07	$0.06	$0.06	$0.05
$0.10	$0.08	$0.07	$0.07	$0.06	$0.06	$0.05
$0.10	$0.08	$0.08	$0.07	$0.06	$0.06	$0.05
$0.10	$0.08	$0.08	$0.07	$0.06	$0.06	$0.05
$0.10	$0.08	$0.08	$0.07	$0.07	$0.06	$0.05
$0.11	$0.08	$0.08	$0.07	$0.07	$0.06	$0.06
$0.11	$0.09	$0.08	$0.07	$0.07	$0.06	$0.06
$0.11	$0.09	$0.08	$0.07	$0.07	$0.06	$0.06
$0.11	$0.09	$0.08	$0.08	$0.07	$0.06	$0.06
$0.12	$0.09	$0.08	$0.08	$0.07	$0.07	$0.06
$0.12	$0.09	$0.08	$0.08	$0.07	$0.07	$0.06
$0.12	$0.09	$0.09	$0.08	$0.07	$0.07	$0.06
$0.12	$0.09	$0.09	$0.08	$0.07	$0.07	$0.06

Retail Rates

Gas Annual Escalation Rate	-5.250%
Non-Gas Fuel Annual Escalation Rate	1.93%

Retail Rates Forecast

Year	Electricty Retail Rate($/kWh)			Peak Demand Cost ($/Dth-yr)	Gas Retail Rate ($/Dth)		
	Residential	C&I & Res	C&I		Residential	C&I & Res	C&I
2023	$ 0.135000	$ 0.110800	$ 0.097843	$194.36	$6.54	$5.49	$4.73
2024	$ 0.137611	$ 0.112943	$ 0.099735	$184.16	$6.20	$5.20	$4.48
2025	$ 0.140272	$ 0.115127	$ 0.101664	$174.49	$5.87	$4.93	$4.25
2026	$ 0.142985	$ 0.117354	$ 0.103630	$165.33	$5.56	$4.67	$4.02
2027	$ 0.145751	$ 0.119624	$ 0.105635	$156.65	$5.27	$4.42	$3.81
2028	$ 0.148570	$ 0.121937	$ 0.107678	$148.42	$4.99	$4.19	$3.61
2029	$ 0.151443	$ 0.124296	$ 0.109760	$140.63	$4.73	$3.97	$3.42
2030	$ 0.154372	$ 0.126700	$ 0.111883	$133.25	$4.48	$3.76	$3.24
2031	$ 0.157358	$ 0.129150	$ 0.114047	$126.25	$4.25	$3.57	$3.07
2032	$ 0.160401	$ 0.131648	$ 0.116253	$119.63	$4.03	$3.38	$2.91
2033	$ 0.163504	$ 0.134194	$ 0.118501	$113.35	$3.81	$3.20	$2.76
2034	$ 0.166666	$ 0.136790	$ 0.120793	$107.39	$3.61	$3.03	$2.61
2035	$ 0.169889	$ 0.139435	$ 0.123129	$101.76	$3.42	$2.87	$2.48
2036	$ 0.173175	$ 0.142132	$ 0.125511	$96.41	$3.24	$2.72	$2.35
2037	$ 0.176525	$ 0.144881	$ 0.127938	$91.35	$3.07	$2.58	$2.22
2038	$ 0.179939	$ 0.147683	$ 0.130413	$86.56	$2.91	$2.44	$2.11
2039	$ 0.183419	$ 0.150539	$ 0.132935	$82.01	$2.76	$2.32	$2.00
2040	$ 0.186966	$ 0.153451	$ 0.135506	$77.71	$2.61	$2.19	$1.89
2041	$ 0.190582	$ 0.156419	$ 0.138127	$73.63	$2.48	$2.08	$1.79
2042	$ 0.194268	$ 0.159444	$ 0.140798	$69.76	$2.35	$1.97	$1.70
2043	$ 0.198026	$ 0.162528	$ 0.143521	$66.10	$2.22	$1.87	$1.61
2044	$ 0.201856	$ 0.165671	$ 0.146297	$62.63	$2.11	$1.77	$1.52
2045	$ 0.205760	$ 0.168875	$ 0.149127	$59.34	$2.00	$1.68	$1.44
2046	$ 0.209739	$ 0.172141	$ 0.152011	$56.23	$1.89	$1.59	$1.37
2047	$ 0.213796	$ 0.175471	$ 0.154951	$53.27	$1.79	$1.50	$1.30
2048	$ 0.217931	$ 0.178864	$ 0.157948	$50.48	$1.70	$1.43	$1.23
2049	$ 0.222145	$ 0.182324	$ 0.161003	$47.83	$1.61	$1.35	$1.16
2050	$ 0.226442	$ 0.185850	$ 0.164117	$45.32	$1.52	$1.28	$1.10
2051	$ 0.230821	$ 0.189445	$ 0.167291	$42.94	$1.44	$1.21	$1.04
2052	$ 0.235286	$ 0.193109	$ 0.170526	$40.68	$1.37	$1.15	$0.99
2053	$ 0.239836	$ 0.196843	$ 0.173824	$38.55	$1.30	$1.09	$0.94
2054	$ 0.244475	$ 0.200651	$ 0.177186	$36.52	$1.23	$1.03	$0.89
2055	$ 0.249203	$ 0.204531	$ 0.180613	$34.61	$1.16	$0.98	$0.84
2056	$ 0.254023	$ 0.208487	$ 0.184106	$32.79	$1.10	$0.93	$0.80
2057	$ 0.258936	$ 0.212519	$ 0.187667	$31.07	$1.05	$0.88	$0.76
2058	$ 0.263944	$ 0.216630	$ 0.191297	$29.44	$0.99	$0.83	$0.72
2059	$ 0.269049	$ 0.220819	$ 0.194996	$27.89	$0.94	$0.79	$0.68
2060	$ 0.274253	$ 0.225090	$ 0.198768	$26.43	$0.89	$0.75	$0.64
2061	$ 0.279557	$ 0.229444	$ 0.202612	$25.04	$0.84	$0.71	$0.61
2062	$ 0.284964	$ 0.233881	$ 0.206531	$23.73	$0.80	$0.67	$0.58
2063	$ 0.290475	$ 0.238405	$ 0.210525	$22.48	$0.76	$0.63	$0.55
2064	$ 0.296093	$ 0.243016	$ 0.214597	$21.30	$0.72	$0.60	$0.52
2065	$ 0.301820	$ 0.247716	$ 0.218747	$20.18	$0.68	$0.57	$0.49
2066	$ 0.307657	$ 0.252507	$ 0.222978	$19.12	$0.64	$0.54	$0.47
2067	$ 0.313607	$ 0.257390	$ 0.227291	$18.12	$0.61	$0.51	$0.44
2068	$ 0.319673	$ 0.262368	$ 0.231687	$17.17	$0.58	$0.48	$0.42
2069	$ 0.325855	$ 0.267443	$ 0.236168	$16.27	$0.55	$0.46	$0.40
2070	$ 0.332158	$ 0.272615	$ 0.240735	$15.41	$0.52	$0.44	$0.38
2071	$ 0.338582	$ 0.277888	$ 0.245391	$14.60	$0.49	$0.41	$0.36
2072	$ 0.345130	$ 0.283262	$ 0.250137	$13.84	$0.47	$0.39	$0.34
2073	$ 0.351805	$ 0.288741	$ 0.254975	$13.11	$0.44	$0.37	$0.32
2074	$ 0.358610	$ 0.294325	$ 0.259907	$12.42	$0.42	$0.35	$0.30
2075	$ 0.365545	$ 0.300018	$ 0.264933	$11.77	$0.40	$0.33	$0.29
2076	$ 0.372615	$ 0.305820	$ 0.270057	$11.15	$0.38	$0.31	$0.27
2077	$ 0.379822	$ 0.311735	$ 0.275280	$10.57	$0.36	$0.30	$0.26
2078	$ 0.387168	$ 0.317764	$ 0.280605	$10.01	$0.34	$0.28	$0.24
2079	$ 0.394656	$ 0.323910	$ 0.286032	$9.49	$0.32	$0.27	$0.23
2080	$ 0.402289	$ 0.330175	$ 0.291564	$8.99	$0.30	$0.25	$0.22
2081	$ 0.410069	$ 0.336561	$ 0.297203	$8.52	$0.29	$0.24	$0.21
2082	$ 0.418001	$ 0.343070	$ 0.302951	$8.07	$0.27	$0.23	$0.20
2083	$ 0.426085	$ 0.349705	$ 0.308810	$7.65	$0.26	$0.22	$0.19
2084	$ 0.434326	$ 0.356469	$ 0.314783	$7.24	$0.24	$0.20	$0.18
2085	$ 0.442726	$ 0.363363	$ 0.320871	$6.86	$0.23	$0.19	$0.17
2086	$ 0.451289	$ 0.370391	$ 0.327077	$6.50	$0.22	$0.18	$0.16
2087	$ 0.460017	$ 0.377555	$ 0.333403	$6.16	$0.21	$0.17	$0.15
2088	$ 0.468914	$ 0.384857	$ 0.339851	$5.84	$0.20	$0.16	$0.14
2089	$ 0.477983	$ 0.392300	$ 0.346424	$5.53	$0.19	$0.16	$0.13
2090	$ 0.487228	$ 0.399887	$ 0.353124	$5.24	$0.18	$0.15	$0.13
2091	$ 0.496651	$ 0.407622	$ 0.359954	$4.97	$0.17	$0.14	$0.12
2092	$ 0.506256	$ 0.415505	$ 0.366915	$4.71	$0.16	$0.13	$0.11

Tables for calculating Disounted Retail Rates

Measure Life	2023 Electricty Retail Rate($/kWh) Residential	2023 C&I & Res	2023 C&I	2023 Peak Demand Cost ($/Dth-yr)	2023 Gas Retail Rate ($/Dth) Residential	2023 C&I & Res	2023 C&I	2024 Electricty Retail Rate($/kWh) Residential	2024 C&I & Res	2024 C&I	2024 Peak Demand Cost ($/Dth-yr)	2024 Gas Retail Rate ($/Dth) Residential	2024 C&I & Res	2024 C&I
1	$0.14	$0.11	$0.10	$194.36	$6.54	$5.49	$4.73	$0.14	$0.11	$0.10	$184.16	$6.20	$5.20	$4.48
2	$0.27	$0.22	$0.19	$372.64	$12.54	$10.53	$9.07	$0.27	$0.22	$0.20	$353.07	$11.88	$9.97	$8.59
3	$0.40	$0.33	$0.29	$536.16	$18.04	$15.14	######	$0.41	$0.33	$0.30	$508.01	$17.09	$14.35	$12.36
4	$0.53	$0.43	$0.38	$686.15	$23.09	$19.38	######	$0.54	$0.44	$0.39	$650.12	$21.88	$18.36	$15.82
5	$0.66	$0.54	$0.48	$823.72	$27.72	$23.27	######	$0.67	$0.55	$0.49	$780.48	$26.26	$22.05	$18.99
6	$0.78	$0.64	$0.57	$949.91	$31.96	$26.83	######	$0.80	$0.66	$0.58	$900.05	$30.29	$25.42	$21.90
7	$0.91	$0.75	$0.66	$1,065.66	$35.86	$30.10	######	$0.93	$0.76	$0.67	$1,009.72	$33.98	$28.52	$24.57
8	$1.03	$0.85	$0.75	$1,171.83	$39.43	$33.10	######	$1.05	$0.86	$0.76	$1,110.31	$37.36	$31.36	$27.02
9	$1.15	$0.95	$0.84	$1,269.22	$42.71	$35.85	######	$1.18	$0.96	$0.85	$1,202.58	$40.47	$33.97	$29.27
10	$1.27	$1.04	$0.92	$1,358.54	$45.71	$38.37	######	$1.30	$1.06	$0.94	$1,287.22	$43.31	$36.36	$31.33
11	$1.39	$1.14	$1.01	$1,440.47	$48.47	$40.69	######	$1.42	$1.16	$1.03	$1,364.85	$45.93	$38.55	$33.22
12	$1.51	$1.24	$1.09	$1,515.62	$51.00	$42.81	######	$1.54	$1.26	$1.11	$1,436.05	$48.32	$40.56	$34.95
13	$1.62	$1.33	$1.18	$1,584.56	$53.32	$44.76	######	$1.65	$1.36	$1.20	$1,501.37	$50.52	$42.41	$36.54
14	$1.74	$1.42	$1.26	$1,647.78	$55.45	$46.54	######	$1.77	$1.45	$1.28	$1,561.28	$52.54	$44.10	$38.00
15	$1.85	$1.52	$1.34	$1,705.78	$57.40	$48.18	######	$1.88	$1.55	$1.37	$1,616.23	$54.38	$45.65	$39.33
16	$1.96	$1.61	$1.42	$1,758.97	$59.19	$49.68	######	$2.00	$1.64	$1.45	$1,666.63	$56.08	$47.08	$40.56
17	$2.07	$1.70	$1.50	$1,807.77	$60.83	$51.06	######	$2.11	$1.73	$1.53	$1,712.86	$57.64	$48.38	$41.68
18	$2.18	$1.79	$1.58	$1,852.52	$62.34	$52.33	######	$2.22	$1.82	$1.61	$1,755.27	$59.06	$49.58	$42.72
19	$2.28	$1.87	$1.65	$1,893.57	$63.72	$53.49	######	$2.33	$1.91	$1.69	$1,794.16	$60.37	$50.68	$43.66
20	$2.39	$1.96	$1.73	$1,931.23	$64.98	$54.55	######	$2.43	$2.00	$1.76	$1,829.84	$61.57	$51.69	$44.53
21	$2.49	$2.04	$1.80	$1,965.77	$66.15	$55.53	######	$2.54	$2.08	$1.84	$1,862.56	$62.67	$52.61	$45.33
22	$2.59	$2.13	$1.88	$1,997.45	$67.21	$56.42	######	$2.64	$2.17	$1.92	$1,892.58	$63.68	$53.46	$46.06
23	$2.69	$2.21	$1.95	$2,026.50	$68.19	$57.24	######	$2.74	$2.25	$1.99	$1,920.11	$64.61	$54.24	$46.73
24–65	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

(2025–2028 blocks of this table: [illegible])

Retail Rates Forecast - Duplicate of Above Table

Year	Electricty Retail Rate($/kWh)			Peak Demand Cost ($/Dth-yr)	Gas Retail Rate ($/Dth)		
	Residential	C&I & Res	C&I		Residential	C&I & Res	C&I
2023	$ 0.135000	$ 0.110800	$ 0.097843	$194.36	$6.54	$5.49	$4.73
2024	$ 0.137611	$ 0.112943	$ 0.099735	$184.16	$6.20	$5.20	$4.48
2025	$ 0.140272	$ 0.115127	$ 0.101664	$174.49	$5.87	$4.93	$4.25
2026	$ 0.142985	$ 0.117354	$ 0.103630	$165.33	$5.56	$4.67	$4.02
2027	$ 0.145751	$ 0.119624	$ 0.105635	$156.65	$5.27	$4.42	$3.81
2028	$ 0.148570	$ 0.121937	$ 0.107678	$148.42	$4.99	$4.19	$3.61
2029	$ 0.151443	$ 0.124296	$ 0.109760	$140.63	$4.73	$3.97	$3.42
2030	$ 0.154372	$ 0.126700	$ 0.111883	$133.25	$4.48	$3.76	$3.24
2031	$ 0.157358	$ 0.129150	$ 0.114047	$126.25	$4.25	$3.57	$3.07
2032	$ 0.160401	$ 0.131648	$ 0.116253	$119.63	$4.03	$3.38	$2.91
2033	$ 0.163504	$ 0.134194	$ 0.118501	$113.35	$3.81	$3.20	$2.76
2034	$ 0.166666	$ 0.136790	$ 0.120793	$107.39	$3.61	$3.03	$2.61
2035	$ 0.169889	$ 0.139435	$ 0.123129	$101.76	$3.42	$2.87	$2.48
2036	$ 0.173175	$ 0.142132	$ 0.125511	$96.41	$3.24	$2.72	$2.35
2037	$ 0.176525	$ 0.144881	$ 0.127938	$91.35	$3.07	$2.58	$2.22
2038	$ 0.179939	$ 0.147683	$ 0.130413	$86.56	$2.91	$2.44	$2.11
2039	$ 0.183419	$ 0.150539	$ 0.132935	$82.01	$2.76	$2.32	$2.00
2040	$ 0.186966	$ 0.153451	$ 0.135506	$77.71	$2.61	$2.19	$1.89
2041	$ 0.190582	$ 0.156419	$ 0.138127	$73.63	$2.48	$2.08	$1.79
2042	$ 0.194268	$ 0.159444	$ 0.140798	$69.76	$2.35	$1.97	$1.70
2043	$ 0.198026	$ 0.162528	$ 0.143521	$66.10	$2.22	$1.87	$1.61
2044	$ 0.201856	$ 0.165671	$ 0.146297	$62.63	$2.11	$1.77	$1.52
2045	$ 0.205760	$ 0.168875	$ 0.149127	$59.34	$2.00	$1.68	$1.44
2046	$ 0.209739	$ 0.172141	$ 0.152011	$56.23	$1.89	$1.59	$1.37
2047	$ 0.213796	$ 0.175471	$ 0.154951	$53.27	$1.79	$1.50	$1.30
2048	$ 0.217931	$ 0.178864	$ 0.157948	$50.48	$1.70	$1.43	$1.23
2049	$ 0.222145	$ 0.182324	$ 0.161003	$47.83	$1.61	$1.35	$1.16
2050	$ 0.226442	$ 0.185850	$ 0.164117	$45.32	$1.52	$1.28	$1.10
2051	$ 0.230821	$ 0.189445	$ 0.167291	$42.94	$1.44	$1.21	$1.04
2052	$ 0.235286	$ 0.193109	$ 0.170526	$40.68	$1.37	$1.15	$0.99
2053	$ 0.239836	$ 0.196843	$ 0.173824	$38.55	$1.30	$1.09	$0.94
2054	$ 0.244475	$ 0.200651	$ 0.177186	$36.52	$1.23	$1.03	$0.89
2055	$ 0.249203	$ 0.204531	$ 0.180613	$34.61	$1.16	$0.98	$0.84
2056	$ 0.254023	$ 0.208487	$ 0.184106	$32.79	$1.10	$0.93	$0.80
2057	$ 0.258936	$ 0.212519	$ 0.187667	$31.07	$1.05	$0.88	$0.76
2058	$ 0.263944	$ 0.216630	$ 0.191297	$29.44	$0.99	$0.83	$0.72
2059	$ 0.269049	$ 0.220819	$ 0.194996	$27.89	$0.94	$0.79	$0.68
2060	$ 0.274253	$ 0.225090	$ 0.198768	$26.43	$0.89	$0.75	$0.64
2061	$ 0.279557	$ 0.229444	$ 0.202612	$25.04	$0.84	$0.71	$0.61
2062	$ 0.284964	$ 0.233881	$ 0.206531	$23.73	$0.80	$0.67	$0.58
2063	$ 0.290475	$ 0.238405	$ 0.210525	$22.48	$0.76	$0.63	$0.55
2064	$ 0.296093	$ 0.243016	$ 0.214597	$21.30	$0.72	$0.60	$0.52
2065	$ 0.301820	$ 0.247716	$ 0.218747	$20.18	$0.68	$0.57	$0.49
2066	$ 0.307657	$ 0.252507	$ 0.222978	$19.12	$0.64	$0.54	$0.47
2067	$ 0.313607	$ 0.257390	$ 0.227291	$18.12	$0.61	$0.51	$0.44
2068	$ 0.319673	$ 0.262368	$ 0.231687	$17.17	$0.58	$0.48	$0.42
2069	$ 0.325855	$ 0.267443	$ 0.236168	$16.27	$0.55	$0.46	$0.40
2070	$ 0.332158	$ 0.272615	$ 0.240735	$15.41	$0.52	$0.44	$0.38
2071	$ 0.338582	$ 0.277888	$ 0.245391	$14.60	$0.49	$0.41	$0.36
2072	$ 0.345130	$ 0.283262	$ 0.250137	$13.84	$0.47	$0.39	$0.34
2073	$ 0.351805	$ 0.288741	$ 0.254975	$13.11	$0.44	$0.37	$0.32
2074	$ 0.358610	$ 0.294325	$ 0.259907	$12.42	$0.42	$0.35	$0.30
2075	$ 0.365545	$ 0.300018	$ 0.264933	$11.77	$0.40	$0.33	$0.29
2076	$ 0.372615	$ 0.305820	$ 0.270057	$11.15	$0.38	$0.31	$0.27
2077	$ 0.379822	$ 0.311735	$ 0.275280	$10.57	$0.36	$0.30	$0.26
2078	$ 0.387168	$ 0.317764	$ 0.280605	$10.01	$0.34	$0.28	$0.24
2079	$ 0.394656	$ 0.323910	$ 0.286032	$9.49	$0.32	$0.27	$0.23
2080	$ 0.402289	$ 0.330175	$ 0.291564	$8.99	$0.30	$0.25	$0.22
2081	$ 0.410069	$ 0.336561	$ 0.297203	$8.52	$0.29	$0.24	$0.21
2082	$ 0.418001	$ 0.343070	$ 0.302951	$8.07	$0.27	$0.23	$0.20
2083	$ 0.426085	$ 0.349705	$ 0.308810	$7.65	$0.26	$0.22	$0.19
2084	$ 0.434326	$ 0.356469	$ 0.314783	$7.24	$0.24	$0.20	$0.18
2085	$ 0.442726	$ 0.363363	$ 0.320871	$6.86	$0.23	$0.19	$0.17
2086	$ 0.451289	$ 0.370391	$ 0.327077	$6.50	$0.22	$0.18	$0.16
2087	$ 0.460017	$ 0.377555	$ 0.333403	$6.16	$0.21	$0.17	$0.15
2088	$ 0.468914	$ 0.384857	$ 0.339851	$5.84	$0.20	$0.16	$0.14
2089	$ 0.477983	$ 0.392300	$ 0.346424	$5.53	$0.19	$0.16	$0.13
2090	$ 0.487228	$ 0.399887	$ 0.353124	$5.24	$0.18	$0.15	$0.13
2091	$ 0.496651	$ 0.407622	$ 0.359954	$4.97	$0.17	$0.14	$0.12
2092	$ 0.506256	$ 0.415505	$ 0.366915	$4.71	$0.16	$0.13	$0.11

Tables for calculating Disounted Participant Discount Rate seperatly when customer class is C&I

Measure Life	2023 Electricty Retail Rate($/kWh) Residential	2023 C&I & Res	2023 C&I	2023 Peak Demand Cost ($/Dth-yr)	2023 Gas Retail Rate ($/Dth) Residential	2023 C&I & Res	2023 C&I	2024 Electricty Retail Rate($/kWh) Residential	2024 C&I & Res	2024 C&I	2024 Peak Demand Cost ($/Dth-yr)	2024 Gas Retail Rate ($/Dth) Residential	2024 C&I & Res	2024 C&I
1	$0.14	$0.11	$0.10	$194.36	$6.54	$5.49	$4.73	$0.14	$0.11	$0.10	$184.16	$6.20	$5.20	$4.48
2	$0.27	$0.22	$0.19	$372.64	$12.54	$10.53	$8.94	$0.27	$0.22	$0.20	$353.07	$11.88	$9.97	$8.47
3	$0.40	$0.33	$0.28	$536.16	$18.04	$15.14	######	$0.41	$0.33	$0.29	$508.01	$17.09	$14.35	$12.02
4	$0.53	$0.43	$0.37	$686.15	$23.09	$19.38	######	$0.54	$0.44	$0.37	$650.12	$21.88	$18.36	$15.18
5	$0.66	$0.54	$0.45	$823.72	$27.72	$23.27	######	$0.67	$0.55	$0.46	$780.48	$26.26	$22.05	$17.99
6	$0.78	$0.64	$0.53	$949.91	$31.96	$26.83	######	$0.80	$0.66	$0.54	$900.05	$30.29	$25.42	$20.50
7	$0.91	$0.75	$0.60	$1,065.66	$35.86	$30.10	######	$0.93	$0.76	$0.62	$1,009.72	$33.98	$28.52	$22.73
8	$1.03	$0.85	$0.68	$1,171.83	$39.43	$33.10	######	$1.05	$0.86	$0.69	$1,110.31	$37.36	$31.36	$24.71
9	$1.15	$0.95	$0.75	$1,269.22	$42.71	$35.85	######	$1.18	$0.96	$0.76	$1,202.58	$40.47	$33.97	$26.48
10	$1.27	$1.04	$0.81	$1,358.54	$45.71	$38.37	######	$1.30	$1.06	$0.83	$1,287.22	$43.31	$36.36	$28.05
11	$1.39	$1.14	$0.87	$1,440.47	$48.47	$40.69	######	$1.42	$1.16	$0.89	$1,364.85	$45.93	$38.55	$29.45
12	$1.51	$1.24	$0.94	$1,515.62	$51.00	$42.81	######	$1.54	$1.26	$0.95	$1,436.05	$48.32	$40.56	$30.69
13	$1.62	$1.33	$0.99	$1,584.56	$53.32	$44.76	######	$1.65	$1.36	$1.01	$1,501.37	$50.52	$42.41	$31.80
14	$1.74	$1.42	$1.05	$1,647.78	$55.45	$46.54	######	$1.77	$1.45	$1.07	$1,561.28	$52.54	$44.10	$32.79
15	$1.85	$1.52	$1.10	$1,705.78	$57.40	$48.18	######	$1.88	$1.55	$1.12	$1,616.23	$54.38	$45.65	$33.67
16	$1.96	$1.61	$1.15	$1,758.97	$59.19	$49.68	######	$2.00	$1.64	$1.18	$1,666.63	$56.08	$47.08	$34.45
17	$2.07	$1.70	$1.20	$1,807.77	$60.83	$51.06	######	$2.11	$1.73	$1.23	$1,712.86	$57.64	$48.38	$35.14
18	$2.18	$1.79	$1.25	$1,852.52	$62.34	$52.33	######	$2.22	$1.82	$1.27	$1,755.27	$59.06	$49.58	$35.76
19	$2.28	$1.87	$1.29	$1,893.57	$63.72	$53.49	######	$2.33	$1.91	$1.32	$1,794.16	$60.37	$50.68	$36.31
20	$2.39	$1.96	$1.34	$1,931.23	$64.98	$54.55	######	$2.43	$2.00	$1.36	$1,829.84	$61.57	$51.69	$36.80
21	$2.49	$2.04	$1.38	$1,965.77	$66.15	$55.53	######	$2.54	$2.08	$1.40	$1,862.56	$62.67	$52.61	$37.24
22–65	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

(2025–2028 blocks of this table: [illegible])

Data for Rate Impact Calculations

Categories for Gas Rate Impacts

Lookup ID	Measure Co Reference fr	Measure Description	Participation Size	Customer Class/ Sector:	Included in NGIA Portfolio?	Gas Supply Costs ($) 2024	2025	2026	2027	2028
Do not Delete Row	Do not De	Do not Delete Row								
1	CNP01	RNG Proposal - Anaerobic Digestion of Organic Materials	A	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
2	CNP01	RNG Proposal - Anaerobic Digestion of Organic Materials	B	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
3	CNP01	RNG Proposal - Anaerobic Digestion of Organic Materials	C	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
4	CNP02	RNG Proposal - Anaerobic Digestion of East Metro Food Waste	A	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
5	CNP02	RNG Proposal - Anaerobic Digestion of East Metro Food Waste	B	C&I & Res	Yes	$ -	$ -	$ 1,856,524	$ 1,878,068	$ 1,899,902
6	CNP02	RNG Proposal - Anaerobic Digestion of East Metro Food Waste	C	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
7	CNP03	RNG Archetype - Wastewater Resource Recovery Facility	A	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
8	CNP03	RNG Archetype - Wastewater Resource Recovery Facility	B	C&I & Res	Yes	$ -	$ 811,156	$ 822,405	$ 834,485	$ 845,931
9	CNP03	RNG Archetype - Wastewater Resource Recovery Facility	C	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
10	CNP04	RNG Archetype - Dairy Manure	A	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
11	CNP04	RNG Archetype - Dairy Manure	B	C&I & Res	Yes	$ -	$ 905,363	$ 908,962	$ 913,794	$ 918,372
12	CNP04	RNG Archetype - Dairy Manure	C	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
13	CNP05	RNG Archetype - Food Waste	A	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
14	CNP05	RNG Archetype - Food Waste	B	C&I & Res	Yes	$ -	$ 4,223,988	$ 4,278,584	$ 4,331,735	$ 4,382,095
15	CNP05	RNG Archetype - Food Waste	C	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
16	CNP06	RNG Archetype - Landfill Gas	A	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
17	CNP06	RNG Archetype - Landfill Gas	B	C&I & Res	Yes	$ -	$ 2,561,928	$ 2,618,755	$ 2,674,020	$ 2,726,383
18	CNP06	RNG Archetype - Landfill Gas	C	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
19	CNP07	Green Hydrogen Blending into Natural Gas Distribution System	A	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
20	CNP07	Green Hydrogen Blending into Natural Gas Distribution System	B	C&I & Res	Yes	$ -	$ -	$ 689,559	$ 454,030	$ 830,876
21	CNP07	Green Hydrogen Blending into Natural Gas Distribution System	C	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
22	CNP08	Green Hydrogen Archetype for Industrial or Large Commercial Facility	A	C&I	Yes	$ -	$ -	$ -	$ -	$ -
23	CNP08	Green Hydrogen Archetype for Industrial or Large Commercial Facility	B	C&I	No	$ -	$ -	$ -	$ -	$ -
24	CNP08	Green Hydrogen Archetype for Industrial or Large Commercial Facility	C	C&I	No	$ -	$ -	$ -	$ -	$ -
25	CNP09	Industrial Methane and Refrigerant Leak Reduction Program	A	C&I	Yes	$ -	$ -	$ -	$ -	$ -
26	CNP09	Industrial Methane and Refrigerant Leak Reduction Program	B	C&I	No	$ -	$ -	$ -	$ -	$ -
27	CNP09	Industrial Methane and Refrigerant Leak Reduction Program	C	C&I	No	$ -	$ -	$ -	$ -	$ -
28	CNP10	Urban Tree Carbon Offset Program	A	C&I & Res	Yes	$ -	$ -	$ -	$ -	$ -
29	CNP10	Urban Tree Carbon Offset Program	B	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
30	CNP10	Urban Tree Carbon Offset Program	C	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
31	CNP11	Carbon Capture Archetype for Industrial or Large Commercial Facility	A	C&I	Yes	$ -	$ -	$ -	$ -	$ -
32	CNP11	Carbon Capture Archetype for Industrial or Large Commercial Facility	B	C&I	No	$ -	$ -	$ -	$ -	$ -
33	CNP11	Carbon Capture Archetype for Industrial or Large Commercial Facility	C	C&I	No	$ -	$ -	$ -	$ -	$ -
37	CNP13	Carbon Capture Rebates for Commercial Buildings	A	C&I	Yes	$ -	$ -	$ -	$ -	$ -
38	CNP13	Carbon Capture Rebates for Commercial Buildings	B	C&I	No	$ -	$ -	$ -	$ -	$ -
39	CNP13	Carbon Capture Rebates for Commercial Buildings	C	C&I	No	$ -	$ -	$ -	$ -	$ -
40	CNP14	New Networked Geothermal Systems Pilot	A	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
41	CNP14	New Networked Geothermal Systems Pilot	B	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
42	CNP14	New Networked Geothermal Systems Pilot	C	C&I & Res	Yes	$ -	$ -	$ -	$ -	$ -
43	CNP15	Decarbonizing Existing District Energy Systems	A	C&I	No	$ -	$ -	$ -	$ -	$ -
44	CNP15	Decarbonizing Existing District Energy Systems	B	C&I	Yes	$ -	$ -	$ -	$ -	$ -
45	CNP15	Decarbonizing Existing District Energy Systems	C	C&I	No	$ -	$ -	$ -	$ -	$ -
46	CNP16	New District Energy System	A	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
47	CNP16	New District Energy System	B	C&I & Res	Yes	$ -	$ -	$ -	$ -	$ -
48	CNP16	New District Energy System	C	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
49	CNP17	Industrial Electrification Incentive Program	A	C&I	Yes	$ -	$ -	$ -	$ -	$ -
50	CNP17	Industrial Electrification Incentive Program	B	C&I	No	$ -	$ -	$ -	$ -	$ -
51	CNP17	Industrial Electrification Incentive Program	C	C&I	No	$ -	$ -	$ -	$ -	$ -
52	CNP18	Commercial hybrid heating pilot	A	C&I	No	$ -	$ -	$ -	$ -	$ -
53	CNP18	Commercial hybrid heating pilot	B	C&I	Yes	$ -	$ -	$ -	$ -	$ -
54	CNP18	Commercial hybrid heating pilot	C	C&I	No	$ -	$ -	$ -	$ -	$ -
55	CNP19	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	A	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
56	CNP19	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	B	C&I & Res	Yes	$ -	$ -	$ -	$ -	$ -
57	CNP19	Residential deep energy retrofit + electric ASHP pilot (with gas backup)	C	C&I & Res	No	$ -	$ -	$ -	$ -	$ -
58	CNP20	Small/medium business GHG audit pilot	A	C&I	No	$ -	$ -	$ -	$ -	$ -
59	CNP20	Small/medium business GHG audit pilot	B	C&I	Yes	$ -	$ -	$ -	$ -	$ -
60	CNP20	Small/medium business GHG audit pilot	C	C&I	No	$ -	$ -	$ -	$ -	$ -
61	CNP21	Residential Gas Heat Pump	A	Residential	Yes	$ -	$ -	$ -	$ -	$ -
62	CNP21	Residential Gas Heat Pump	B	Residential	No	$ -	$ -	$ -	$ -	$ -
63	CNP21	Residential Gas Heat Pump	C	Residential	No	$ -	$ -	$ -	$ -	$ -
64	CNP22	Gas Heat Pump for Commercial Buildings	A	C&I	Yes	$ -	$ -	$ -	$ -	$ -
65	CNP22	Gas Heat Pump for Commercial Buildings	B	C&I	No	$ -	$ -	$ -	$ -	$ -
66	CNP22	Gas Heat Pump for Commercial Buildings	C	C&I	No	$ -	$ -	$ -	$ -	$ -
70	CNP24	Solar Thermal Heating for C&I	A	C&I	No	$ -	$ -	$ -	$ -	$ -
71	CNP24	Solar Thermal Heating for C&I	B	C&I	No	$ -	$ -	$ -	$ -	$ -
72	CNP24	Solar Thermal Heating for C&I	C	C&I	No	$ -	$ -	$ -	$ -	$ -
73	CNP25	Industrial and Large Commercial GHG Audit Pilot	A	C&I	Yes	$ -	$ -	$ -	$ -	$ -
74	CNP25	Industrial and Large Commercial GHG Audit Pilot	B	C&I	No	$ -	$ -	$ -	$ -	$ -
75	CNP25	Industrial and Large Commercial GHG Audit Pilot	C	C&I	No	$ -	$ -	$ -	$ -	$ -
Sub-Totals		Sub-Total: Residential, Commercial, and Industrial		C&I & Res		$ -	$ 8,502,435	$11,174,790	$11,086,133	$11,603,560
		Sub-Total: Just Residential		Residential		$ -	$ -	$ -	$ -	$ -
		Sub-Total: Just Commercial and Industrial		C&I		$ -	$ -	$ -	$ -	$ -
		Total		All customers		$ -	$ 8,502,435	$11,174,790	$11,086,133	$11,603,560
		Additional Portfolio Level Costs								
Sub-Totals		Research and Development Costs		All customers						
		Additional Portfolio Development Costs		All customers						
		Additional Portfolio Administration Costs		All customers						
Total		Total		All customers		$ -	$ 8,502,435	$11,174,790	$11,086,133	$11,603,560

Monthly Gas Supply Values for PGA (divide by 12): $ - | $ 708,536 | $ 931,232 | $ 923,844 | $ 966,963

Lookup ID	Capital Cost Recovery ($) 2024	2025	2026	2027	2028	O&M Costs ($) 2024	2025	2026	2027	2028
1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	$ -	$ -	$ -	$ -	$ -	$ 144,932	$ 108,822	$ 166,883	$ 168,133	$ 169,420
6	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	$ -	$ -	$ -	$ -	$ -	$ 102,686	$ 139,731	$ 143,202	$ 144,177	$ 145,182
9	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	$ -	$ -	$ -	$ -	$ -	$ 110,794	$ 140,379	$ 148,600	$ 149,627	$ 150,686
12	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14	$ -	$ -	$ -	$ -	$ -	$ 447,403	$ 402,183	$ 372,691	$ 375,897	$ 379,200
15	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	$ -	$ -	$ -	$ -	$ -	$ 283,239	$ 291,776	$ 263,402	$ 265,545	$ 267,754
18	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
19	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	$ -	$ -	$459,241	$731,143	$ 684,640	$ 153,089	$ 220,454	$ 257,340	$ 226,821	$ 227,830
21	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
22	$ -	$ -	$ -	$ -	$ -	$ 174,212	$ 39,145	$1,573,026	$ 30,122	$ 80,614
23	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
25	$ -	$ -	$ -	$ -	$ -	$ 464,411	$ 469,454	$ 229,369	$ 237,422	$ 245,776
26	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
27	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
28	$ -	$ -	$ -	$ -	$ -	$ 52,319	$ 55,880	$ 62,970	$ 71,679	$ 79,999
29	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
30	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
31	$ -	$ -	$ -	$ -	$ -	$ 193,416	$ 61,559	$1,693,801	$ 162,349	$ 50,822
32	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
33	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
37	$ -	$ -	$ -	$ -	$ -	$ 85,611	$ 112,742	$ 174,046	$ 143,693	$ 215,390
38	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
39	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
40	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
41	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
42	$ -	$ -	$112,447	$400,062	$ 743,796	$ 896,791	$2,358,542	$2,329,545	$2,401,805	$ 2,594,704
43	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
44	$ -	$ -	$ -	$ -	$ -	$ 53,110	$1,299,160	$1,269,257	$ 19,655	$ 70,065
45	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
46	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
47	$ -	$ -	$ -	$ -	$ -	$ 14,593	$ 274,994	$ 285,223	$ 13,931	$ 64,284
48	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
49	$ -	$ -	$ -	$ -	$ -	$ 160,212	$ 510,608	$ 17,861	$ 18,246	$ 18,642
50	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
51	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
52	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
53	$ -	$ -	$ -	$ -	$ -	$ 1,070,115	$1,653,337	$1,658,286	$1,496,753	$ 1,500,325
54	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
55	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
56	$ -	$ -	$ -	$ -	$ -	$ 499,682	$2,251,258	$2,248,954	$2,993,554	$ 5,654,046
57	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
58	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
59	$ -	$ -	$ -	$ -	$ -	$ 372,068	$ 384,267	$ 409,975	$ 401,421	$ 453,324
60	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
61	$ -	$ -	$ -	$ -	$ -	$ 28,263	$ 133,359	$ 133,531	$ 66,398	$ 16,775
62	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
63	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
64	$ -	$ -	$ -	$ -	$ -	$ 125,159	$ 472,978	$ 120,869	$ 34,145	$ 34,945
65	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
66	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
70	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
71	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
72	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
73	$ -	$ -	$ -	$ -	$ -	$ 280,564	$ 274,459	$ 274,781	$ 275,586	$ 326,416
74	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
75	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Sub-Total: Residential, Commercial, and Industrial	$ -	$ -	$571,688	#########	##########	$ 2,705,529	$6,244,019	$6,278,808	$6,811,169	$ 9,733,105
Sub-Total: Just Residential	$ -	$ -	$ -	$ -	$ -	$ 28,263	$ 133,359	$ 133,531	$ 66,398	$ 16,775
Sub-Total: Just Commercial and Industrial	$ -	$ -	$ -	$ -	$ -	$ 2,978,879	$5,277,710	$7,421,270	$2,819,393	$ 2,996,319
Total	$ -	$ -	$571,688	#########	##########	$ 5,712,672	###########	###########	$ 9,696,960	$ 12,746,199
Research and Development Costs						$ 1,024,525	$1,024,525	$2,840,471	$2,840,471	$ 2,840,471
Additional Portfolio Development Costs						$ -	$ -	$ -	$ -	$ -
Additional Portfolio Administration Costs						$ -	$ -	$ -	$ -	$ -
Total	$ -	$ -	$571,688	#########	##########	$ 6,737,196	###########	###########	###########	$ 15,586,670

Lookup ID	Utility Cost Savings ($) 2024	2025	2026	2027	2028	Additional Portfolio Development Costs($) 2024	Portion of Utility Costs by Pilot
1	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
2	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
3	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
4	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
5	$ -	$ -	$ -	$ -	$ -	$ 127,801	6.9%
6	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
7	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
8	$ -	$ -	$ -	$ -	$ -	$ 79,746	4.3%
9	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
10	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
11	$ -	$ -	$ -	$ -	$ -	$ 86,895	4.7%
12	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
13	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
14	$ -	$ -	$ -	$ -	$ -	$ 383,716	20.6%
15	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
16	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
17	$ -	$ -	$ -	$ -	$ -	$ 238,957	12.8%
18	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
19	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
20	$ -	$ -	$ 133,260	$ 126,264	$ 119,636	$ 91,079	4.9%
21	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
22	$ -	$ -	$ 268,163	$ 254,085	$ 240,746	$ 22,673	1.2%
23	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
24	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
25	$ 52,858	$ 100,167	$ 94,908	$ 89,925	$ 85,204	$ 24,457	1.3%
26	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
27	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
28	$ -	$ -	$ -	$ -	$ -	$ 6,454	0.3%
29	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
30	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
31	$ -	$ -	$(148,837)	$(141,023)	$ (133,619)	$ 51,687	2.8%
32	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
33	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
37	$ 1,879	$ 6,529	$ 16,310	$ 35,703	$ 70,687	$ 12,003	0.6%
38	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
39	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
40	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
41	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
42	$ -	$ -	$ 52,766	$ 149,988	$ 236,857	$ 227,867	12.2%
43	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
44	$ -	$ 332,332	$ 629,770	$ 596,708	$ 565,381	$ 11,736	0.6%
45	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
46	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
47	$ -	$ 69,090	$ 130,926	$ 124,052	$ 117,540	$ 4,227	0.2%
48	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
49	$ -	$ 62,507	$ 59,226	$ 56,116	$ 53,170	$ 9,887	0.5%
50	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
51	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
52	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
53	$ 20,834	$ 59,222	$ 93,521	$ 124,056	$ 151,126	$ 138,544	7.4%
54	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
55	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
56	$ -	$ 12,554	$ 23,789	$ 78,890	$ 181,532	$ 266,904	14.3%
57	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
58	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
59	$ 4,434	$ 8,784	$ 13,027	$ 16,801	$ 20,142	$ 39,141	2.1%
60	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
61	$ -	$ 787	$ 1,491	$ 1,413	$ 1,338	$ 7,463	0.4%
62	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
63	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
64	$ -	$ 14,427	$ 13,670	$ 12,952	$ 12,272	$ 14,689	0.8%
65	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
66	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
70	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
71	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
72	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
73	$ 38,396	$ 72,761	$ 103,411	$ 130,643	$ 154,731	$ 18,630	1.0%
74	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
75	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
Sub-Total: Residential, Commercial, and Industrial	$ -	$ 81,644	$340,741	$479,195	$ 655,564	$ 1,513,646	100.0%
Sub-Total: Just Residential	$ -	$ 787	$ 1,491	$ 1,413	$ 1,338	$ 7,463	
Sub-Total: Just Commercial and Industrial	$ 118,402	$ 656,729	##########	##########	$ 1,219,840	$ 343,447	
Total	$ 118,402	$ 739,159	##########	##########	$ 1,876,742	$ 1,864,555	
Total (all customers)	$ 118,402	$ 739,159	##########	##########	$ 1,876,742	$ 1,864,555	

Lookup ID	Allocation of Overhead Costs — O&M Costs ($) 2024	2025	2026	2027	2028	Values before Overhead is added in to specific pilots — O&M Costs ($) 2024	2025	2026	2027	2028
1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	$ 144,932	$ 98,728	$ 96,486	$ 97,424	$ 98,390	$ -	$ 10,094	$ 70,397	$ 70,709	$ 71,030
6	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	$ 90,436	$ 61,605	$ 60,206	$ 60,791	$ 61,394	$ 12,250	$ 78,126	$ 82,996	$ 83,386	$ 83,787
9	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	$ 98,544	$ 67,128	$ 65,604	$ 66,241	$ 66,898	$ 12,250	$ 73,251	$ 82,996	$ 83,386	$ 83,787
12	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14	$ 435,153	$ 296,427	$ 289,695	$ 292,511	$ 295,412	$ 12,250	$ 105,756	$ 82,996	$ 83,386	$ 83,787
15	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	$ 270,989	$ 184,598	$ 180,406	$ 182,160	$ 183,966	$ 12,250	$ 107,178	$ 82,996	$ 83,386	$ 83,787
18	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
19	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	$ 103,289	$ 70,360	$ 68,762	$ 69,431	$ 70,119	$ 49,800	$ 150,094	$ 188,578	$ 157,390	$ 157,711
21	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
22	$ 25,712	$ 17,515	$ 17,118	$ 17,284	$ 17,455	$ 148,500	$ 21,630	$1,555,908	$ 12,838	$ 63,159
23	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
25	$ 27,736	$ 18,894	$ 18,465	$ 18,644	$ 18,829	$ 436,676	$ 450,561	$ 210,904	$ 218,778	$ 226,947
26	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
27	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
28	$ 7,319	$ 4,986	$ 4,873	$ 4,920	$ 4,969	$ 45,000	$ 50,894	$ 58,097	$ 66,759	$ 75,030
29	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
30	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
31	$ 58,616	$ 39,929	$ 39,022	$ 39,402	$ 39,792	$ 134,800	$ 21,630	$1,654,779	$ 122,947	$ 11,030
32	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
33	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
37	$ 13,611	$ 9,272	$ 9,062	$ 9,150	$ 9,240	$ 72,000	$ 103,470	$ 164,984	$ 134,544	$ 206,150
38	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
39	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
40	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
41	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
42	$ 258,413	$ 176,031	$ 172,033	$ 173,706	$ 175,428	$ 638,378	$2,182,511	$2,157,511	$2,228,100	$2,419,276
43	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
44	$ 13,310	$ 9,066	$ 8,861	$ 8,947	$ 9,035	$ 39,800	$1,290,094	$1,260,397	$ 10,709	$ 61,030
45	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
46	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
47	$ 4,793	$ 3,265	$ 3,191	$ 3,222	$ 3,254	$ 9,800	$ 271,729	$ 282,032	$ 10,709	$ 61,030
48	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
49	$ 11,212	$ 7,638	$ 7,464	$ 7,537	$ 7,612	$ 149,000	$ 502,970	$ 10,397	$ 10,709	$ 11,030
50	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
51	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
52	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
53	$ 157,115	$ 107,027	$ 104,597	$ 105,613	$ 106,661	$ 913,000	$1,546,310	$1,553,689	$1,391,140	$1,393,664
54	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
55	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
56	$ 302,682	$ 206,188	$ 201,505	$ 203,464	$ 205,482	$ 197,000	$2,045,070	$2,047,449	$2,790,090	$5,448,564
57	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
58	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
59	$ 44,388	$ 30,237	$ 29,550	$ 29,838	$ 30,134	$ 327,680	$ 354,030	$ 380,424	$ 371,584	$ 423,190
60	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
61	$ 8,463	$ 5,765	$ 5,634	$ 5,689	$ 5,745	$ 19,800	$ 127,594	$ 127,897	$ 60,709	$ 11,030
62	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
63	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
64	$ 16,659	$ 11,348	$ 11,090	$ 11,198	$ 11,309	$ 108,500	$ 461,630	$ 109,779	$ 22,947	$ 23,636
65	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
66	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
70	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
71	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
72	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
73	$ 21,127	$ 14,392	$ 14,065	$ 14,202	$ 14,342	$ 259,438	$ 260,068	$ 260,716	$ 261,385	$ 312,073
74	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
75	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Sub-Total: Residential, Commercial, and Industrial	##########	##########	##########	##########	##########	$ 988,978	$5,074,702	$5,136,048	$5,657,299	$8,567,791
Sub-Total: Just Residential	$ 8,463	$ 5,765	$ 5,634	$ 5,689	$ 5,745	$ 19,800	$ 127,594	$ 127,897	$ 60,709	$ 11,030
Sub-Total: Just Commercial and Industrial	$ 389,486	$ 265,318	$ 259,293	$ 261,813	$ 264,410	$2,589,393	$5,012,392	$7,161,978	$2,557,580	$2,731,909
Total	##########	##########	##########	##########	##########	$ 3,598,172	###########	###########	$ 8,275,588	###########
Research and Development Costs	##########	##########	##########	##########	##########	$1,024,525	$1,024,525	$2,840,471	$2,840,471	$2,840,471
Additional Portfolio Development Costs	$ -					$1,864,555	$ -	$ -	$ -	$ -
Additional Portfolio Administration Costs	$ -	$ -	$ -	$ -	$ -	$2,114,500	$1,440,400	$1,407,687	$1,421,373	$1,435,469
Total	##########	##########	##########	##########	##########	$ 8,601,751	###########	###########	###########	###########

	Total	Annual
Total R&D Budget:	$10,570,462	
Year 1 & 2:	$2,049,049	$1,024,525
Years 3, 4, 5:	$8,521,413	$2,840,471

5-year R&D budget:	##########
Estimated Cost Cap (per year):	##########

R&D	10%

ICF

CNP01 - RNG Proposal - Anaerobic Digestion of Organic Materials

Click here to go back to the list of all pilots

NGIA Pilot Profiles Workbook

March 15th 2024 Update: Nothing has been changed in this tab, but the Hennepin County RNG project has been cancelled. So this is no longer selected for the NGIA porfolio.

DESCRIPTION

Pilot Project Code:	**CNP01**
Pilot Project Name:	*RNG Proposal - Anaerobic Digestion of Organic Materials*
Customer Class/ Sector:	**C&I & Res**
Low-Income Community Benefit?	**N**
Target Area:	**Territory-wide**
Primary Innovative Resource Category:	**Renewable Natural Gas (RNG)**

Select primary Innovation Category. Others can be listed here:

Pilot Description:

CenterPoint Energy proposes to buy renewable natural gas ("RNG"), including both the commodity and environmental attributes, from Hennepin County's anaerobic digestion ("AD") facility, which is currently under development.

Overview of Program/ Implementation Approach:

This project is expected to be operational in 2026.
The terms of the RNG purchase contract would be determined at a later date; all figures in this spreadsheet are estimates for the purpose of this analysis.
Environmental attributes would be retired on behalf of CenterPoint Energy customers.

Other Comments / Information:

Assumes offtake from developer or other entity, not capital investment from CNP.

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

Pilot Year	Year 1	Year 2	Year 3	Year 4	Year 5	
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A			8,288			*Dekatherms of gas purchased as offtake in single year. Incremental units added, annual (not cumulative).*
Participating Units, Size B			41,440			
Participating Units, Size C			82,880			*Note, this represents the annual RNG (Dth/year) that will be purchased through a multi-year agreement (project life defined below) starting in this year.*

Units above are to annual dekatherms of RNG supply (shown only for the year supply contract starts)

Calculations & Other Explanation:

2026 is the RFI respondent's updated target for digester RNG setup.

	Year 1	Year 2	Year 3	Year 4	Year 5
Cumulative RNG Supply (Dth/year), Size A	-	-	8,288	8,288	8,288
Cumulative RNG Supply (Dth/year), Size B	-	-	41,440	41,440	41,440
Cumulative RNG Supply (Dth/year), Size C	-	-	82,880	82,880	82,880
Assumed Number of GHG Verifications Required, Size A:	0	0	1	1	1
Assumed Number of GHG Verifications Required, Size B:	0	0	1	1	1
Assumed Number of GHG Verifications Required, Size C:	0	0	1	1	1

Size A (10% of Dth of RNG generated, from Hennepin County's response to our Data Request)
8288
Size B (50% of Dth of RNG generated, from Hennepin County's response to our Data Request)
41440
Size C (100% of Dth of RNG generated, from Hennepin County's response to our Data Request)
82880

Updated estimate of MMBTU of RNG to be generated, from Hennepin County: 82879.6 MMBtu/yr

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ -	$ 10,094	$ 208,082	$ 208,896	$ 211,115	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ -	$ 10,094	$ 852,823	$ 861,646	$ 871,453	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ -	$ 10,094	$ 1,658,748	$ 1,677,584	$ 1,696,877	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ -	$ 10,094	$ 208,082	$ 208,896	$ 211,115	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ -	$ 10,094	$ 852,823	$ 861,646	$ 871,453	total cost per year	
Fixed O&M Cost, Size C	$ -	$ 10,094	$ 1,658,748	$ 1,677,584	$ 1,696,877	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ -	$ 10,094	$ 208,082	$ 208,896	$ 211,115	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ -	$ 10,094	$ 852,823	$ 861,646	$ 871,453	per year	
Total Project Delivery, Size C	$ -	$ 10,094	$ 1,658,748	$ 1,677,584	$ 1,696,877	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ -	$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ -	$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	
Internal Project Delivery, Size C	$ -	$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ -	$ -	$ 197,685	$ 198,187	$ 200,085	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ -	$ -	$ 842,426	$ 850,937	$ 860,423	per year	
External Project Delivery, Size C	$ -	$ -	$ 1,648,352	$ 1,666,875	$ 1,685,847	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Advertising and Promotions, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A						per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*

UTILITY PILOT COSTS

Allocation of General Portfolio Costs, Size B						per year	
Allocation of General Portfolio Costs, Size C						per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A	$ -	per year	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B	$ -	per year	
Est. Total Revenue Requirement for Capital Projects, Size C	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	#DIV/0!	#DIV/0!	$ -	#DIV/0!	#DIV/0!	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	#DIV/0!	#DIV/0!	$ -	#DIV/0!	#DIV/0!	per participant per year	
Incentives per Participant, Size C	#DIV/0!	#DIV/0!	$ -	#DIV/0!	#DIV/0!	per participant per year	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
RNG Contract Purchase Cost:	$ 24.00	$ 24.00	$ 24.00	$ 24.00	$ 24.00	per Dth (1 Dth = 1 MMBtu)	
Geologic Gas Cost:	$ 5.13	$ 4.86	$ 4.60	$ 4.36	$ 4.13	per Dth	
Incremental Fuel Cost:	$ 18.87	$ 19.14	$ 19.40	$ 19.64	$ 19.87	per Dth	
Incremental Fuel Cost - Average over Contract Life (based on contract start year):	$ 19.63	$ 19.73	$ 19.80	$ 19.85	$ 19.87	per Dth	

Note - in original Exhibit N these were based on a fixed value for Year 1, but in this combined file they have been linked to the 'Planning Assumptions' from Exhibit P so that commodity price updates are automatically reflected here. This formula also corrects the mistake CenterPoint Energy reported, about using Year 0 commodity costs for RNG Year 1 Commodity costs in the original filing.

Basing costs to CNP on the incremental cost, since RNG offtake contracts will reduce the volumes of geologic gas that ne

Assumes Incremental Cost from year 5 is unchanged for remaining years of supply contract.

M-RETS RTC On-going Registration Costs:	$0.05	$/Dth, for all Dth produced each year
M-RETS RTC Upfront Registration Costs:	$1,500	One time upfront

	Year 1	Year 2	Year 3	Year 4	Year 5	
Escalation rate in gas commodity costs:	-5.250%	-5.250%	-5.250%	-5.250%	-5.250%	Note - in original Exhibit N these were just values, but in this combined file they have been linked to the 'Planning Assumptions' from Exhibit P

		$ 1,644,806	
Project Verification Costs:	$35,000	$/year	Green-E or other cost for project verification

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A	$ 196	$ 197	$ 198	$ 198	$ 199	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B	$ 196	$ 197	$ 198	$ 198	$ 199	per participant	
Total Pilot Upfront Costs, Size C	$ 196	$ 197	$ 198	$ 198	$ 199	per participant	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Third Party Funding, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Third Party Funding, Size C	$ -	$ -	$ -	$ -	$ -	per participant	

Description of source of external funding:

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note 1: some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant.*
Direct Participant Pilot Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Direct Participant Pilot Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

PARTICIPANT NON-ENERGY COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Participant Non-Energy Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life
Participant Non-Energy Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life
Participant Non-Energy Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life

This includes any increased in costs like equipment operating costs or increased water costs. Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note, to calculate this metric, you can make one cost estimate for year 1 and then use the escalation rate to estimate each remaining year.

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5	
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)

For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Participant Non-Energy Savings, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life
Participant Non-Energy Savings, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life
Participant Non-Energy Savings, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life

This includes any operating savings like water savings.

Calculations & Other Explanation:

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	10	years
Average Lifetime for Savings/Pilot Tech, Size B	10	years
Average Lifetime for Savings/Pilot Tech, Size C	10	years

Calculations & Other Explanation:

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	0	Dth/Participant
Avg. Dth/Participant Saved, Size B	0	Dth/Participant
Avg. Dth/Participant Saved, Size C	0	Dth/Participant

Calculations & Other Explanation:

Changes in natural gas consumption for RNG production are already factored into Carbon Intensity through GREET calculations (avoiding double counting them here).

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	0	kWh/Participant	*Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Non-Gas Fuel Units/Part. Saved, Size B	0	kWh/Participant	
Avg. Non-Gas Fuel Units/Part. Saved, Size C	0	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	0	kWh/Participant	*Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	0	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	0	kWh/Participant	

Calculations & Other Explanation:

Changes in electricity consumption for RNG production are already factored into Carbon Intensity through GREET calculations (avoiding double counting them here).

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5	
Total Annual Dth Saved, Size A	0.00	0.00	0.00	0.00	0.00	Dth
Total Annual Dth Saved, Size B	0.00	0.00	0.00	0.00	0.00	Dth
Total Annual Dth Saved, Size C	0.00	0.00	0.00	0.00	0.00	Dth

Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario: Xcel

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from National Renewable

Calculations & Other Explanation: Xcel 2025 and Xcel 2030 used to reflect plan window investments over the 10 years - Hennepin Co. confirmed to be in Xcel service territory for electricity supply.

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity Savings, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	68.10	68.10	68.10	68.10	68.10	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity Savings, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	68.10	68.10	68.10	68.10	68.10	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity Savings, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	68.10	68.10	68.10	68.10	68.10	kg CO2e/participant
High						kg CO2e/participant

For RNG pilots (where the units of participation are Dth of RNG purchased) the above values represent the lifecycle emission reduction achieved per Dth of RNG purchase (calculated as the difference between the carbon intensity score calculated from GREET for this pilot, vs. the GREET emission factor for geologic natural gas combustion).

Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.

Calculations & Other Explanation:

GHG Intensity			
	Size A	**Size B**	**Size C**
	kg CO2e/Dth		
Low Scenario			
Expected Scenario	(2)	(2)	(2)
High Scenario			

These values represent the carbon intensity for this project/archetype, as calculated by ICF using GREET. Some default assumptions from GREET have been updated to better reflect typical expectations for RNG projects in Minnesota (e.g. GHG intensity of electricity supply), use of combined heat and power on-site vs. grid electricity, etc.

Note that carbon intensities will vary by project, and GREET calculations will be required for specific projects as they are chosen (based on assumed project designs, and later updated for actual operating conditions).

Also note that GREET's rules for carbon accounting (which NGIA legislation requires CenterPoint to follow) differ from California's Low-Carbon Fuel Standard (LCFS) in a number of areas, meaning that these scores can look quite different than California LCFS Carbon Intensity scores.

	kg CO2e/Dth
Default Geologic Gas Emissions Factor	66.14

RNG GHG factor, updated for grid mix factors 2025, 2030, and 2035	Pilot Lifetime Average	2024-2028 period, using 2025 grid mix	2029-2033 period, using 2030 grid mix	2034-2038 period, using 2035 grid mix
kg CO2e/Dth	-1.96	-0.62	-2.53	-2.54

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor: 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.05	$ 0.04	$ 0.04	$ 0.04	per Dth	*The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria. Note, to calculate this metric, you can make one cost estimate for year 1 and then use the escalation rate to estimate each Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2027 to all users in the West North Central Region as estimated in the Energy Information Administration's 2023 Annual Energy Outlook*
Calculations & Other Explanation:							
Escalation rate	-5.250%	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)	

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:	
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh	*The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals.* *equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)*
Calculations & Other Explanation:			

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor	8.22%	*The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales*
Calculations & Other Explanation:		

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

		USD Cost Unit:	
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth	*Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E1999/CI-14-643, utilities may use the value most applicable for the pilot or measure.*
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth	
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth	
Calculations & Other Explanation:			

2024 Gas environmental damage from all criteria pollutants combined	$	0.37	
2022 Gas environmental damage from all criteria pollutants combined	$	0.34	per Dth

The factor is calculated using the median range of the final metropolitan fringe environmental cost values approved by the Minnesota Public Utilities Commission (Commission)27 for carbon dioxide (CO2), sulfur dioxide (SO2), fine particulate matter (PM2.5), carbon monoxide (CO), nitrogen oxides (NOx), and lead (Pb); along with estimated natural gas emission factor (or factors) for each emission provided by the Environmental Protection Agency Source: AP-42, Fifth Edition, Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources

Escalation rate from order		0.0779	2022 USD adjustment to 2024 USD
Annual escalation rate		3.82%	

Annual escalation rate calculated as the average of the 12-month percentage change in the "all items" customer price index available from the United States Bureau of Labor Statistics between 2018 and 2022. https://www.bls.gov/charts/consumer-price-index/consumer-price-index-by-category-line-chart.htm

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life		
Net Direct Job Creation, Size A	0	0	1	1	1	3	8	# of jobs	*Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Net Direct Job Creation, Size B	0	0	4	4	4	13	33	# of jobs	
Net Direct Job Creation, Size C	0	0	8	8	8	25	65	# of jobs	

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life		
Net Indirect Job Creation, Size A	0	0	0	0	0	1	3	# of jobs	*Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Net Indirect Job Creation, Size B	0	0	2	2	1	5	12	# of jobs	
Net Indirect Job Creation, Size C	0	0	3	3	3	9	23	# of jobs	

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Induced Job Creation, Size A	0	0	1	1	1	2	4	# of jobs
Net Induced Job Creation, Size A	0	0	2	2	2	7	18	# of jobs
Net Induced Job Creation, Size A	0	0	5	4	4	13	35	# of jobs

Calculations & Other Explanation:
Job numbers are estimated as Full Time Equivalents (FTE) and are rounded off.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year	*Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year	*The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

Definition: *It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.*

NGIA Participants' Perspective Notes:

Definition: *It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*

NGIA Nonparticipating Customers' Perspective Notes:

Definition: *As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*

Provides widespread benefits to all sales customers

Effects on Other Energy Systems and Energy Security:

Definition: *NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.*

Fuel made in MN and reduces import of fuel from outside of MN

GHG Emissions Notes:

Definition: *An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*

Other Pollution Notes:

Definition: *Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*

Planned facility located in an environmental justice area of concern

Waste Reduction and Reuse Notes:

Definition: *Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.*

Supports community organics recycling

Policy Notes:

Definition: *NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*

Reduces fossil gas throughput; avoids landfilling; increases use of renewable energy

Net Job Creation Notes:

Definition: *An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*

Economic Development Notes:

Definition: *The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*

Will pay prevailing wages; will seek apprentices; will seek to hire from local community

Public Co-Benefits Notes:

Definition: *There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.*

Supports local government waste management

Market Development Notes:

Definition: *The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized*

May produce fertilizer or soil amendments

Direct Innovation Support Notes:	
Definition:	*This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA 40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.*
	Opportunity for Company to learn about purchasing RNG
Resource Scalability and Role in a Decarbonized System Notes:	
Definition:	*While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.*
	Realistic pathways to decarbonization include RNG

ICF

CNP02 - RNG Proposal - Anaerobic Digestion of East Metro Food Waste

Click here to go back to the list of all pilots

NGIA Pilot Profiles Workbook

March 15th 2024 Update: The assumed participating units (e.g. volume of RNG to be contracted) from this pilot has been changed, to reflect updated expectations about the portion of total RNG production that will be available for long-term contracts. Updated input cells marked in green.

DESCRIPTION

Pilot Project Code:	CNP02
Pilot Project Name:	*RNG Proposal - Anaerobic Digestion of East Metro Food Waste*
Customer Class/ Sector:	C&I & Res
Low-Income Community Benefit?	N
Target Area:	Territory-wide
Primary Innovative Resource Category:	Renewable Natural Gas (RNG)

Select primary Innovation Category. Others can be listed here:

Pilot Description:
CenterPoint Energy proposes to buy RNG, including both the commodity and environmental attributes, from Ramsey and Washington Counties' anaerobic digestion facility under development.

Overview of Program/ Implementation Approach:
This project is expected to be operational in 2026.
The terms of the RNG purchase contract would be determined at a later date; all figures in this spreadsheet are estimates for the purpose of this analysis.
Environmental attributes would be retired on behalf of CenterPoint Energy customers.

Other Comments / Information:

Assumes offtake from developer or other entity, not capital investment from CNP.

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

	Year 1	Year 2	Year 3	Year 4	Year 5
Pilot Year					
Calendar Year	2024	2025	2026	2027	2028
Participating Units, Size A			18,168		
Participating Units, Size B			95,383		
Participating Units, Size C			190,767		

Dekatherms of gas purchased as offtake in single year. Incremental units added, annual (not cumulative).

Note, this represents the annual RNG (Dth/year) that will be purchased through a multi-year agreement (project life defined below) starting in this year.

Units above are to annual dekatherms of RNG supply (shown only for the year supply contract starts)

Calculations & Other Explanation: 2026 is the RFI respondent's updated target for digester RNG setup.

	Year 1	Year 2	Year 3	Year 4	Year 5
Cumulative RNG Supply (Dth/year), Size A	-	-	18,168	18,168	18,168
Cumulative RNG Supply (Dth/year), Size B	-	-	95,383	95,383	95,383
Cumulative RNG Supply (Dth/year), Size C	-	-	190,767	190,767	190,767
Assumed Number of GHG Verifications Required, Size A:	0	0	1	1	1
Assumed Number of GHG Verifications Required, Size B:	0	0	1	1	1
Assumed Number of GHG Verifications Required, Size C:	0	0	1	1	1

Size A (10% of Dth listed in RFI response)
2 mcfh or 48 mcfd 18168 Dth/yr
Size B (50% of Dth listed in RFI response) March 15th 2024 Update: The assumed participating units (e.g.
10.5 mcfh or 252 mcfd 95383 Dth/yr
Size C (100% of Dth listed in RFI response)
21 mcfh or 504 mcfd 190767 Dth/yr

Convert from MCF to MMBtu with *1.037 1.037

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ -	$ 10,094	$ 425,235	$ 428,436	$ 432,916	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ -	$ 10,094	$ 1,926,921	$ 1,948,777	$ 1,970,932	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ -	$ 10,094	$ 3,781,945	$ 3,826,845	$ 3,870,835	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ -	$ 10,094	$ 425,235	$ 428,436	$ 432,916	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ -	$ 10,094	$ 1,926,921	$ 1,948,777	$ 1,970,932	total cost per year	
Fixed O&M Cost, Size C	$ -	$ 10,094	$ 3,781,945	$ 3,826,845	$ 3,870,835	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ -	$ 10,094	$ 425,235	$ 428,436	$ 432,916	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ -	$ 10,094	$ 1,926,921	$ 1,948,777	$ 1,970,932	per year	
Total Project Delivery, Size C	$ -	$ 10,094	$ 3,781,945	$ 3,826,845	$ 3,870,835	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A		$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B		$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	
Internal Project Delivery, Size C		$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ -	$ -	$ 414,838	$ 417,727	$ 421,886	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ -	$ -	$ 1,916,524	$ 1,938,068	$ 1,959,902	per year	
External Project Delivery, Size C	$ -	$ -	$ 3,771,548	$ 3,816,136	$ 3,859,805	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Advertising and Promotions, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A						per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B						per year	
Allocation of General Portfolio Costs, Size C						per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

UTILITY PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A	$ -	per year	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B	$ -	per year	
Est. Total Revenue Requirement for Capital Projects, Size C	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	#DIV/0!	#DIV/0!	$ -	#DIV/0!	#DIV/0!	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	#DIV/0!	#DIV/0!	$ -	#DIV/0!	#DIV/0!	per participant per year	
Incentives per Participant, Size C	#DIV/0!	#DIV/0!	$ -	#DIV/0!	#DIV/0!	per participant per year	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
RNG Contract Purchase Cost:	$ 24.00	$ 24.00	$ 24.00	$ 24.00	$ 24.00	per Dth (1 Dth = 1 MMBtu)	
Geologic Gas Cost:	$ 5.13	$ 4.86	$ 4.60	$ 4.36	$ 4.13	per Dth	Note - in original Exhibit N these were based on a fixed value for Year 1, but in this combined file they have been linked to the 'Planning Assumptions' from Exhibit P so that commodity price updates are automatically reflected here. This formula also corrects the mistake CenterPoint Energy reported, about using Year 0 commodity costs for RNG Year 1 Commodity costs in the original filing.
Incremental Fuel Cost:	$ 18.87	$ 19.14	$ 19.40	$ 19.64	$ 19.87	per Dth	Basing costs to CNP on the incremental cost, since RNG offtake contracts will reduce the volumes of geologic gas that
Incremental Fuel Cost - Average over Contract Life (based on contract start year):	$ 19.63	$ 19.73	$ 19.80	$ 19.85	$ 19.87	per Dth	Assumes Incremental Cost from year 5 is unchanged for remaining years of supply contract.

M-RETS RTC On-going Registration Costs: $0.05 $/Dth, for all Dth produced each year
M-RETS RTC Upfront Registration Costs: $1,500 One time upfront

Project Verification Costs: $60,000 $/year Green-E or other cost for project verification

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A	$ 196	$ 197	$ 198	$ 198	$ 199	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B	$ 196	$ 197	$ 198	$ 198	$ 199	per participant	
Total Pilot Upfront Costs, Size C	$ 196	$ 197	$ 198	$ 198	$ 199	per participant	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Third Party Funding, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Third Party Funding, Size C	$ -	$ -	$ -	$ -	$ -	per participant	

Description of source of external funding:

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note that some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant..*
Direct Participant Pilot Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Direct Participant Pilot Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

PARTICIPANT NON-ENERGY COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any increased in costs like equipment operating costs or increased water costs. Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Participant Non-Energy Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any operating savings like water savings.*
Participant Non-Energy Savings, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Savings, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	10	years
Average Lifetime for Savings/Pilot Tech, Size B	10	years
Average Lifetime for Savings/Pilot Tech, Size C	10	years

Calculations & Other Explanation:

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	0	Dth/Participant
Avg. Dth/Participant Saved, Size B	0	Dth/Participant
Avg. Dth/Participant Saved, Size C	0	Dth/Participant

Calculations & Other Explanation: Changes in natural gas consumption for RNG production are already factored into Carbon Intensity through GREET calculations (avoiding double counting them here).

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	0	kWh/Participant	*Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Non-Gas Fuel Units/Part. Saved, Size B	0	kWh/Participant	
Avg. Non-Gas Fuel Units/Part. Saved, Size C	0	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	0	kWh/Participant	*Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	0	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	0	kWh/Participant	

Calculations & Other Explanation: Changes in electricity consumption for RNG production are already factored into Carbon Intensity through GREET calculations (avoiding double counting them here).

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5	
Total Annual Dth Saved, Size A	0.00	0.00	0.00	0.00	0.00	Dth
Total Annual Dth Saved, Size B	0.00	0.00	0.00	0.00	0.00	Dth
Total Annual Dth Saved, Size C	0.00	0.00	0.00	0.00	0.00	Dth

Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario: Xcel

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from National Renewable Energy Laboratory (NREL) Standard Scenarios. If the renewable natural gas facility is using a higher proportion of carbon free electricity than is available by default from their electric utility, either from on-site generation, by subscribing to a Commission-approved

Calculations & Other Explanation:

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity Savings, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	96.89	96.89	96.89	96.89	96.89	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity Savings, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	96.89	96.89	96.89	96.89	96.89	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity Savings, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	96.89	96.89	96.89	96.89	96.89	kg CO2e/participant
High						kg CO2e/participant

Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.

For RNG pilots (where the units of participation are Dth of RNG purchased) the above values represent the lifecycle emission reduction achieved per Dth of RNG purchase (calculated as the difference between the carbon intensity score calculated from GREET for this pilot, vs. the GREET emission factor for geologic natural gas combustion).

Calculations & Other Explanation:

GHG Intensity	Size A	Size B	Size C
	kg CO2e/Dth		
Low Scenario			
Expected Scenario	(31)	(31)	(31)
High Scenario			

These values represent the carbon intensity for this project/archetype, as calculated by ICF using GREET. Some default assumptions from GREET have been updated to better reflect typical expectations for RNG projects in Minnesota (e.g. GHG intensity of electricity supply), use of combined heat and power on-site vs. grid electricity, etc.

Note that carbon intensities will vary by project, and GREET calculations will be required for specific projects as they are chosen (based on assumed project designs, and later updated for actual operating conditions).

Also note that GREET's rules for carbon accounting (which NGIA legislation requires CenterPoint to follow) differ from California's Low-Carbon Fuel Standard (LCFS) in a number of areas, meaning that these scores can look quite different than California LCFS Carbon Intensity scores.

	kg CO2e/Dth
Default Geologic Gas Emissions Factor	66.14

RNG GHG factor, updated for grid mix factors 2025, 2030, and 2035 kg CO2e/Dth	Pilot Lifetime Average	2024-2028 period, using 2025 grid mix	2029-2033 period, using 2030 grid mix	2034-2038 period, using 2035 grid mix
	-30.74	-29.14	-31.42	-31.44

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor: 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

Values now linked directly back to planning assumptions tab (possible given the combination of formerly separate Exhibits P and N into a single file)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5	
Escalation rate	n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)

Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2027 to all users in the Wes

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals.
equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)

Calculations & Other Explanation:

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor	8.22%

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales

Calculations & Other Explanation:

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

		USD Cost Unit:
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth

Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E1999/CI-14-643, utilities may use the value most applicable for the pilot or measure.

Calculations & Other Explanation:

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Direct Job Creation, Size A	0	0	1	1	1	4	10	# of jobs
Net Direct Job Creation, Size B	1	0	11	9	9	31	81	# of jobs
Net Direct Job Creation, Size C	0	0	13	13	12	38	101	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Indirect Job Creation, Size A	0	0	1	1	1	2	6	# of jobs
Net Indirect Job Creation, Size B	1	0	6	6	5	18	44	# of jobs
Net Indirect Job Creation, Size C	0	0	7	7	7	21	54	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Induced Job Creation, Size A	0	0	1	1	1	2	6	# of jobs
Net Induced Job Creation, Size A	1	0	6	6	6	20	50	# of jobs
Net Induced Job Creation, Size A	0	0	8	8	8	24	62	# of jobs

March 15th 2024 Update: Note that Net Job Creation impacts have not been updated with the current changes to this pilot.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year

Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

Calculations & Other Explanation:

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year

The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

Definition:	*It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.*
NGIA Participants' Perspective Notes:	
Definition:	*It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*
NGIA Nonparticipating Customers' Perspective Notes:	
Definition:	*As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*
	Provides widespread benefits to all sales customers
Effects on Other Energy Systems and Energy Security:	
Definition:	*NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.*
	Fuel made in MN and reduces import of fuel from outside of MN
GHG Emissions Notes:	
Definition:	*An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*
Other Pollution Notes:	
Definition:	*Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*
Waste Reduction and Reuse Notes:	
Definition:	*Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.*
	Supports community organics recycling
Policy Notes:	
Definition:	*NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*
	Reduces fossil gas throughput; avoids landfilling; increases use of renewable energy
Net Job Creation Notes:	
Definition:	*An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Economic Development Notes:	
Definition:	*The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*
	Will pay prevailing wages; will seek apprentices; will seek to hire from local community

Public Co-Benefits Notes:

Definition:

There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.

Supports local government waste management

Market Development Notes:

Definition:

The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized

May produce biochar

Direct Innovation Support Notes:

Definition:

This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.

Opportunity for Company to learn about purchasing RNG

Resource Scalability and Role in a Decarbonized System Notes:

Definition:

While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.

Realistic pathways to decarbonization include RNG

ICF

CNP03 - RNG Archetype - Wastewater Resource Recovery Facility

Click here to go back to the list of all pilots

NGIA Pilot Profiles Workbook

DESCRIPTION

Pilot Project Code:	**CNP03**
Pilot Project Name:	*RNG Archetype - Wastewater Resource Recovery Facility*
Customer Class/ Sector:	**C&I & Res**
Low-Income Community Benefit?	**N**
Target Area:	**Territory-wide**
Primary Innovative Resource Category:	**Renewable Natural Gas (RNG)**

Select primary Innovation Category. Others can be listed here:

Pilot Description:

For Pilots 3-6, the "RNG Archetypes", CenterPoint Energy would purchase RNG - including the commodity and environmental attributes - from multiple RNG producers that have developed RNG projects using a variety of feedstocks. CNP may also support RNG project development by directly investing in the biogas upgrading equipment (required to produce pipeline-quality RNG) for a limited number of RNG projects, to reduce developers' required capital. We have developed an estimate of expected carbon intensity for each type of feedstock to inform our analysis of potential GHG reductions from a portfolio of RNG purchases.

Overview of Program/ Implementation Approach:

CenterPoint Energy would likely issue a request for proposals (RFP) from RNG project developers. The RFP process would help CenterPoint Energy to maximize cost-effectiveness by building a portfolio of RNG purchases from a variety of projects and under customized contract terms.

Other Comments / Information:

For the purposes of this analysis, assumes offtake from developer or other entity, not capital investment from CNP.

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

Pilot Year	Year 1	Year 2	Year 3	Year 4	Year 5	
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A		10,000				*Dekatherms of gas purchased as offtake in single year. Incremental units added, annual (not cumulative).*
Participating Units, Size B		50,000				
Participating Units, Size C		300,000				*Note, this represents the annual RNG (Dth/year) that will be purchased through a multi-year agreement (project life defined below) starting in this year.*

Units above are to annual dekatherms of RNG supply (shown only for the year supply contract starts)

Calculations & Other Explanation:

Sizes are placeholder assumptions to show a range of RNG purchase volumes (NGIA rules require at least half of the budget to be for low-carbon fuels, like RNG and Hydrogen).

	Year 1	Year 2	Year 3	Year 4	Year 5	
Cumulative RNG Supply (Dth/year), Size A	-	10,000	10,000	10,000	10,000	408,750
Cumulative RNG Supply (Dth/year), Size B	-	50,000	50,000	50,000	50,000	
Cumulative RNG Supply (Dth/year), Size C	-	300,000	300,000	300,000	300,000	
Assumed Number of GHG Verifications Required, Size A:	0	1	1	1	1	
Assumed Number of GHG Verifications Required, Size B:	0	2	2	2	2	Uncertain how many RNG projects would be needed, conservatively assuming multiple verifications.
Assumed Number of GHG Verifications Required, Size C:	0	3	3	3	3	Uncertain how many RNG projects would be needed, conservatively assuming multiple verifications.

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 12,250	$ 203,742	$ 212,477	$ 215,283	$ 217,974	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ 12,250	$ 889,283	$ 905,402	$ 917,871	$ 929,718	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ 12,250	$ 4,978,490	$ 5,052,429	$ 5,125,297	$ 5,194,372	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 12,250	$ 203,742	$ 212,477	$ 215,283	$ 217,974	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 12,250	$ 889,283	$ 905,402	$ 917,871	$ 929,718	total cost per year	
Fixed O&M Cost, Size C	$ 12,250	$ 4,978,490	$ 5,052,429	$ 5,125,297	$ 5,194,372	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 12,250	$ 203,427	$ 212,477	$ 215,283	$ 217,974	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 12,250	$ 888,801	$ 905,402	$ 917,871	$ 929,718	per year	
Total Project Delivery, Size C	$ 12,250	$ 4,977,657	$ 5,052,429	$ 5,125,297	$ 5,194,372	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 12,250	$ 4,996	$ 12,996	$ 13,386	$ 13,787	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 12,250	$ 7,644	$ 12,996	$ 13,386	$ 13,787	per year	
Internal Project Delivery, Size C	$ 12,250	$ 13,218	$ 12,996	$ 13,386	$ 13,787	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ -	$ 198,431	$ 199,481	$ 201,897	$ 204,186	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ -	$ 881,156	$ 892,405	$ 904,485	$ 915,931	per year	
External Project Delivery, Size C	$ -	$ 4,964,439	$ 5,039,433	$ 5,111,911	$ 5,180,585	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ -	$ 315	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ -	$ 482	$ -	$ -	$ -	per year	
Advertising and Promotions, Size C	$ -	$ 833	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A						per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B						per year	
Allocation of General Portfolio Costs, Size C						per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

UTILITY PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A	$ -	per year	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B	$ -	per year	
Est. Total Revenue Requirement for Capital Projects, Size C	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	#DIV/0!	$ -	#DIV/0!	#DIV/0!	#DIV/0!	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	#DIV/0!	$ -	#DIV/0!	#DIV/0!	#DIV/0!	per participant per year	
Incentives per Participant, Size C	#DIV/0!	$ -	#DIV/0!	#DIV/0!	#DIV/0!	per participant per year	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
RNG Contract Purchase Cost:	$ 21.00	$ 21.00	$ 21.00	$ 21.00	$ 21.00	per Dth (1 Dth = 1 MMBtu)	
Geologic Gas Cost:	$ 5.13	$ 4.86	$ 4.60	$ 4.36	$ 4.13	per Dth	Note - in original Exhibit N these were based on a fixed value for Year 1, but in this combined file they have been linked to the 'Planning Assumptions' from Exhibit P so that commodity price updates are automatically reflected here. This formula also corrects the mistake CenterPoint Energy reported, about using Year 0 commodity costs for RNG Year 1 Commodity costs in the original filing.
Incremental Fuel Cost:	$ 15.87	$ 16.14	$ 16.40	$ 16.64	$ 16.87	per Dth	Basing costs to CNP on the incremental cost, since RNG offtake contracts will reduce the volumes of geologic gas that ne
Incremental Fuel Cost - Average over Contract Life (based on contract start year):	$ 16.63	$ 16.73	$ 16.80	$ 16.85	$ 16.87	per Dth	Assumes Incremental Cost from year 5 is unchanged for remaining years of supply contract.

M-RETS RTC On-going Registration Costs: $0.05 $/Dth, for all Dth produced each year
M-RETS RTC Upfront Registration Costs: $1,500 One time upfront

Project Verification Costs: $35,000 $/year Green-E or other cost for project verification

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A	$ 166	$ 167	$ 168	$ 168	$ 169	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B	$ 166	$ 167	$ 168	$ 168	$ 169	per participant	
Total Pilot Upfront Costs, Size C	$ 166	$ 167	$ 168	$ 168	$ 169	per participant	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Third Party Funding, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Third Party Funding, Size C	$ -	$ -	$ -	$ -	$ -	per participant	

Description of source of external funding:

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note 1: some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant.*
Direct Participant Pilot Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Direct Participant Pilot Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

PARTICIPANT NON-ENERGY COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any increased in costs like equipment operating costs or increased water costs. Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Participant Non-Energy Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any operating savings like water savings.*
Participant Non-Energy Savings, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Savings, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	10	years
Average Lifetime for Savings/Pilot Tech, Size B	10	years
Average Lifetime for Savings/Pilot Tech, Size C	10	years

Calculations & Other Explanation:

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	0	Dth/Participant
Avg. Dth/Participant Saved, Size B	0	Dth/Participant
Avg. Dth/Participant Saved, Size C	0	Dth/Participant

Calculations & Other Explanation:

Changes in natural gas consumption for RNG production are already factored into Carbon Intensity through GREET calculations (avoiding double counting them here).

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	0	kWh/Participant	*Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Non-Gas Fuel Units/Part. Saved, Size B	0	kWh/Participant	
Avg. Non-Gas Fuel Units/Part. Saved, Size C	0	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	0	kWh/Participant	*Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	0	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	0	kWh/Participant	

Calculations & Other Explanation:

Changes in electricity consumption for RNG production are already factored into Carbon Intensity through GREET calculations (avoiding double counting them here).

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5	
Total Annual Dth Saved, Size A	0.00	0.00	0.00	0.00	0.00	Dth
Total Annual Dth Saved, Size B	0.00	0.00	0.00	0.00	0.00	Dth
Total Annual Dth Saved, Size C	0.00	0.00	0.00	0.00	0.00	Dth

Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario: NREL

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from National Renewable Energy Laboratory (NREL) Standard Scenarios. If the renewable natural gas facility is using a higher proportion of carbon free electricity than is available by default from their electric utility, either from on-site generation, by subscribing to a Commission-approved electric utility green

Calculations & Other Explanation:

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity Savings, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	53.11	53.11	53.11	53.11	53.11	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity Savings, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	53.11	53.11	53.11	53.11	53.11	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity Savings, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	53.11	53.11	53.11	53.11	53.11	kg CO2e/participant
High						kg CO2e/participant

Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.

For RNG pilots (where the units of participation are Dth of RNG purchased) the above values represent the lifecycle emission reduction achieved per Dth of RNG purchase (calculated as the difference between the carbon intensity score calculated from GREET for this pilot, vs. the GREET emission factor for geologic natural gas combustion).

Calculations & Other Explanation:

GHG Intensity			
	Size A	**Size B**	**Size C**
	kg CO2e/Dth		
Low Scenario			
Expected Scenario	13	13	13
High Scenario			

These values represent the carbon intensity for this project/archetype, as calculated by ICF using GREET. Some default assumptions from GREET have been updated to better reflect typical expectations for RNG projects in Minnesota (e.g. GHG intensity of electricity supply), use of combined heat and power on-site vs. grid electricity, etc.

Note that carbon intensities will vary by project, and GREET calculations will be required for specific projects as they are chosen (based on assumed project designs, and later updated for actual operating conditions).

Also note that GREET's rules for carbon accounting (which NGIA legislation requires CenterPoint to follow) differ from California's Low-Carbon Fuel Standard (LCFS) in a number of areas, meaning that these scores can look quite different than California LCFS Carbon Intensity scores.

	kg CO2e/Dth
Default Geologic Gas Emissions Factor	66.14

RNG GHG factor, updated for grid mix factors 2025, 2030, and 2035	Pilot Lifetime Average	2024-2028 period, using 2025 grid mix	2029-2033 period, using 2030 grid mix	2034-2038 period, using 2035 grid mix
kg CO2e/Dth	13.03	15.50	11.41	11.29

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor: 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

Values now linked directly back to planning assumptions tab (possible given the combination of formerly separate Exhibits P and N into a single file)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria. Note, to calculate this metric, you can make one cost estimate for year 1 and then use the escalation rate to estimate each

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5	
Escalation rate	n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)

Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2027 to all users in the West

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals.
equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)

Calculations & Other Explanation:

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor	8.22%

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales

Calculations & Other Explanation:

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

		USD Cost Unit:
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth

Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E0999/CI-14-643, utilities may use the value most applicable for the pilot or measure.

Calculations & Other Explanation:

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Direct Job Creation, Size A	0	1	1	1	1	3	5	# of jobs
Net Direct Job Creation, Size B	1	3	3	3	3	13	21	# of jobs
Net Direct Job Creation, Size C	0	17	17	16	16	66	115	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Indirect Job Creation, Size A	0	0	0	0	0	2	2	# of jobs
Net Indirect Job Creation, Size B	0	2	2	2	2	7	11	# of jobs
Net Indirect Job Creation, Size C	0	9	9	9	9	36	62	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Induced Job Creation, Size A	0	0	0	0	0	2	3	# of jobs
Net Induced Job Creation, Size A	0	2	2	2	2	8	13	# of jobs
Net Induced Job Creation, Size A	0	11	10	10	10	41	71	# of jobs

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year

Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year

The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. Methodology is TBD. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below

WATER POLLUTION	Calculations & Other Explanation: door open to quantify

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:	
Definition:	*It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.*
NGIA Participants' Perspective Notes:	
Definition:	*It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*
NGIA Nonparticipating Customers' Perspective Notes:	
Definition:	*As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*
	Provides widespread benefits to all sales customers
Effects on Other Energy Systems and Energy Security:	
Definition:	*NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.*
	Company will give preference to fuel made in MN that will reduce import from outside of MN
GHG Emissions Notes:	
Definition:	*An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*
Other Pollution Notes:	
Definition:	*Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*
Waste Reduction and Reuse Notes:	
Definition:	*Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.*
	wastewater projects make a useful product from waste
Policy Notes:	
Definition:	*NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*
	Reduces fossil gas throughput; increases use of renewable energy

Net Job Creation Notes:

Definition: *An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*

Economic Development Notes:

Definition: *The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*

Public Co-Benefits Notes:

Definition: *There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.*

Pilot would support wastewater treatement, which is often a public and publicly funded service

Market Development Notes:

Definition: *The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized*

Direct Innovation Support Notes:

Definition: *This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.*

Opportunity for Company to learn about purchasing RNG

Resource Scalability and Role in a Decarbonized System Notes:

Definition: *While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.*

Realistic pathways to decarbonization include RNG

ICF

CNP04 - RNG Archetype - Dairy Manure

Click here to go back to the list of all pilots

NGIA Pilot Profiles Workbook

DESCRIPTION

Pilot Project Code:	**CNP04**
Pilot Project Name:	*RNG Archetype - Dairy Manure*
Customer Class/ Sector:	**C&I & Res**
Low-Income Community Benefit?	**N**
Target Area:	**Territory-wide**
Primary Innovative Resource Category:	**Renewable Natural Gas (RNG)**

Select primary Innovation Category. Others can be listed here:

Pilot Description:
For Pilots 3-6, the "RNG Archetypes", CenterPoint Energy would purchase RNG - including the commodity and environmental attributes - from multiple RNG producers that have developed RNG projects using a variety of feedstocks. CNP may also support RNG project development by directly investing in the biogas upgrading equipment (required to produce pipeline-quality RNG) for a limited number of RNG projects, to reduce developers' required capital. We have developed an estimate of expected carbon intensity for each type of feedstock to inform our analysis of potential GHG reductions from a portfolio of RNG purchases.

Overview of Program/ Implementation Approach:
CenterPoint Energy would likely issue a request for proposals (RFP) from RNG project developers. The RFP process would help CenterPoint Energy to maximize cost-effectiveness by building a portfolio of RNG purchases from a variety of projects and under customized contract terms.

Other Comments / Information:

For the purposes of this analysis, assumes offtake from developer or other entity, not capital investment from CNP.

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

Pilot Year	Year 1	Year 2	Year 3	Year 4	Year 5	
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A		10,000				*Dekatherms of gas purchased as offtake in single year. Incremental units added, annual (not cumulative).*
Participating Units, Size B		20,000				
Participating Units, Size C		100,000				*Note, this represents the annual RNG (Dth/year) that will be purchased through a multi-year agreement (project life defined below) starting in this year.*

Units above are to annual dekatherms of RNG supply (shown only for the year supply contract starts)

Calculations & Other Explanation: Sizes are placeholder assumptions to show a range of RNG purchase volumes (NGIA rules require at least half of the budget to be for low-carbon fuels, like RNG and Hydrogen).

	Year 1	Year 2	Year 3	Year 4	Year 5	
Cumulative RNG Supply (Dth/year), Size A	-	10,000	10,000	10,000	10,000	
Cumulative RNG Supply (Dth/year), Size B	-	20,000	20,000	20,000	20,000	
Cumulative RNG Supply (Dth/year), Size C	-	100,000	100,000	100,000	100,000	
Assumed Number of GHG Verifications Required, Size A:	0	1	1	1	1	
Assumed Number of GHG Verifications Required, Size B:	0	2	2	2	2	Uncertain how many RNG projects would be needed, conservatively assuming multiple verifications.
Assumed Number of GHG Verifications Required, Size C:	0	3	3	3	3	Uncertain how many RNG projects would be needed, conservatively assuming multiple verifications.

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 12,250	$ 493,742	$ 502,477	$ 505,283	$ 507,974	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ 12,250	$ 978,613	$ 991,958	$ 997,180	$ 1,002,160	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ 12,250	$ 4,630,497	$ 4,662,807	$ 4,687,356	$ 4,710,649	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 12,250	$ 493,742	$ 502,477	$ 505,283	$ 507,974	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 12,250	$ 978,613	$ 991,958	$ 997,180	$ 1,002,160	total cost per year	
Fixed O&M Cost, Size C	$ 12,250	$ 4,630,497	$ 4,662,807	$ 4,687,356	$ 4,710,649	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 12,250	$ 493,427	$ 502,477	$ 505,283	$ 507,974	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 12,250	$ 978,420	$ 991,958	$ 997,180	$ 1,002,160	per year	
Total Project Delivery, Size C	$ 12,250	$ 4,630,219	$ 4,662,807	$ 4,687,356	$ 4,710,649	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 12,250	$ 4,996	$ 12,996	$ 13,386	$ 13,787	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 12,250	$ 3,058	$ 12,996	$ 13,386	$ 13,787	per year	
Internal Project Delivery, Size C	$ 12,250	$ 4,406	$ 12,996	$ 13,386	$ 13,787	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ -	$ 488,431	$ 489,481	$ 491,897	$ 494,186	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ -	$ 975,363	$ 978,962	$ 983,794	$ 988,372	per year	
External Project Delivery, Size C	$ -	$ 4,625,813	$ 4,649,811	$ 4,673,970	$ 4,696,862	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ -	$ 315	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ -	$ 193	$ -	$ -	$ -	per year	
Advertising and Promotions, Size C	$ -	$ 278	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A						per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B						per year	
Allocation of General Portfolio Costs, Size C						per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:

UTILITY PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A	$ -	per year	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B	$ -	per year	
Est. Total Revenue Requirement for Capital Projects, Size C	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	#DIV/0!	$ -	#DIV/0!	#DIV/0!	#DIV/0!	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	#DIV/0!	$ -	#DIV/0!	#DIV/0!	#DIV/0!	per participant per year	
Incentives per Participant, Size C	#DIV/0!	$ -	#DIV/0!	#DIV/0!	#DIV/0!	per participant per year	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
RNG Contract Purchase Cost:	$ 50.00	$ 50.00	$ 50.00	$ 50.00	$ 50.00	per Dth (1 Dth = 1 MMBtu)	
Geologic Gas Cost:	$ 5.13	$ 4.86	$ 4.60	$ 4.36	$ 4.13	per Dth	Note - in original Exhibit N these were based on a fixed value for Year 1, but in this combined file they have been linked to the 'Planning Assumptions' from Exhibit P so that commodity price updates are automatically reflected here. This formula also corrects the mistake CenterPoint Energy reported, about using Year 0 commodity costs for RNG Year 1 Commodity costs in the original filing.
Incremental Fuel Cost:	$ 44.87	$ 45.14	$ 45.40	$ 45.64	$ 45.87	per Dth	Basing costs to CNP on the incremental cost, since RNG offtake contracts will reduce the volumes of geologic gas that
Incremental Fuel Cost - Average over Contract Life (based on contract start year):	$ 45.63	$ 45.73	$ 45.80	$ 45.85	$ 45.87	per Dth	Assumes Incremental Cost from year 5 is unchanged for remaining years of supply contract.

M-RETS RTC On-going Registration Costs:	$0.05	$/Dth, for all Dth produced each year	
M-RETS RTC Upfront Registration Costs:	$1,500	One time upfront	
Project Verification Costs:	$35,000	$/year	Green-E or other cost for project GHG verification

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A	$ 456	$ 457	$ 458	$ 458	$ 459	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B	$ 456	$ 457	$ 458	$ 458	$ 459	per participant	
Total Pilot Upfront Costs, Size C	$ 456	$ 457	$ 458	$ 458	$ 459	per participant	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Third Party Funding, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Third Party Funding, Size C	$ -	$ -	$ -	$ -	$ -	per participant	

Description of source of external funding:

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note 1: some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant.*
Direct Participant Pilot Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Direct Participant Pilot Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

PARTICIPANT NON-ENERGY COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any increased in costs like equipment operating costs or increased water costs. Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Participant Non-Energy Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any operating savings like water savings.*
Participant Non-Energy Savings, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Savings, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	10	years
Average Lifetime for Savings/Pilot Tech, Size B	10	years
Average Lifetime for Savings/Pilot Tech, Size C	10	years

Calculations & Other Explanation:

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	0	Dth/Participant
Avg. Dth/Participant Saved, Size B	0	Dth/Participant
Avg. Dth/Participant Saved, Size C	0	Dth/Participant

Calculations & Other Explanation: Changes in natural gas consumption for RNG production are already factored into Carbon Intensity through GREET calculations (avoiding double counting them here).

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	0	kWh/Participant	*Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Non-Gas Fuel Units/Part. Saved, Size B	0	kWh/Participant	
Avg. Non-Gas Fuel Units/Part. Saved, Size C	0	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	0	kWh/Participant	*Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	0	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	0	kWh/Participant	

Calculations & Other Explanation: Changes in electricity consumption for RNG production are already factored into Carbon Intensity through GREET calculations (avoiding double counting them here).

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5	
Total Annual Dth Saved, Size A	0.00	0.00	0.00	0.00	0.00	Dth
Total Annual Dth Saved, Size B	0.00	0.00	0.00	0.00	0.00	Dth
Total Annual Dth Saved, Size C	0.00	0.00	0.00	0.00	0.00	Dth

Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario: NREL

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from National Renewable Energy Laboratory (NREL) Standard Scenarios. If the renewable natural gas facility is using a higher proportion of carbon free electricity than is available by default from their electric utility, either from on-site generation, by subscribing to a Commission-approved

Calculations & Other Explanation:

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity Savings, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	98.95	98.95	98.95	98.95	98.95	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity Savings, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	98.95	98.95	98.95	98.95	98.95	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity Savings, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	98.95	98.95	98.95	98.95	98.95	kg CO2e/participant
High						kg CO2e/participant

Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.

For RNG pilots (where the units of participation are Dth of RNG purchased) the above values represent the lifecycle emission reduction achieved per Dth of RNG purchase (calculated as the difference between the carbon intensity score calculated from GREET for this pilot, vs. the GREET emission factor for geologic natural gas combustion).

Calculations & Other Explanation:

GHG Intensity			
	Size A	**Size B**	**Size C**
	kg CO2e/Dth		
Low Scenario			
Expected Scenario	(33)	(33)	(33)
High Scenario			

These values represent the carbon intensity for this project/archetype, as calculated by ICF using GREET. Some default assumptions from GREET have been updated to better reflect typical expectations for RNG projects in Minnesota (e.g. GHG intensity of electricity supply), use of combined heat and power on-site vs. grid electricity, etc.

Note that carbon intensities will vary by project, and GREET calculations will be required for specific projects as they are chosen (based on assumed project designs, and later updated for actual operating conditions).

Also note that GREET's rules for carbon accounting (which NGIA legislation requires CenterPoint to follow) differ from California's Low-Carbon Fuel Standard (LCFS) in a number of areas, meaning that these scores can look quite different than California LCFS Carbon Intensity scores.

	kg CO2e/Dth
Default Geologic Gas Emissions Factor	66.14

RNG GHG factor, updated for grid mix factors 2025, 2030, and 2035	Pilot Lifetime Average	2024-2028 period, using 2025 grid mix	2029-2033 period, using 2030 grid mix	2034-2038 period, using 2035 grid mix
kg CO2e/Dth	-32.81	-27.70	-36.17	-36.41

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor: 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

Values now linked directly back to planning assumptions tab (possible given the combination of formerly separate Exhibits P and N into a single file)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth
Escalation rate	n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)

Calculations & Other Explanation:

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.
Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2027 to all users in the Wes

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh

Calculations & Other Explanation:

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals.
equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor	8.22%

Calculations & Other Explanation:

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

		USD Cost Unit:
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth

Calculations & Other Explanation:

Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E1999/CI-14-643, utilities may use the value most applicable for the pilot or measure.

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Direct Job Creation, Size A	0	1	1	1	1	3	4	# of jobs
Net Direct Job Creation, Size B	0	1	1	1	1	5	8	# of jobs
Net Direct Job Creation, Size C	0	6	6	5	5	22	38	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Indirect Job Creation, Size A	0	2	1	1	1	6	9	# of jobs
Net Indirect Job Creation, Size B	0	3	3	3	3	11	18	# of jobs
Net Indirect Job Creation, Size C	0	13	13	12	12	51	87	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Induced Job Creation, Size A	0	1	1	1	1	3	5	# of jobs

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year

Calculations & Other Explanation:

Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year

Calculations & Other Explanation:

The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

Definition: *It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.*

NGIA Participants' Perspective Notes:

Definition: *It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*

NGIA Nonparticipating Customers' Perspective Notes:	
Definition:	*As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*
	Provides widespread benefits to all sales customers
Effects on Other Energy Systems and Energy Security:	
Definition:	*NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.*
	Company will give preference to fuel made in MN that will reduce import from outside of MN
GHG Emissions Notes:	
Definition:	*An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*
Other Pollution Notes:	
Definition:	*Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*
	Dairy manure projects can have local water quality, odor benefits
Waste Reduction and Reuse Notes:	
Definition:	*Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.*
	dairy projects all make a useful product from waste
Policy Notes:	
Definition:	*NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*
	Reduces fossil gas throughput; increases use of renewable energy
Net Job Creation Notes:	
Definition:	*An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Economic Development Notes:	
Definition:	*The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*
Public Co-Benefits Notes:	
Definition:	*There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.*
Market Development Notes:	
Definition:	*The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized*

Direct Innovation Support Notes:	
Definition:	*This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.*
	Opportunity for Company to learn about purchasing RNG
Resource Scalability and Role in a Decarbonized System Notes:	
Definition:	*While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.*
	Realistic pathways to decarbonization include RNG

ICF

CNP05 - RNG Archetype - Food Waste

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NGIA Pilot Profiles Workbook

DESCRIPTION

Pilot Project Code:	**CNP05**
Pilot Project Name:	*RNG Archetype - Food Waste*
Customer Class/ Sector:	**C&I & Res**
Low-Income Community Benefit?	**N**
Target Area:	**Territory-wide**
Primary Innovative Resource Category:	**Renewable Natural Gas (RNG)**

Select primary Innovation Category. Others can be listed here:

Pilot Description:
For Pilots 3-6, the "RNG Archetypes", CenterPoint Energy would purchase RNG – including the commodity and environmental attributes – from multiple RNG producers that have developed RNG projects using a variety of feedstocks. CNP may also support RNG project development by directly investing in the biogas upgrading equipment (required to produce pipeline-quality RNG) for a limited number of RNG projects, to reduce developers' required capital. We have developed an estimate of expected carbon intensity for each type of feedstock to inform our analysis of potential GHG reductions from a portfolio of RNG purchases.

Overview of Program/ Implementation Approach:
CenterPoint Energy would likely issue a request for proposals (RFP) from RNG project developers. The RFP process would help CenterPoint Energy to maximize cost-effectiveness by building a portfolio of RNG purchases from a variety of projects and under customized contract terms.

Other Comments / Information:

For the purposes of this analysis, assumes offtake from developer or other entity, not capital investment from CNP.

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

Pilot Year	Year 1	Year 2	Year 3	Year 4	Year 5	
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A		10,000				*Dekatherms of gas purchased as offtake in single year. Incremental units added, annual (not cumulative).*
Participating Units, Size B		220,000				
Participating Units, Size C		500,000				*Note, this represents the annual RNG (Dth/year) that will be purchased through a multi-year agreement (project life defined below) starting in this year.*

Units above are to annual dekatherms of RNG supply (shown only for the year supply contract starts)

Calculations & Other Explanation:
Sizes are placeholder assumptions to show a range of RNG purchase volumes (NGIA rules require at least half of the budget to be for low-carbon fuels, like RNG and Hydrogen).

	Year 1	Year 2	Year 3	Year 4	Year 5	
Cumulative RNG Supply (Dth/year), Size A	-	10,000	10,000	10,000	10,000	
Cumulative RNG Supply (Dth/year), Size B	-	220,000	220,000	220,000	220,000	
Cumulative RNG Supply (Dth/year), Size C	-	500,000	500,000	500,000	500,000	
Assumed Number of GHG Verifications Required, Size A:	0	1	1	1	1	
Assumed Number of GHG Verifications Required, Size B:	0	2	2	2	2	Uncertain how many RNG projects would be needed, conservatively assuming multiple verifications.
Assumed Number of GHG Verifications Required, Size C:	0	3	3	3	3	Uncertain how many RNG projects would be needed, conservatively assuming multiple verifications.

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 12,250	$ 233,742	$ 242,477	$ 245,283	$ 247,974	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ 12,250	$ 4,329,744	$ 4,361,580	$ 4,415,121	$ 4,465,883	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ 12,250	$ 9,726,484	$ 9,842,051	$ 9,963,238	$ 10,078,095	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 12,250	$ 233,742	$ 242,477	$ 245,283	$ 247,974	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 12,250	$ 4,329,744	$ 4,361,580	$ 4,415,121	$ 4,465,883	total cost per year	
Fixed O&M Cost, Size C	$ 12,250	$ 9,726,484	$ 9,842,051	$ 9,963,238	$ 10,078,095	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 12,250	$ 233,427	$ 242,477	$ 245,283	$ 247,974	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 12,250	$ 4,327,623	$ 4,361,580	$ 4,415,121	$ 4,465,883	per year	
Total Project Delivery, Size C	$ 12,250	$ 9,725,095	$ 9,842,051	$ 9,963,238	$ 10,078,095	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 12,250	$ 4,996	$ 12,996	$ 13,386	$ 13,787	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 12,250	$ 33,635	$ 12,996	$ 13,386	$ 13,787	per year	
Internal Project Delivery, Size C	$ 12,250	$ 22,031	$ 12,996	$ 13,386	$ 13,787	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ -	$ 228,431	$ 229,481	$ 231,897	$ 234,186	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ -	$ 4,293,988	$ 4,348,584	$ 4,401,735	$ 4,452,095	per year	
External Project Delivery, Size C	$ -	$ 9,703,064	$ 9,829,055	$ 9,949,852	$ 10,064,308	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ -	$ 315	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ -	$ 2,120	$ -	$ -	$ -	per year	
Advertising and Promotions, Size C	$ -	$ 1,389	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A						per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B						per year	

UTILITY PILOT COSTS

Allocation of General Portfolio Costs, Size C						per year	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	
	Total	**USD (Nominal) Cost Unit:**					
Est. Total Revenue Requirement for Capital Projects, Size A	$ -	per year					*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B	$ -	per year					
Est. Total Revenue Requirement for Capital Projects, Size C	$ -	per year					
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
Incentives per Participant, Size A	#DIV/0!	$ -	#DIV/0!	#DIV/0!	#DIV/0!	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	#DIV/0!	$ -	#DIV/0!	#DIV/0!	#DIV/0!	per participant per year	
Incentives per Participant, Size C	#DIV/0!	$ -	#DIV/0!	#DIV/0!	#DIV/0!	per participant per year	

Calculations & Other Explanation:

	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**		
RNG Contract Purchase Cost:	$ 24.00	$ 24.00	$ 24.00	$ 24.00	$ 24.00	per Dth (1 Dth = 1 MMBtu)	
Geologic Gas Cost:	$ 5.13	$ 4.86	$ 4.60	$ 4.36	$ 4.13	per Dth	Note – in original Exhibit N these were based on a fixed value for Year 1, but in this combined file they have been linked to the 'Planning Assumptions' from Exhibit P so that commodity price updates are automatically reflected here. This formula also corrects the mistake CenterPoint Energy reported, about using Year 0 commodity costs for RNG Year 1 Commodity costs in the original filing.
Incremental Fuel Cost:	$ 18.87	$ 19.14	$ 19.40	$ 19.64	$ 19.87	per Dth	Basing costs to CNP on the incremental cost, since RNG offtake contracts will reduce the volumes of geologic gas that ne
Incremental Fuel Cost – Average over Contract Life (based on contract start year):	$ 19.63	$ 19.73	$ 19.80	$ 19.85	$ 19.87	per Dth	Assumes Incremental Cost from year 5 is unchanged for remaining years of supply contract

M-RETS RTC On-going Registration Costs:	$0.05	$/Dth, for all Dth produced each year	
M-RETS RTC Upfront Registration Costs:	$1,500	One time upfront	
Project Verification Costs:	$35,000	$/year	Green-E or other cost for project verification

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
Total Pilot Upfront Costs, Size A	$ 196	$ 197	$ 198	$ 198	$ 199	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B	$ 196	$ 197	$ 198	$ 198	$ 199	per participant	
Total Pilot Upfront Costs, Size C	$ 196	$ 197	$ 198	$ 198	$ 199	per participant	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
Third Party Funding, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Third Party Funding, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Third Party Funding, Size C	$ -	$ -	$ -	$ -	$ -	per participant	
Description of source of external funding:							
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
Direct Participant Pilot Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note 1: some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant.*
Direct Participant Pilot Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Direct Participant Pilot Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant	

Calculations & Other Explanation:

	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
Participant Non-Energy Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any increased in costs like equipment operating costs or increased water costs. Participant Non-Energy Costs will be used in the*

PARTICIPANT NON-ENERGY COSTS

Participant Non-Energy Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*Participant Cost tests for the NGIA evaluation criteria.*
Participant Non-Energy Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any operating savings like water savings.*
Participant Non-Energy Savings, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Savings, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	10	years
Average Lifetime for Savings/Pilot Tech, Size B	10	years
Average Lifetime for Savings/Pilot Tech, Size C	10	years

Calculations & Other Explanation:

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	0	Dth/Participant
Avg. Dth/Participant Saved, Size B	0	Dth/Participant
Avg. Dth/Participant Saved, Size C	0	Dth/Participant

Calculations & Other Explanation: Changes in natural gas consumption for RNG production are already factored into Carbon Intensity through GREET calculations (avoiding double counting them here).

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	0	kWh/Participant	*Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Non-Gas Fuel Units/Part. Saved, Size B	0	kWh/Participant	
Avg. Non-Gas Fuel Units/Part. Saved, Size C	0	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	0	kWh/Participant	*Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	0	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	0	kWh/Participant	

Calculations & Other Explanation: Changes in electricity consumption for RNG production are already factored into Carbon Intensity through GREET calculations (avoiding double counting them here).

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5	
Total Annual Dth Saved, Size A	0.00	0.00	0.00	0.00	0.00	Dth
Total Annual Dth Saved, Size B	0.00	0.00	0.00	0.00	0.00	Dth
Total Annual Dth Saved, Size C	0.00	0.00	0.00	0.00	0.00	Dth

Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario: NREL

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from National Renewable Energy Laboratory (NREL) Standard Scenarios. If the renewable natural gas facility is using a higher proportion of carbon free electricity than is available by default from their electric utility, either from on-site generation, by subscribing to a Commission-approved electric utility green tariff with

Calculations & Other Explanation:

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity Savings, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	115.79	115.79	115.79	115.79	115.79	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity Savings, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	115.79	115.79	115.79	115.79	115.79	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity Savings, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	115.79	115.79	115.79	115.79	115.79	kg CO2e/participant
High						kg CO2e/participant

Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.

For RNG pilots (where the units of participation are Dth of RNG purchased) the above values represent the lifecycle emission reduction achieved per Dth of RNG purchase (calculated as the difference between the carbon intensity score calculated from GREET for this pilot, vs. the GREET emission factor for geologic natural gas combustion).

Calculations & Other Explanation:

GHG Intensity			
	Size A	**Size B**	**Size C**
	kg CO2e/Dth		
Low Scenario			
Expected Scenario	(50)	(50)	(50)
High Scenario			

These values represent the carbon intensity for this project/archetype, as calculated by ICF using GREET. Some default assumptions from GREET have been updated to better reflect typical expectations for RNG projects in Minnesota (e.g. GHG intensity of electricity supply), use of combined heat and power on-site vs. grid electricity, etc.

Note that carbon intensities will vary by project, and GREET calculations will be required for specific projects as they are chosen (based on assumed project designs, and later updated for actual operating conditions).

Also note that GREET's rules for carbon accounting (which NGIA legislation requires CenterPoint to follow) differ from California's Low-Carbon Fuel Standard (LCFS) in a number of areas, meaning that these scores can look quite different than California LCFS Carbon Intensity scores.

	kg CO2e/Dth
Default Geologic Gas Emissions Factor	66.14

		2024-2028 period, using 2025 grid mix	2029-2033 period, using 2030 grid mix	2034-2038 period, using 2035 grid mix
RNG GHG factor, updated for grid mix factors 2025, 2030, and 2035 kg CO2e/Dth	Pilot Lifetime Average	-49.65	-44.30	-53.17	-53.42

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor: 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

Values now linked directly back to planning assumptions tab (possible given the combination of formerly separate Exhibits P and N into a single file)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5	
Escalation rate	n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)
	-0.052499023	-0.052499023	-0.052499023	-0.052499023	-0.052499023	(for each pilot analysis year)

Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2027 to all users in the West North Central Region as estimated in the Energy Information Administration's 2023 Annual Energy Outlook

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals.
equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)

Calculations & Other Explanation:

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor	8.22%

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales

Calculations & Other Explanation:

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

		USD Cost Unit:
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth

Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E1999/CI-14-643, utilities may use the value most applicable for the pilot or measure.

Calculations & Other Explanation:

2024 Gas environmental damage from all criteria pollutants combined	$	0.37	
2022 Gas environmental damage from all criteria pollutants combined	$	0.34	per Dth

The factor is calculated using the median range of the final metropolitan fringe environmental cost values approved by the Minnesota Public Utilities Commission (Commission)27 for carbon dioxide (CO2), sulfur dioxide (SO2), fine particulate matter (PM2.5), carbon monoxide (CO), nitrogen oxides (NOx), and lead (Pb); along with estimated natural gas emission factor (or factors) for each emission provided by the Environmental Protection Agency Source: AP-42, Fifth

Escalation rate from legislation	0.0779	2024 USD
Annual escalation rate	3.82%	

Annual escalation rate calculated as the average of the 12-month percentage change in the "all items" customer price index available from the United States Bureau of Labor Statistics between 2018 and 2022.
https://www.bls.gov/charts/consumer-price-index/consumer-price-index-by-category-line-chart.htm

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Direct Job Creation, Size A	0	1	1	1	1	3	5	# of jobs
Net Direct Job Creation, Size B	3	15	15	15	14	61	100	# of jobs
Net Direct Job Creation, Size C	0	34	32	31	31	129	225	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Indirect Job Creation, Size A	0	0	0	0	0	2	3	# of jobs
Net Indirect Job Creation, Size B	2	9	8	8	8	34	54	# of jobs
Net Indirect Job Creation, Size C	0	18	18	17	17	70	121	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Induced Job Creation, Size A	0	1	0	0	0	2	3	# of jobs
Net Induced Job Creation, Size A	2	9	9	9	9	38	62	# of jobs
Net Induced Job Creation, Size A	0	21	20	20	19	80	139	# of jobs

Calculations & Other Explanation:
Job numbers are estimated as Full Time Equivalents (FTE) and are rounded off.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year

Quantifiable in some cases. For example, when a utility pays a municipality for RNG produced from wastewater treatment but may be qualitative in other situations. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below

Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

Calculations & Other Explanation:

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year

The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. Methodology is TBD. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below

The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.

Definition:

NGIA Participants' Perspective Notes:

Definition: *It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*

NGIA Nonparticipating Customers' Perspective Notes:

Definition: *As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*

Provides widespread benefits to all sales customers

Effects on Other Energy Systems and Energy Security:

Definition: *NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.*

Company will give preference to fuel made in MN that will reduce import from outside of MN

GHG Emissions Notes:

Definition: *An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*

Other Pollution Notes:

Definition: *Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*

Waste Reduction and Reuse Notes:

Definition: *Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.*

Food waste projects can have landfill avoidance benefits; foodwaste projects all make a useful product from waste

Policy Notes:

Definition: *NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*

Reduces fossil gas throughput; increases use of renewable energy

Net Job Creation Notes:

Definition: *An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*

Economic Development Notes:

Definition: *The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*

Public Co-Benefits Notes:

Definition: *There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.*

Market Development Notes:

Definition:

The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized

Direct Innovation Support Notes:

Definition:

This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.

Opportunity for Company to learn about purchasing RNG

Resource Scalability and Role in a Decarbonized System Notes:

Definition:

While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.

Realistic pathways to decarbonization include RNG

ICF

CNP06 - RNG Archetype - Landfill Gas

Click here to go back to the list of all pilots

NGIA Pilot Profiles Workbook

March 15th 2024 Update: The assumed participating units (e.g. volume of RNG to be contracted) from this RNG archetype has been updated to help the overall revised portfolio align with the cost cap and ensure more than 50% of spending is dedicated to low-carbon fuels. Updated input cells ma

DESCRIPTION

Pilot Project Code:	**CNP06**
Pilot Project Name:	*RNG Archetype – Landfill Gas*
Customer Class/ Sector:	**C&I & Res**
Low-Income Community Benefit?	**N**
Target Area:	**Territory-wide**
Primary Innovative Resource Category:	**Renewable Natural Gas (RNG)**

Select primary Innovation Category. Others can be listed here:

Pilot Description:
For Pilots 3-6, the "RNG Archetypes", CenterPoint Energy would purchase RNG - including the commodity and environmental attributes - from multiple RNG producers that have developed RNG projects using a variety of feedstocks. CNP may also support RNG project development by directly investing in the biogas upgrading equipment (required to produce pipeline-quality RNG) for a limited number of RNG projects, to reduce developers' required capital. We have developed an estimate of expected carbon intensity for each type of feedstock to inform our analysis of potential GHG reductions from a portfolio of RNG purchases.

Overview of Program/ Implementation Approach:
CenterPoint Energy would likely issue a request for proposals (RFP) from RNG project developers. The RFP process would help CenterPoint Energy to maximize cost-effectiveness by building a portfolio of RNG purchases from a variety of projects and under customized contract terms.

Other Comments / Information:

For the purposes of this analysis, assumes offtake from developer or other entity, not capital investment from CNP.

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

Pilot Year	Year 1	Year 2	Year 3	Year 4	Year 5	
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A		128,750				*Dekatherms of gas purchased as offtake in single year. Incremental units added, annual (not cumulative).*
Participating Units, Size B		228,750				
Participating Units, Size C		900,000				*Note, this represents the annual RNG (Dth/year) that will be purchased through a multi-year agreement (project life defined below) starting in this year.*

Units above are to annual dekatherms of RNG supply (shown only for the year supply contract starts)

Calculations & Other Explanation: Sizes are placeholder assumptions to show a range of RNG purchase volumes (NGIA rules require at least half of the budget to be for low-carbon fuels, like RNG and Hydrogen).

	Year 1	Year 2	Year 3	Year 4	Year 5	
Cumulative RNG Supply (Dth/year), Size A	-	128,750	128,750	128,750	128,750	
Cumulative RNG Supply (Dth/year), Size B	-	228,750	228,750	228,750	228,750	
Cumulative RNG Supply (Dth/year), Size C	-	900,000	900,000	900,000	900,000	
Assumed Number of GHG Verifications Required, Size A:	0	1	1	1	1	
Assumed Number of GHG Verifications Required, Size B:	0	2	2	2	2	Uncertain how many RNG projects would be needed, conservatively assuming multiple verifications.
Assumed Number of GHG Verifications Required, Size C:	0	3	3	3	3	Uncertain how many RNG projects would be needed, conservatively assuming multiple verifications.

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 12,250	$ 1,545,993	$ 1,521,940	$ 1,553,435	$ 1,583,309	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ 12,250	$ 2,669,106	$ 2,701,751	$ 2,757,406	$ 2,810,171	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ 12,250	$ 10,222,471	$ 10,421,295	$ 10,639,120	$ 10,845,542	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 12,250	$ 1,545,993	$ 1,521,940	$ 1,553,435	$ 1,583,309	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 12,250	$ 2,669,106	$ 2,701,751	$ 2,757,406	$ 2,810,171	total cost per year	
Fixed O&M Cost, Size C	$ 12,250	$ 10,222,471	$ 10,421,295	$ 10,639,120	$ 10,845,542	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 12,250	$ 1,541,938	$ 1,521,940	$ 1,553,435	$ 1,583,309	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 12,250	$ 2,666,901	$ 2,701,751	$ 2,757,406	$ 2,810,171	per year	
Total Project Delivery, Size C	$ 12,250	$ 10,219,971	$ 10,421,295	$ 10,639,120	$ 10,845,542	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 12,250	$ 64,322	$ 12,996	$ 13,386	$ 13,787	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 12,250	$ 34,973	$ 12,996	$ 13,386	$ 13,787	per year	
Internal Project Delivery, Size C	$ 12,250	$ 39,655	$ 12,996	$ 13,386	$ 13,787	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ -	$ 1,477,615	$ 1,508,944	$ 1,540,049	$ 1,569,522	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ -	$ 2,631,928	$ 2,688,755	$ 2,744,020	$ 2,796,383	per year	
External Project Delivery, Size C	$ -	$ 10,180,316	$ 10,408,299	$ 10,625,734	$ 10,831,754	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ -	$ 4,055	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ -	$ 2,205	$ -	$ -	$ -	per year	
Advertising and Promotions, Size C	$ -	$ 2,500	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A						per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B						per year	
Allocation of General Portfolio Costs, Size C						per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

UTILITY PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A	$ -	per year	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B	$ -	per year	
Est. Total Revenue Requirement for Capital Projects, Size C	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	#DIV/0!	$ -	#DIV/0!	#DIV/0!	#DIV/0!	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	#DIV/0!	$ -	#DIV/0!	#DIV/0!	#DIV/0!	per participant per year	
Incentives per Participant, Size C	#DIV/0!	$ -	#DIV/0!	#DIV/0!	#DIV/0!	per participant per year	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
RNG Contract Purchase Cost:	$ 16.00	$ 16.00	$ 16.00	$ 16.00	$ 16.00	per Dth (1 Dth = 1 MMBtu)	
Geologic Gas Cost:	$ 5.13	$ 4.86	$ 4.60	$ 4.36	$ 4.13	per Dth	Note - in original Exhibit N these were based on a fixed value for Year 1, but in this combined file they have been linked to the 'Planning Assumptions' from Exhibit P so that commodity price updates are automatically reflected here. This formula also corrects the mistake CenterPoint Energy reported, about using Year 0 commodity costs for RNG Year 1 Commodity costs in the original filing.
Incremental Fuel Cost:	$ 10.87	$ 11.14	$ 11.40	$ 11.64	$ 11.87	per Dth	Basing costs to CNP on the incremental cost, since RNG offtake contracts will reduce the volumes of geologic gas that
Incremental Fuel Cost - Average over Contract Life (based on contract start year):	$ 11.63	$ 11.73	$ 11.80	$ 11.85	$ 11.87	per Dth	Assumes Incremental Cost from year 5 is unchanged for remaining years of supply contract.

M-RETS RTC On-going Registration Costs:	$0.05	$/Dth, for all Dth produced each year
M-RETS RTC Upfront Registration Costs:	$1,500	One time upfront
Project Verification Costs:	$35,000	$/year — Green-E or other cost for project verification

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A	$ 116	$ 117	$ 118	$ 118	$ 119	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B	$ 116	$ 117	$ 118	$ 118	$ 119	per participant	
Total Pilot Upfront Costs, Size C	$ 116	$ 117	$ 118	$ 118	$ 119	per participant	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*If there are expectations for external funding sources (e.g. IRA, etc.) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Third Party Funding, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Third Party Funding, Size C	$ -	$ -	$ -	$ -	$ -	per participant	
Description of source of external funding:							

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note t some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant.*
Direct Participant Pilot Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Direct Participant Pilot Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

PARTICIPANT NON-ENERGY COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any increased in costs like equipment operating costs or increased water costs. Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Participant Non-Energy Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any operating savings like water savings.*
Participant Non-Energy Savings, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Savings, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	10	years
Average Lifetime for Savings/Pilot Tech, Size B	10	years
Average Lifetime for Savings/Pilot Tech, Size C	10	years

Calculations & Other Explanation:

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	0	Dth/Participant
Avg. Dth/Participant Saved, Size B	0	Dth/Participant
Avg. Dth/Participant Saved, Size C	0	Dth/Participant

Calculations & Other Explanation:

Changes in natural gas consumption for RNG production are already factored into Carbon Intensity through GREET calculations (avoiding double counting them here).

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	0	kWh/Participant	*Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Non-Gas Fuel Units/Part. Saved, Size B	0	kWh/Participant	
Avg. Non-Gas Fuel Units/Part. Saved, Size C	0	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	0	kWh/Participant	*Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	0	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	0	kWh/Participant	

Calculations & Other Explanation:

Changes in electricity consumption for RNG production are already factored into Carbon Intensity through GREET calculations (avoiding double counting them here).

GRID MIX SCENARIO

Grid Mix Scenario: NREL

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from National Renewable Energy Laboratory (NREL) Standard Scenarios. If the renewable natural gas facility is using a higher proportion of carbon-free electricity than is available by default from their electric utility, either from on-site generation, by subscribing to a Commission-approved

Calculations & Other Explanation:

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity Savings, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	53.35	53.35	53.35	53.35	53.35	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity Savings, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	53.35	53.35	53.35	53.35	53.35	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity Savings, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	53.35	53.35	53.35	53.35	53.35	kg CO2e/participant
High						kg CO2e/participant

Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.

For RNG pilots (where the units of participation are Dth of RNG purchased) the above values represent the lifecycle emission reduction achieved per Dth of RNG purchase (calculated as the difference between the carbon intensity score calculated from GREET for this pilot, vs. the GREET emission factor for geologic natural gas combustion).

Calculations & Other Explanation:

GHG Intensity

	Size A	Size B	Size C
	kg CO2e/Dth		
Low Scenario			
Expected Scenario	13	13	13
High Scenario			

These values represent the carbon intensity for this project/archetype, as calculated by ICF using GREET. Some default assumptions from GREET have been updated to better reflect typical expectations for RNG projects in Minnesota (e.g. GHG intensity of electricity supply), use of combined heat and power on-site vs. grid electricity, etc.

Note that carbon intensities will vary by project, and GREET calculations will be required for specific projects as they are chosen (based on assumed project designs, and later updated for actual operating conditions).

Also note that GREET's rules for carbon accounting (which NGIA legislation requires CenterPoint to follow) differ from California's Low-Carbon Fuel Standard (LCFS) in a number of areas, meaning that these scores can look quite different than California LCFS Carbon Intensity scores.

	kg CO2e/Dth
Default Geologic Gas Emissions Factor	66.14

RNG GHG factor, updated for grid mix factors 2025, 2030, and 2035	Pilot Lifetime Average	2024-2028 period, using 2025 grid mix	2029-2033 period, using 2030 grid mix	2034-2038 period, using 2035 grid mix
kg CO2e/Dth	12.79	15.18	11.22	11.11

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor: 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

Values now linked directly back to planning assumptions tab (possible given the combination of formerly separate Exhibits P and N into a single file)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5	
Escalation rate	n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)

Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2027 to all users in the Wes

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:	
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh	*The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)*

Calculations & Other Explanation:

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor	8.22%	*The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017–2019 average retail sales*

Calculations & Other Explanation:

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

		USD Cost Unit:	
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth	*Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E0999/CI-14-643, utilities may use the value most applicable for the pilot or measure.*
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth	
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth	

Calculations & Other Explanation:

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life		
Net Direct Job Creation, Size A	1	4	4	4	4	18	27	# of jobs	*Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Net Direct Job Creation, Size B	0	17	17	17	17	69	120	# of jobs	
Net Direct Job Creation, Size C	0	35	34	34	33	136	240	# of jobs	

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life		
Net Indirect Job Creation, Size A	0	2	2	2	2	9	15	# of jobs	*Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Net Indirect Job Creation, Size B	0	9	9	9	9	37	65	# of jobs	
Net Indirect Job Creation, Size C	0	19	18	18	18	73	130	# of jobs	

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Induced Job Creation, Size A	0	3	2	2	2	10	18	# of jobs
Net Induced Job Creation, Size A	0	11	11	10	10	42	75	# of jobs
Net Induced Job Creation, Size A	0	21	21	20	21	84	148	# of jobs

March 15th 2024 Update: Note that Net Job Creation impacts have not been updated with the current changes to this pilot.

Calculations & Other Explanation:
Job numbers are estimated as Full Time Equivalents (FTE) and are rounded off.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year	*Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year	*The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

Definition: *It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.*

NGIA Participants' Perspective Notes:

Definition: *It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*

NGIA Nonparticipating Customers' Perspective Notes:	
Definition:	*As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*
	Provides widespread benefits to all sales customers
Effects on Other Energy Systems and Energy Security:	
Definition:	*NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.*
	Company will give preference to fuel made in MN that will reduce import from outside of MN
GHG Emissions Notes:	
Definition:	*An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*
Other Pollution Notes:	
Definition:	*Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*
Waste Reduction and Reuse Notes:	
Definition:	*Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.*
Policy Notes:	
Definition:	*NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*
	Reduces fossil gas throughput
Net Job Creation Notes:	
Definition:	*An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Economic Development Notes:	
Definition:	*The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*
Public Co-Benefits Notes:	
Definition:	*There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.*
Market Development Notes:	
Definition:	*The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized*

Direct Innovation Support Notes:	
Definition:	*This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.*
	Opportunity for Company to learn about purchasing RNG
Resource Scalability and Role in a Decarbonized System Notes:	
Definition:	*While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.*
	Realistic pathways to decarbonization include RNG

ICF

CNP07 - Green Hydrogen Blending into Natural Gas Distribution System

Click here to go back to the list of all pilots

NGIA Pilot Profiles Workbook

March 15th 2024 Update: The pilot cost assumptions have been updated to factor in a conservative expectation of the IRA's PTC funding, in place of the ITC, based on draft guidance for the PTC.

DESCRIPTION

Pilot Project Code:	**CNP07**
Pilot Project Name:	*Green Hydrogen Blending into Natural Gas Distribution System*
Customer Class/ Sector:	**C&I & Res**
Low-Income Community Benefit?	**N**
Target Area:	**Territory-wide**
Primary Innovative Resource Category:	**Power-to-Hydrogen**

Select primary Innovation Category. Others can be listed here:

Pilot Description:
CenterPoint Energy proposes to own and operate a 1 megawatt ("MW") green hydrogen plant at an existing Company facility in Mankato, Minnesota.

Overview of Program/ Implementation Approach:
CenterPoint Energy would own all components of installed system, including electrolyzer and PV systems. Estimated timeline for system design, planning and installation would be approximately 2 years. This represents a next phase in CenterPoint Energy's hydrogen production work, gaining experience using dedicated renewables to produce hydrogen and in turn drive down the costs of the blending projects.

Other Comments / Information:
Size A assumes no grid electricity used to supplement dedicated solar power input.
Size B assumes grid electricity to power the electrolyzer when solar PV is not generating power.
May still add a pilot size C to test using battery storage with increased solar PV capacity - which would allow running the electrolyzer at higher capacity factor than Size A (without, or with less grid electricity purchases).
Some important details on IRA funding, and whether or not grid electricity can be used, have not been finalized.

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

Pilot Year	Year 1	Year 2	Year 3	Year 4	Year 5	
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A	0	0	1	0	0	*incremental units added, annual (not cumulative).*
Participating Units, Size B	0	0	1	0	0	
Participating Units, Size C	0	0	0	0	0	

Unit of Participation = **Capacity of Electrolyzer (MW)**

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5
Cumulative Electrolyzer Capacity Installed (MW), Size A	-	-	1	1	1
Cumulative Electrolyzer Capacity Installed (MW), Size B	-	-	1	1	1
Cumulative Electrolyzer Capacity Installed (MW), Size A	-	-	-	-	-

Note:
Size A assumes no grid electricity used to supplement dedicated solar power input.
Size B assumes grid electricity to power the electrolyzer when solar PV is not generating power.

UTILITY PILOT

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 49,800	$ 150,094	$ 599,157	$ 792,765	$ 746,583	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ 49,800	$ 150,094	$ 1,337,378	$ 1,342,564	$ 1,673,226	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ -	$ -	$ -	$ -	$ -	total cost per year	
	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 49,800	$ 150,094	$ 139,916	$ 61,622	$ 61,943	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 49,800	$ 150,094	$ 878,137	$ 611,420	$ 988,587	total cost per year	
Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	total cost per year	
	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 49,800	$ 150,094	$ 186,897	$ 155,709	$ 156,030	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 49,800	$ 150,094	$ 187,955	$ 156,767	$ 157,088	per year	
Total Project Delivery, Size C	$ -	$ -	$ -	$ -	$ -	per year	
	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	
Internal Project Delivery, Size C	$ -	$ -	$ -	$ -	$ -	per year	
	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ 40,000	$ 140,000	$ 176,500	$ 145,000	$ 145,000	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ 40,000	$ 140,000	$ 177,558	$ 146,058	$ 146,058	per year	
External Project Delivery, Size C	$ -	$ -	$ -	$ -	$ -	per year	

March 15th Update: Updated costs above factor in new annual verification costs

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Advertising and Promotions, Size C	$ -	$ -	$ -	$ -	$ -	per year	
	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A	$ -	$ -	$ -	$ -	$ -	per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Allocation of General Portfolio Costs, Size C	$ -	$ -	$ -	$ -	$ -	per year	
	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	
	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ (46,981)	$ (94,087)	$ (94,087)	per year	Increased electricity costs for renewable power purchases for the electrolyzer and increased water costs. Electricity costs were included directly here because they expect to use a green tarif program to procur renewable electricity, while the default areas to enter increased electricity consumption below would automatically apply higher GHG emission factors for power generation.
Other Fixed O&M Cost, Size B	$ -	$ -	$ 690,182	$ 454,653	$ 831,499	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

March 15th Update: Updated costs above factor in expected revenue from PTC.

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total utility capital investment, Size A	$ -	$ -	$ 4,340,000	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
Total utility capital investment, Size B	$ -	$ -	$ 4,340,000	$ -	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	

March 15th Update: Updated costs above factor in updated capital investments using PTC for hydrogen investments (upfront capital investment only reduced by ITC for solar PV)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ 459,241	$ 731,143	$ 684,640	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ 459,241	$ 731,143	$ 684,640	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	

March 15th Update: Updated annual revenue requirement factors in updated capital investments using PTC for hydrogen investments (upfront capital investment only reduced by ITC for solar PV)

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A	$ 8,172,579	total cost	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B	$ 8,172,579	total cost	
Est. Total Revenue Requirement for Capital Projects, Size C	$ -	total cost	

March 15th Update: Updated total revenue requirement factors in updated capital investments using PTC for hydrogen investments (upfront capital investment only reduced by ITC for solar PV)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	#DIV/0!	#DIV/0!	$ -	#DIV/0!	#DIV/0!	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	#DIV/0!	#DIV/0!	$ -	#DIV/0!	#DIV/0!	per participant per year	
Incentives per Participant, Size C	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	per participant per year	

Calculations & Other Explanation:

Capitals costs for electrolyzer (1 MW) and Solar PV: $ 5,000,000

External Delivery O&M Estimate Detail - 1MW Electrolyzer	Year 1	Year 2	Year 3	Year 4	Year 5	Remaing Years of Equipment Life	
Technical Support:	$40,000	$40,000	$40,000	$10,000	$10,000	$0	
Contract Labor:	$0	$50,000	$50,000	$50,000	$50,000	$50,000	
Materials/Parts:	$0	$25,000	$25,000	$25,000	$25,000	$25,000	
Utilities:	$0	$25,000	$25,000	$25,000	$25,000	$25,000	Electricity purchased here to be from renewable sources, acquired through green tariff program.
Formal M&V:	$0	$0	$0	$0	$0	$0	

M-RETS Generator Registration Fee (One Time, year of installation): $1,500
M-RETS RTC Registration Costs: $0.05 $/Dth
M&V - Total Cost for Whole Pilot: N/A
Project Verification Costs: $35,000 $/year

March 15th Update: The PTC will require annual verification of project GHG intensity (through GREET) so annual project verification costs have been added to this pilot, but the total pilot M&V has been removed.
Green-E or other cost for project verification

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A			$ 8,172,579			per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B			$ 8,172,579			per participant	
Total Pilot Upfront Costs, Size C						per participant	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A	$ -	$ -	$ 707,106	$ 94,211	$ 94,211	per participant	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Third Party Funding, Size B	$ -	$ -	$ 895,528	$ 471,057	$ 94,211	per participant	
Third Party Funding, Size C	$ -	$ -	$ -	$ -	$ -	per participant	

Description of source of external funding: IRA's ITC tax credit, taken as 30% of upfront capital costs (for both solar and electrolyzer)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note t some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant.*
Direct Participant Pilot Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Direct Participant Pilot Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

IRA max credit value as $3/kg H2 feasible when the hydrogen production carbon intensity is lower than 0.45kg CO2e/kg H2 which would be the case for this on-site solar PV generation for the electrolyzers. For max credit, also need to meet certain labor requirements on t

Funding from IRA: $ 3.00 /kg H2 (assumes max credit)
ITC Rebate level: 30%

March 15th Update: Still using ITC for solar PV, but instead using IRA's $3/kg PTC for the hydrogen production portion of project.
IRA rules on PTC treatment are still a draft proposal, and there are some areas of uncertainty final rules will need to clear up. But rules would seem to allow (if some conditions are met) for green tarif electricity to be counted t
However draft PTC regulations require hourly matching of renewable generation to hydrogen production starting in 2028. To be conservative, only PTC credits on the portion of electricity from on-site solar has been assumed
Note that NGIA Frameworks Order: "Utilities may assume that hydrogen produced using carbon-free electricity has no greenhouse gas emissions associated with its production but may have greenhouse gas emissions associ

		ITC (Using this for both Size A and B)		PTC Funding		
				2026	2027	2028
Solar PV Capital Investment:	$2,200,000	$660,000	**Pilot Size A:**	$ 47,106	$ 94,211	$ 94,211
Rest of Hydrogen Investment:	$2,800,000	$0	**Pilot Size B:**	$ 235,528	$ 471,057	$ 94,211

PARTICIPANT NON-ENERGY COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any increased in costs like equipment operating costs or increased water costs. **No costs were included here, because this is a utility owned pilot, so costs were instead entered into the utility budget directly (in rows 107-109).** Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Participant Non-Energy Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

Water consumption (kg water/kg H2): 10
Water cost $/metric ton of water: $0.40

Price of Renewable Electricity Purchases (total): $0.129 $/kWh

20-year (2025-2044) average electricity retail price ($/kWh for C&I in MN): $ 0.12 $/kWh *(base electricity price)*

Incremental Electricity cost for renewable electricity via Windsource (estimated net charge): $ 0.0065 $/kWh *(used here because carbon-free power must be purchased for power to hydrogen pilots under Frameworks Order)*

Xcel Energy's Windsource subscriptions are available in 100 kilowatt-hour (kWh) blocks.
The Windsource charge includes a per block charge of $3.53, less a credit for fuel costs. For Commercial and industrial demand customers, the average net charge in 2021 was $0.65 per block. Actual costs will vary based on usage and monthly fuel credit variations.
This cost is in addition to your current electric charges. If your electricity use is less than your Windsource commitment in a given month, you will be charged only for what you use.

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any operating savings like water savings.*
Participant Non-Energy Savings, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Savings, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	20	years
Average Lifetime for Savings/Pilot Tech, Size B	20	years
Average Lifetime for Savings/Pilot Tech, Size C	20	years

Calculations & Other Explanation:

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	4,232	Dth/Participant
Avg. Dth/Participant Saved, Size B	21,160	Dth/Participant
Avg. Dth/Participant Saved, Size C	-	Dth/Participant

Calculations & Other Explanation:

Assumes that all H2 produced is blended into gas distribution system displacing natural gas use by CenterPoint customers.

	Electrolyzer Size (MW)	Installed Solar PV Capacity (MW)	Solar Capacity Factor (%)	Annual Solar Generation (MWh)	Additional green electricity purchases from grid (MWh)	Total electricity for Electrolyzers (MWh)	Annual Hydrogen Production (kg H2))	Annual Hydrogen Production (MMBtu)	Balance of Plant (BOP) Elecicity Consumption (KWh)
Size A	1	1	19%	1,664	-	1,664	31,404	4,232	125,615
Size B	1	1	19%	1,664	6,658	8,322	157,019	21,160	628,075

		Target Electrolyzer Capacity Factor with Grid Purchases:	95%
Electricity consumption electrolyzer:	53	kWh/kg H2	
Electricity consumption BOP:	4	kWh/kg H2	Source: CenterPoint Experience
Heat content per Kg of H2 (HHV)	0.1348	MMBTU/kg	

Additional annual electricity consumption for pilot B vs. A (kWh):	7,160,060
	63,481

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	0.00	kWh/Participant
Avg. Non-Gas Fuel Units/Part. Saved, Size B	0.00	kWh/Participant
Avg. Non-Gas Fuel Units/Part. Saved, Size C	0.00	kWh/Participant

Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.

Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	-	kWh/Participant
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	-	kWh/Participant
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	-	kWh/Participant

Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

Additional electricity usage is reflected in costs above so as to not over-count emissions.

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5	
Total Annual Dth Saved, Size A	-	-	4,232	-	-	Dth
Total Annual Dth Saved, Size B	-	-	21,160	-	-	Dth
Total Annual Dth Saved, Size C	-	-	-	-	-	Dth

Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario

NREL
Not leveraged for GHG evaluation, which

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from National

Calculations & Other Explanation:

From Frameworks Order: "Carbon-free electricity includes dedicated carbon-free generation, electricity purchased pursuant to a Commission approved green-tariff program, and, for approval on a case-by-case basis, other carbon-free generation supported by a demonstration that the greenhouse gas intensity of the connected electric grid is not adversely impacted."

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity, Size A

Year 1	Year 2	Year 3	Year 4	Year 5

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.

Lifecycle GHG Intensity, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Calculations & Other Explanation:

GHG Intensity			
	Size A	Size B	Size C
	kg CO2e/Dth		
Low Scenario			
Expected Scenario	-	-	-
High Scenario			

Using this calculation structure is optional; if modifications are needed, please use the hidden rows or raise with project leads.

	kg CO2e/Dth
Default Geologic Gas Emissions Factor	66.14

From Frameworks Order: "Utilities may assume that hydrogen produced using carbon-free electricity has no greenhouse gas emissions associated with its production but may have greenhouse gas emissions associated with electricity used for compression, transportation, blending, injection, purification and pumping of water, or other purposes."
NG Dth/year savings profiled will already be calculating GHG savings based on 66.14 factor.

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

Values now linked directly back to planning assumptions tab (possible given the combination of formerly separate Exhibits P and N into a single file)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

Year 1	Year 2	Year 3	Year 4	Year 5	
n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)

Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2027 to all users in the Wes

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals.
equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)

Calculations & Other Explanation:

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor 8.22%

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales

Calculations & Other Explanation:

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

		USD Cost Unit:
Other Non-GHG Pollutants, Size A	$ (0.004)	per Dth
Other Non-GHG Pollutants, Size B	$ (0.004)	per Dth
Other Non-GHG Pollutants, Size C	$ (0.004)	per Dth

This is a net cost savings per Dth of natural gas saved. In addition to the 'other non-GHG pollutant' cost savings from reduced combustion of natural gas, which is calculated with in line with the CIP methodology, this pilot accounts for increased NOx emissions from the combustion of Hydrogen in place of natural gas. The valuation of NOx emissions comes from the same source, and the level of NOx emissions come from GREET. The negative net savings shown here reflects slightly higher cost increases from NOx combustion than the savings achieved (from multiple types of emissions) from reduced gas combustion. The natural gas factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E1999/CI-14-643, utilities may use the value most applicable for the pilot or measure.

Calculations & Other Explanation:

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Direct Job Creation, Size A	0	1	4	1	1	7	10	# of jobs
Net Direct Job Creation, Size B	1	1	6	2	2	12	31	# of jobs
Net Direct Job Creation, Size C								# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Indirect Job Creation, Size A	0	0	3	0	0	3	5	# of jobs
Net Indirect Job Creation, Size B	0	0	6	3	3	12	47	# of jobs
Net Indirect Job Creation, Size C								# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Induced Job Creation, Size A	0	0	4	0	0	4	5	# of jobs
Net Induced Job Creation, Size A	0	0	5	2	2	9	36	# of jobs
Net Induced Job Creation, Size A								# of jobs

March 15th 2024 Update: Note that Net Job Creation impacts have not been updated with the current changes to this pilot.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year	*Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year	*The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

Definition: *It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.*

NGIA Participants' Perspective Notes:

Definition: *It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*

NGIA Nonparticipating Customers' Perspective Notes:

Definition: *As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*

Provides widespread benefits to all sales customers

Effects on Other Energy Systems and Energy Security:

Definition: *NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.*

Fuel made in MN and reduces import of fuel from outside of MN; hydrogen may place burden on electric grid

GHG Emissions Notes:

Definition: *An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*

Other Pollution Notes:

Definition: *Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*

Waste Reduction and Reuse Notes:

Definition: *Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.*

Policy Notes:

Definition:	*NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*
	Reduces fossil gas throughput; increases use of renewable energy
Net Job Creation Notes:	
Definition:	*An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
	This type of project can creates high-wage jobs during construction and also long-term employment options for high-skill, displaced workers from traditional energy industries (as the skillset from the coal, oil, gas, and petrochemical segments transfers directly to green H2production).
Economic Development Notes:	
Definition:	*The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*
	Will pay prevailing wages; will seek apprentices; will seek to hire from local community; will take advantage of higher IRA credits due to labor practices; hydrogen projects represent clean energy opportunity for workers from traditional fossil fuel jobs; will help MN build hydrogen workforce as hydrogen poised for growth due to IRA
Public Co-Benefits Notes:	
Definition:	*There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.*
Market Development Notes:	
Definition:	*The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized*
Direct Innovation Support Notes:	
Definition:	*This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.*
	Opportunity for Company to learn about hydrogen blending, storage, and use of solar
Resource Scalability and Role in a Decarbonized System Notes:	
Definition:	*While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.*
	Hydrogen poised to become more affordable and scalable as a result of IRA

ICF

CNP08 - Green Hydrogen Archetype for Industrial or Large Commercial Facility

Click here to go back to the list of all pilots

NGIA Pilot Profiles Workbook

DESCRIPTION

Pilot Project Code:	**CNP08**
Pilot Project Name:	*Green Hydrogen Archetype for Industrial or Large Commercial Facility*
Customer Class/ Sector:	**C&I**
Low-Income Community Benefit?	**N**
Target Area:	**Territory-wide**
Primary Innovative Resource Category:	**Power-to-Hydrogen**

Select primary Innovation Category. Others can be listed here:

Pilot Description:
CenterPoint Energy would offer incentives covering a portion (100%, up to a max of $1.5 million) of the equipment and installation costs of green hydrogen production systems (electrolyzers) for on-site use by industrial or large commercial customers, displacing natural gas use by these facilities. These systems would be installed onsite for 1-3 customers, who would own and operate the systems. CenterPoint has not yet identified specific customers for the projects, so a 5 MW 'archetype' was chosen to assess to the pilot for the time being, considering that a number of existing customers should be large enough for that size of electrolyzer (some could be higher).

Overview of Program/ Implementation Approach:
The projects would be expected to purchase renewable electricity from grid to supply the electrolyzers, and so even with potential IRA incentives and the upfront funding from CenterPoint Energy, participants in this pilot would be committing to a considerable cost increase in their electricity supply in order to decarbonize (part of) their heating load. Some additional programmatic support to identify potential sites and assist with feasibility studies for the projects is also envisioned. CenterPoint Energy would create a measurement and verification plan to monitor system performance for a period of time following installation.

Other Comments / Information:
Possible that some participants could be larger or smaller than the electrolyzer size below.

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

Pilot Year	Year 1	Year 2	Year 3	Year 4	Year 5	
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A	0	0	1	0	0	*Incremental units added, annual (not cumulative).*
Participating Units, Size B	0	0	1	1	0	
Participating Units, Size C	0	0	1	1	1	

Unit of Participation = Industrial facilities installing 5MW electrolyzer

Calculations & Other Explanation:
Assumes all H2 production onsite from electrolyzers, PEM electrolysis, contracted carbon free electricity rather than onsite generation

Single Unit: Small PEM Electrolysis

5,000	**kW electricity input**
53	**Electricity consumption electrolyzer kWh/ kg H2**
8	**Electricity consumption BOP kWh/kg H2**
61	**Total Electricity consumption kWh/kg H2**
95	**Capacity kg H2 output/ hour**
13	**Capacity MMBtu H2 output HHV/ hour**
38%	**Annual capacity utilization for electrolyzer**
315,973	**Output kg/year**
42,581	**Output MMBtu HHV/year (for one electrolyzer)**

Balance of Plant electricity includes pumps, other electricity needed for hydrogen production:

This relates to industrial facility site's NG firing rate (facility scale); how much NG are you trying to displace w/ H2:

By way of comparison, the AEO Reference Case annual capacity utilization rates for solar averages 23.5% and wind averages 37.4% in 2050. Combining solar & wind would increase these CUs.

Size A	1 electrolyzer customer (total for 5 year plan)
Size B	2 electrolyzer customers (total for 5 year plan)
Size C	3 electrolyzer customers (total for 5 year plan)

134,762 Btu/kg H2, HHV

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 148,500	$ 21,630	$ 1,555,908	$ 12,838	$ 63,159	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ 148,500	$ 24,130	$ 1,555,908	$ 1,558,705	$ 115,288	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ 148,500	$ 24,130	$ 1,557,158	$ 1,561,205	$ 1,711,523	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 148,500	$ 21,630	$ 25,908	$ 12,838	$ 63,159	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 148,500	$ 24,130	$ 25,908	$ 28,705	$ 115,288	total cost per year	
Fixed O&M Cost, Size C	$ 148,500	$ 24,130	$ 27,158	$ 31,205	$ 181,523	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 146,000	$ 21,630	$ 25,908	$ 12,838	$ 63,159	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 146,000	$ 21,630	$ 25,908	$ 28,705	$ 115,288	per year	
Total Project Delivery, Size C	$ 146,000	$ 21,630	$ 25,908	$ 28,705	$ 181,523	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 21,000	$ 21,630	$ 22,279	$ 10,709	$ 11,030	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 21,000	$ 21,630	$ 22,279	$ 22,947	$ 11,030	per year	
Internal Project Delivery, Size C	$ 21,000	$ 21,630	$ 22,279	$ 22,947	$ 23,636	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ 125,000	$ -	$ 3,629	$ 2,129	$ 52,129	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ 125,000	$ -	$ 3,629	$ 5,758	$ 104,258	per year	
External Project Delivery, Size C	$ 125,000	$ -	$ 3,629	$ 5,758	$ 157,887	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ 2,500	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ 2,500	$ 2,500	$ -	$ -	$ -	per year	
Advertising and Promotions, Size C	$ 2,500	$ 2,500	$ 1,250	$ 2,500	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A	$ -	$ -	$ -	$ -	$ -	per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Allocation of General Portfolio Costs, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

UTILITY PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions,) as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A	$ -	per year	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B	$ -	per year	
Est. Total Revenue Requirement for Capital Projects, Size C	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ -	$ -	$ 1,530,000	$ -	$ -	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ -	$ -	$ 1,530,000	$ 1,530,000	$ -	per year	
Incentives, Size C	$ -	$ -	$ 1,530,000	$ 1,530,000	$ 1,530,000	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	#DIV/0!	#DIV/0!	$ 1,530,000	#DIV/0!	#DIV/0!	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	#DIV/0!	#DIV/0!	$ 1,530,000	$ 1,530,000	#DIV/0!	per participant per year	
Incentives per Participant, Size C	#DIV/0!	#DIV/0!	$ 1,530,000	$ 1,530,000	$ 1,530,000	per participant per year	

Calculations & Other Explanation:

Single Unit: Small PEM Electrolysis		Assumes no compressor needed because H2 used onsite
$	1,970.71	**Total electrolyzer CapEx ($/kW)**
$	9,853,568	**Total electrolyzer CapEx ($)**
$	1,971	**Total investment cost in $/kW electrolyzer input**
$	11.88	**Total investment cost in $/kg annual capacity**
$	88.17	**Total investment cost in $/MMBtu HHV annual capacity**

Support for Studies: $30,000 **Full Study Cost:** $ 200,000
Scoping Study / Customer Identification: $125,000
CapEx Incentive, After Third Party Funding % 100% (up to $1.5M cap)
M-RETS RTC Registration Costs: $0.05 $/Renewable Thermal Certificate (1 RTC = 1 Dth)
M-RETS Generator Registration Fee (One Time): $ 1,500.00
M&V - Total Cost for Whole Pilot: $50,000

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A	$ 10,641,674	$ 10,641,674	$ 10,841,674	$ 10,641,674	$ 10,641,674	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B	$ 10,641,674	$ 10,641,674	$ 10,841,674	$ 10,841,674	$ 10,641,674	per participant	
Total Pilot Upfront Costs, Size C	$ 10,641,674	$ 10,641,674	$ 10,841,674	$ 10,841,674	$ 10,841,674	per participant	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A	$ 8,699,856	$ 8,699,856	$ 8,699,856	$ 8,699,856	$ 8,699,856	per participant	*If there are expectations for external funding sources (e.g. IRA, etc.) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Third Party Funding, Size B	$ 8,699,856	$ 8,699,856	$ 8,699,856	$ 8,699,856	$ 8,699,856	per participant	
Third Party Funding, Size C	$ 8,699,856	$ 8,699,856	$ 8,699,856	$ 8,699,856	$ 8,699,856	per participant	

Description of source of external funding: Plan for this pilot is to take the IRA $3/kg incentive, which will be calculated on an annual basis (not all paid upfront). As such the total funding from 10 years is included here, to be accounted for in appropriate cost effectiveness tests, but these values ARE NOT used to change the Direct Participant Upfront Costs below. Instead this 3rd party IRA funding is added as 'Participant Non-Energy Savings' in rows 203-205 below (where the 10 year value is divided by measure life, since this input is per year of pilot life).

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ -	$ -	$ 9,311,674	$ -	$ -	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note 1: some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant. Note 2: you*
Direct Participant Pilot Costs, Size B	$ -	$ -	$ 9,311,674	$ 9,311,674	$ -	per participant	
Direct Participant Pilot Costs, Size C	$ -	$ -	$ 9,311,674	$ 9,311,674	$ 9,311,674	per participant	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

IRA max credit value as $3/kg H2 feasible when the hydrogen production carbon
Funding from IRA: $ 3.00 $/kg H2 (assumes max
The above assumption assumes that IRA rules, which have not yet been announced, would allow grid connected facilities to procure renewables that count as low-carbon. We assume a low capacity factor (38%) to make that more feasible.

Electrolyzer stack must be replaced after 10 years 10 yr
PV of stack replacement cost ($) $ 788,106

Stack cost as % of Capex 15%
Stack replacement cost $ 1,478,035
Stack life (hours) 80000
Weighted average real cost of capital 6.5%

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Costs, Size A	$ 3,288,011	$ 3,288,011	$ 3,288,011	$ 3,288,011	$ 3,288,011	per participant per year of pilot life	Increased electricity costs for renewable power purchases for the electrolyzer, increased operating and maintenance costs (O&M), and increased water costs. Electricity costs were included directly here because they expect to use a green tarif program to procur renewable electricity, while the default areas to enter increased electricity consumption below would automatically apply higher GHG emission factors for power generation. Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria.
Participant Non-Energy Costs, Size B	$ 3,288,011	$ 3,288,011	$ 3,288,011	$ 3,288,011	$ 3,288,011	per participant per year of pilot life	
Participant Non-Energy Costs, Size C	$ 3,288,011	$ 3,288,011	$ 3,288,011	$ 3,288,011	$ 3,288,011	per participant per year of pilot life	

Calculations & Other Explanation: -

Year 1	Year 2	Year 3	Year 4	Year 5

PARTICIPANT NON-ENERGY COSTS

Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

Base electricity + clean power opt-in cost (included here to avoid counting electricity against emissions)

20-year (2025-2044) average electricity retail price ($/kWh for C&I in MN)	$ 0.12	$/kWh	*(base electricity price)*
Electricity cost for renewable electricity via Windsource (estimated net charge)	$ 0.0065	$/kWh	*(used here because carbon-free power must*

Xcel Energy's Windsource subscriptions are available in 100 kilowatt-hour (kWh) blocks.
The Windsource charge includes a per block charge of $3.53, less a credit for fuel costs. For Commercial and industrial demand customers, the average net charge in 2021 was $0.65 per block. Actual costs will vary based on usage and monthly fuel credit variations.
This cost is in addition to your current electric charges. If your electricity use is less than your Windsource commitment in a given month, you will be charged only for what you use.

Water consumption (kg water/kg H2)	10
Water cost $/metric ton of water	$0.40
O&M as % of CapEx	8%

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ 473,960	$ 473,960	$ 473,960	$ 473,960	$ 473,960	per participant per year of pilot life	*This includes any operating savings like water savings.*
Participant Non-Energy Savings, Size B	$ 473,960	$ 473,960	$ 473,960	$ 473,960	$ 473,960	per participant per year of pilot life	
Participant Non-Energy Savings, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

This area is used to include the IRA $3/kg incentive, as it is an on-going cost savings (not upfront).

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	20	years
Average Lifetime for Savings/Pilot Tech, Size B	20	years
Average Lifetime for Savings/Pilot Tech, Size C	20	years

Calculations & Other Explanation:

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	42,581	Dth/Participant
Avg. Dth/Participant Saved, Size B	42,581	Dth/Participant
Avg. Dth/Participant Saved, Size C	42,581	Dth/Participant

Calculations & Other Explanation:

Assumes no H2 storage (that all H2 produced is consumed at facility displacing natural gas combustion).

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	0.00	kWh/Participant	*Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Non-Gas Fuel Units/Part. Saved, Size B	0.00	kWh/Participant	
Avg. Non-Gas Fuel Units/Part. Saved, Size C	0.00	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	0.00	kWh/Participant	*Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	0.00	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	0.00	kWh/Participant	

Calculations & Other Explanation:

Additional electricity usage is reflected in costs above so as to not over-count emissions.

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5		
Total Annual Dth Saved, Size A	-	-	42,581	-	-	Dth	*Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year*
Total Annual Dth Saved, Size B	-	-	42,581	42,581	-	Dth	
Total Annual Dth Saved, Size C	-	-	42,581	42,581	42,581	Dth	

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario NREL

Not leveraged for GHG evaluation, which

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from National Renewable Energy Laboratory (NREL) Standard Scenarios. If the renewable natural gas facility is using a higher proportion of carbon-free electricity than is available by default from their electric utility, either from on-site generation, by subscribing to a Commission-approved electric utility green tariff with renewable energy credits retired

From Frameworks Order: "Carbon-free electricity includes dedicated carbon-free generation, electricity purchased pursuant to a Commission approved green-tariff program, and, for approval on a case-by-case basis, other carbon-free generation supported by a demonstration that the greenhouse gas intensity of the connected electric grid is not adversely impacted."

Calculations & Other Explanation:

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5		
Low						kg CO2e/participant	*Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.*
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant	
High						kg CO2e/participant	

Lifecycle GHG Intensity, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Calculations & Other Explanation:

Using this calculation structure is optional; if modifications are needed, please use the hidden rows or raise with project leads.

GHG Intensity			
	Size A	Size B	Size C
	kg CO2e/Dth		
Low Scenario			
Expected Scenario	0.00	0.00	0.00
High Scenario			

	kg CO2e/Dth
Default Geologic Gas Emissions Factor	66.14

From Frameworks Order: "Utilities may assume that hydrogen produced using carbon-free electricity has no greenhouse gas emissions associated with its production but may have greenhouse gas emissions associated with electricity used for compression, transportation, blending, injection, purification and pumping of water, or other purposes."
NG Dth/year savings profiled will already be calculating GHG savings based on 66.14 factor.

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

Values now linked directly back to planning assumptions tab (possible given the combination of formerly separate Exhibits P and N into a single file)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5	
Escalation rate	n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)

Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2027 to all users in the West Nor

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals.
equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)

Calculations & Other Explanation:

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor 8.22%

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales

Calculations & Other Explanation:

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

		USD Cost Unit:
Other Non-GHG Pollutants, Size A	$ (0.004)	per Dth
Other Non-GHG Pollutants, Size B	$ (0.004)	per Dth
Other Non-GHG Pollutants, Size C	$ (0.004)	per Dth

This is a net cost savings per Dth of natural gas saved. In addition to the 'other non-GHG pollutant' cost savings from reduced combustion of natural gas, which is calculated with in line with the CIP methodology, this pilot accounts for increased NOx emissions from the combustion of Hydrogen in place of natural gas. The valuation of NOx emissions comes from the same source, and the level of NOx emissions come from GREET. The negative net savings shown here reflects slightly higher cost increases from NOx combustion than the savings achieved (from multiple types of emissions) from reduced gas combustion. The natural gas factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E1999/CI-14-643, utilities may use the value most applicable for the pilot or measure.

Calculations & Other Explanation:

Escalation rate from legislation	18.73%	2014 USD adjustment to 2021 USD

For an escalation rate, we use the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the observed years from 2014 to 2021. Using the most recently available data.

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Direct Job Creation, Size A	1	20	6	6	6	39	125	# of jobs
Net Direct Job Creation, Size B	1	0	45	32	11	89	241	# of jobs
Net Direct Job Creation, Size C	1	0	24	27	35	87	281	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Indirect Job Creation, Size A	0	12	4	4	4	24	75	# of jobs
Net Indirect Job Creation, Size B	0	0	27	19	6	52	145	# of jobs
Net Indirect Job Creation, Size C	0	0	14	17	20	51	169	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Induced Job Creation, Size A	0	16	5	4	4	28	91	# of jobs
Net Induced Job Creation, Size A	0	0	34	24	8	66	176	# of jobs
Net Induced Job Creation, Size A	0	0	18	21	25	64	213	# of jobs

Calculations & Other Explanation:
Job numbers are estimated as Full Time Equivalents (FTE) and are rounded off.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year

Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

Calculations & Other Explanation:

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year

The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

Definition: *It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.*

NGIA Participants' Perspective Notes:

Definition: *It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*

May assist MN businesses in achieving GHG goals

NGIA Nonparticipating Customers' Perspective Notes:

Definition: *As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*

Effects on Other Energy Systems and Energy Security:

Definition: *NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.*

Fuel made in MN and reduces import of fuel from outside of MN; hydrogen production may place burden on electric grid

GHG Emissions Notes:

Definition: *An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*

Other Pollution Notes:

Definition: *Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*

Waste Reduction and Reuse Notes:

Definition: *Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.*

Policy Notes:

Definition: *NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*

Reduces fossil gas throughput; increases use of renewable energy

Net Job Creation Notes:

Definition: *An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*

Economic Development Notes:

Definition: *The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*

Likely that many projects will satisfy IRA labor requirements; hydrogen projects represent clean energy opportunity for workers from traditional fossil fuel jobs; will help MN build hydrogen workforce as hydrogen poised for growth due to IRA

Public Co-Benefits Notes:	
Definition:	*There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.*
Market Development Notes:	
Definition:	*The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized*
	May help MN businesses appeal to customers interested in sustainability
Direct Innovation Support Notes:	
Definition:	*This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.*
	Opportunity for customers to learn about novel options for reducing GHGs from their systems
Resource Scalability and Role in a Decarbonized System Notes:	
Definition:	*While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.*
	Hydrogen poised to become more affordable and scalable as a result of IRA; hydrogen may be best decarb options for high heat load processes

Click here to go back to the list of all pilots

NGIA Pilot Profiles Workbook

CNP09 - Industrial Methane and Refrigerant Leak Reduction Program

DESCRIPTION

Pilot Project Code:	**CNP09**
Pilot Project Name:	*Industrial Methane and Refrigerant Leak Reduction Program*
Customer Class/ Sector:	**C&I**
Low-Income Community Benefit?	**N**
Target Area:	**Territory-wide**
Primary Innovative Resource Category:	**Carbon Capture**

Select primary Innovation Category. Others can be listed here:

Pilot Description:

CenterPoint Energy will hire a third-party vendor to conduct surveys of participating industrial and large commercial facilities for methane and refrigerant leaks behind the customer gas meter. After leaks are identified, CenterPoint Energy will offer incentives to partially offset the cost of leak repair. Participating customers will also receive follow up surveys every two years during the term of the Plan to test how well the impacts of the leak survey on reducing methane and refrigerant leakage are sustained .

Overview of Program/ Implementation Approach:

Large industrial and commercial CenterPoint Energy customers would be encouraged to participate in this program, targetting between 25-50 new facilities per year. In their first year of participation facilities would receive a 'sweep survey' to identify and quantify behind the meter methane leaks, as well as planning support to establish a systematic leak repair program. These services would be provided by a 3rd party vendor and fully funded through the pilot. The program would also offer incentives to partially offset the costs of repairing identified leaks. Program participants would also receive follow-up 'sweep surveys' every 2 years of the 5-year NGIA framework, as an approach to testing how well the impacts can be sustained. There is significant uncertainty on the level of leaks, as well as expectations that leak levels can vary widely between facilities. To that end, we have made conservative estimates of leak reductions, and ultimately actual leak levels (and impact of repairs) will be documented through the initial and follow up leak sweeps.

Other Comments / Information:

Pilot sizes differ depending on number of participants
Due to data limitations, magnitude of GHG reduction from refrigerant leaks is not quantified for the purposes of this analysis, so estimate provided here could be an underestimate of the total GHG savings potential.
This program is expected to be accessible to large industrial and commercial facilities, and able to reach rural and/or underserved communities.

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

	Year 1	Year 2	Year 3	Year 4	Year 5	
Pilot Year						
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A	25	25	0	0	0	*Incremental units added, annual (not cumulative).*
Participating Units, Size B	25	25	25	25	25	
Participating Units, Size C	50	50	50	50	50	

Unit of Participation = Facilities enrolling in program

Calculations & Other Explanation:

Participating units above only include first time customer sweeps, while the numbers below include a follow up sweep every other year (sites from year 1 get sweep again in year 3 and year 5). Follow up sweeps will serve to confirm that leak repairs have been made, that savings are maintained over time, and monitor the rate of new leak occurences.

	2024	2025	2026	2027	2028
Total Number of Sweeps Per Year, Size A	25	25	25	25	25
Total Number of Sweeps Per Year, Size B	25	25	50	50	75
Total Number of Sweeps Per Year, Size C	50	50	100	100	150

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 436,676	$ 450,561	$ 210,904	$ 218,778	$ 226,947	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots*
Annual Total Utility Incremental Cost, Size B	$ 436,676	$ 450,561	$ 653,589	$ 675,736	$ 902,027	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ 804,351	$ 830,651	$ 1,235,195	$ 1,277,928	$ 1,728,905	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 399,000	$ 412,885	$ 210,904	$ 218,778	$ 226,947	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 399,000	$ 412,885	$ 615,914	$ 638,060	$ 864,352	total cost per year	
Fixed O&M Cost, Size C	$ 729,000	$ 755,300	$ 1,159,843	$ 1,202,577	$ 1,653,554	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 374,000	$ 387,885	$ 210,904	$ 218,778	$ 226,947	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 374,000	$ 387,885	$ 590,914	$ 613,060	$ 839,352	per year	
Total Project Delivery, Size C	$ 699,000	$ 725,300	$ 1,129,843	$ 1,172,577	$ 1,623,554	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 49,000	$ 50,470	$ 22,279	$ 22,947	$ 23,636	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 49,000	$ 50,470	$ 51,984	$ 53,544	$ 55,150	per year	
Internal Project Delivery, Size C	$ 49,000	$ 50,470	$ 51,984	$ 53,544	$ 55,150	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ 325,000	$ 337,415	$ 188,625	$ 195,831	$ 203,312	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ 325,000	$ 337,415	$ 538,930	$ 559,517	$ 784,202	per year	
External Project Delivery, Size C	$ 650,000	$ 674,830	$ 1,077,859	$ 1,119,033	$ 1,568,404	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ 25,000	$ 25,000	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	per year	
Advertising and Promotions, Size C	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	per year	

UTILITY PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A						per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B						per year	
Allocation of General Portfolio Costs, Size C						per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below)*
Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A	$ -	per year	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation*
Est. Total Revenue Requirement for Capital Projects, Size B	$ -	per year	
Est. Total Revenue Requirement for Capital Projects, Size C	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ 37,676	$ 37,676	$ -	$ -	$ -	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying*
Incentives, Size B	$ 37,676	$ 37,676	$ 37,676	$ 37,676	$ 37,676	per year	
Incentives, Size C	$ 75,351	$ 75,351	$ 75,351	$ 75,351	$ 75,351	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	$ 1,507	$ 1,507	#DIV/0!	#DIV/0!	#DIV/0!	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	$ 1,507	$ 1,507	$ 1,507	$ 1,507	$ 1,507	per participant per year	
Incentives per Participant, Size C	$ 1,507	$ 1,507	$ 1,507	$ 1,507	$ 1,507	per participant per year	

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A	$ 12,000	$ 12,458	$ 12,934	$ 13,428	$ 13,941	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs*
Total Pilot Upfront Costs, Size B	$ 12,000	$ 12,458	$ 12,934	$ 13,428	$ 13,941	per participant	
Total Pilot Upfront Costs, Size C	$ 12,000	$ 12,458	$ 12,934	$ 13,428	$ 13,941	per participant	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Third Party Funding, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Third Party Funding, Size C	$ -	$ -	$ -	$ -	$ -	per participant	
Description of source of external funding:	IRA, etc						

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ 3,493	$ 3,684	$ 3,882	$ 4,088	$ 4,302	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests*
Direct Participant Pilot Costs, Size B	$ 3,493	$ 3,684	$ 3,882	$ 4,088	$ 4,302	per participant	
Direct Participant Pilot Costs, Size C	$ 3,493	$ 3,684	$ 3,882	$ 4,088	$ 4,302	per participant	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of*

	Year 1	Year 2	Year 3	Year 4	Year 5	
Cost of onsite sweep survey per customer:	$7,000	$7,267	$7,545	$7,833	$8,132	Covered by Pilot
Cost for 1-year on-going vendor planning support:	$6,000	$6,229	$6,467	$6,714	$6,971	Covered by Pilot
Assumed customer leak repair costs:	$5,000	$5,191	$5,389	$5,595	$5,809	Customer cost, incentive in next row
Total Incentives for Customer Leak Repairs (per customer):	$1,507	$1,507	$1,507	$1,507	$1,507	Covered by Pilot

Leak repair incentives: $0.50 $ / annual therm savings

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any increased in costs like equipment operating costs or increased*

PARTICIPANT NON-ENERGY COSTS

Participant Non-Energy Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*water costs. Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Participant Non-Energy Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of*

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any operating savings like water savings.*
Participant Non-Energy Savings, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Savings, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	5	years
Average Lifetime for Savings/Pilot Tech, Size B	5	years
Average Lifetime for Savings/Pilot Tech, Size C	5	years

Calculations & Other Explanation:

There is little publicly available information on how long the leaks would have remained un-repaired. RFI respondent suggested a range of 5 to 8 years might be appropriate. Pilot is being designed to build better understanding of how commonly new leaks form, and how long repairs are maintained.

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	301	Dth/Participant
Avg. Dth/Participant Saved, Size B	301	Dth/Participant
Avg. Dth/Participant Saved, Size C	301	Dth/Participant

Note, only accounting for savings from the first sweep at a given site (given that these savings are assumed to persist), not accounting for savings from follow-up sweeps.

Calculations & Other Explanation:

Average 2022 Gas Consumption for CenterPoint's largest 200 customers: 120,562 Dth/year

Assumed level of reduction in methane leaks: 0.25% % of customer gas consumption

Source: this is an assumption being made in an area where there is a lot of uncertainty. This testing in this pilot would quantify the leaks that are identified so that actual reductions can be reported for NGIA savings. The RFI respondent initially proposed that a higher level of leak reduction might be possible, so this could be viewed as conservative (i.e., GHG reduction impacts may be higher than what is calculated here, if leak reduction rates are higher).

One EPA estimate of methane leaks from industrial facilities pegged the rate at up to 5%, however this work was concentrated on refineries, and we do not expect this level to be common at most industrial facilities (EPA document Leak Detection and Repair Compliance Assistance Guidance Best Practices Guide: https://www.epa.gov/sites/default/files/2014-02/documents/ldarguide.pdf)

Other work in California, in the commercial sector, has found leak rates ranging between 0.14% and 0.28% of total customer consumption (https://www.energy.ca.gov/sites/default/files/2021-05/CEC-500-2020-048.pdf)

Estimates here are further complicated by the fact that in some studies many facilities might have no/minimal leaks, while a few facities make up the majority of total leaks.

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	0.00	kWh/Participant	*Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Non-Gas Fuel Units/Part. Saved, Size B	0.00	kWh/Participant	
Avg. Non-Gas Fuel Units/Part. Saved, Size C	0.00	kWh/Participant	

Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	0.00	kWh/Participant	*Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	0.00	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	0.00	kWh/Participant	

The sweeps may also be able to uncover leaks in refrigerants. However the potential volumes, savings, and likelihood of repairs are unclear for refrigerant leaks, so these benefits are conservatively being assumed to be zero for now.

Calculations & Other Explanation:

No electricity savings

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5		
Total Annual Dth Saved, Size A	7,535	7,535	-	-	-	Dth	*Natural gas energy savings that result from multiplying savings per participant times the to*
Total Annual Dth Saved, Size B	7,535	7,535	7,535	7,535	7,535	Dth	
Total Annual Dth Saved, Size C	15,070	15,070	15,070	15,070	15,070	Dth	

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario No Electricity Impact

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from National Renewable Energy Laboratory (NREL) Standard Scenarios. If the renewable natural gas facility is using a higher proportion of carbon free electricity than is

Calculations & Other Explanation:

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	115,116	115,116	115,116	115,116	115,116	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	115,116	115,116	115,116	115,116	115,116	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	115,116	115,116	115,116	115,116	115,116	kg CO2e/participant
High						kg CO2e/participant

Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs

Calculations & Other Explanation:

Conversions	Factor	Units
Density of Methane at 60 degrees F and 14.7 psia	0.0192	kg/scf(MT/MCF)
Methane 100 years GWP	29.8	GREET 2022 default to AR6
Methane Composition for sales gas	84.5%	%

Calculations in this section take the assume reduction in natural gas leaks (in Dth/year), convert that to a volume of natural gas (cf), then take the methane fraction of that gas, calculate the mass of methane emissions (kg) to atmosphere that have been avoided, and apply a global warming potential (GWP) to convert those units into kg CO2e. This represents the GHG emission reduction from avoiding these methane leaks. The natural gas combustion emision factor (66.14) is then subtracted from these savings simply because the spreadsheet these numbers feed into will automatically add that same amount of savings for this pilot (when there are no actual reductions in combustion emissions in this pilot).

	kg CO2e/Dth
Default Geologic Gas Emissions Factor:	66.14

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

Values now linked directly back to planning assumptions tab (possible given the combination of formerly separate Exhibits P and N into a single file)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5	
Escalation rate	n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)

Annual Escalation Rate calculated using the average percent change in the price of n

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)

Calculations & Other Explanation:

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor 8.22%

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales

Calculations & Other Explanation:

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

		USD Cost Unit:
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth

Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in

Calculations & Other Explanation:

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life		
Net Direct Job Creation, Size A	3	3	1	1	1	9	0	# of jobs	*Utilities should consider both jobs created by proposed pilots*
Net Direct Job Creation, Size B	5	5	8	8	11	37	4	# of jobs	
Net Direct Job Creation, Size C	3	3	4	4	5	18	1	# of jobs	

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life		
Net Indirect Job Creation, Size A	1	1	1	1	1	5	0	# of jobs	*Utilities should consider both jobs created by proposed pilots*
Net Indirect Job Creation, Size B	1	1	2	2	2	8	1	# of jobs	
Net Indirect Job Creation, Size C	2	3	4	4	5	17	1	# of jobs	

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life		
Net Induced Job Creation, Size A	2	2	1	1	1	7	0	# of jobs	
Net Induced Job Creation, Size A	2	2	3	3	3	13	1	# of jobs	
Net Induced Job Creation, Size A	3	3	5	5	7	22	1	# of jobs	

Calculations & Other Explanation:
Job numbers are estimated as Full Time Equivalents (FTE) and are rounded off.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year	*Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year	*The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

Definition: *It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.*

NGIA Participants' Perspective Notes:

Definition: *It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*

May assist MN businesses in achieving GHG goals; may improve workplace safety

NGIA Nonparticipating Customers' Perspective Notes:

Definition: *As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*

Effects on Other Energy Systems and Energy Security:

Definition:

	NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.
GHG Emissions Notes:	
Definition:	*An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*
	Quantified benefits do not include avoided refrigerant leaks
Other Pollution Notes:	
Definition:	*Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*
Waste Reduction and Reuse Notes:	*Waste reduction, reuse, and anaerobic digestion are goals of the NGIA.*
Definition:	*Includes reduction of water use.*
Policy Notes:	*NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*
Definition:	Reduces fossil gas throughput
Net Job Creation Notes:	*An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Definition:	
Economic Development Notes:	
Definition:	*The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*
Public Co-Benefits Notes:	
Definition:	*There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.*
Market Development Notes:	
Definition:	*The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized*
	May help MN businesses appeal to customers interested in sustainability
Direct Innovation Support Notes:	
Definition:	*This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.*

	Opportunity for customers to learn about novel options for reducing GHGs from their systems; will reduce uncertainty about GHG potential of leak detection programs
Resource Scalability and Role in a Decarbonized System Notes: *Definition:*	*While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.*
	Even in full decarbonized system likely to have some methane gas and continuing need for leak detection

ICF

CNP10 - Urban Tree Carbon Offset Program

Click here to go back to the list of all pilots

NGIA Pilot Profiles Workbook

DESCRIPTION

Pilot Project Code:	**CNP10**
Pilot Project Name:	*Urban Tree Carbon Offset Program*
Customer Class/ Sector:	**C&I & Res**
Low-Income Community Benefit?	**Y**
Target Area:	**Urban**
Primary Innovative Resource Category:	**Carbon Capture**

Select primary Innovation Category. Others can be listed here:

Pilot Description:
Local non-profit Green Minneapolis, which is working in partnership with the Minneapolis Park and Recreation Board ("MPRB"), is selling registered City Forest Credits for trees planted in Minneapolis between 2019 and 2021. Under this pilot, CenterPoint Energy will purchase these credits and retire them on behalf of CenterPoint Energy customers.

Overview of Program/ Implementation Approach:
Trees planted in area with conditions of project-defined high inequity to trees, such as at schools, affordable or subidized housing, formerly redlined neigbothoods, areas with high property vacancy rates, or areas with high proportion of renters.

Other Comments / Information:
Pilot size determined by number of credits purchased. Sizes A, B, and C represent 25%, 50%, and 100% of the credits expected to be available from the RFI respondent, respectively.

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

Pilot Year	Year 1	Year 2	Year 3	Year 4	Year 5	
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A	800	850	900	950	1000	*Incremental units added, annual (not cumulative).*
Participating Units, Size B	1600	1700	1800	1900	2000	
Participating Units, Size C	3200	3400	3600	3800	4000	

Unit of Participation = **Carbon credits purchased**

Calculations & Other Explanation:
Sizes A, B, and C represent 25%, 50%, and 100% of the credits expected to be available from the RFI respondent, respectively.

UTILITY PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 45,000	$ 50,894	$ 58,097	$ 66,759	$ 75,030	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ 80,200	$ 91,694	$ 105,797	$ 122,809	$ 139,030	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ 150,600	$ 173,294	$ 201,197	$ 234,909	$ 267,030	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 45,000	$ 50,894	$ 58,097	$ 66,759	$ 75,030	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 80,200	$ 91,694	$ 105,797	$ 122,809	$ 139,030	total cost per year	
Fixed O&M Cost, Size C	$ 150,600	$ 173,294	$ 201,197	$ 234,909	$ 267,030	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 45,000	$ 50,894	$ 58,097	$ 66,759	$ 75,030	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 80,200	$ 91,694	$ 105,797	$ 122,809	$ 139,030	per year	
Total Project Delivery, Size C	$ 150,600	$ 173,294	$ 201,197	$ 234,909	$ 267,030	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	
Internal Project Delivery, Size C	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ 35,200	$ 40,800	$ 47,700	$ 56,050	$ 64,000	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ 70,400	$ 81,600	$ 95,400	$ 112,100	$ 128,000	per year	
External Project Delivery, Size C	$ 140,800	$ 163,200	$ 190,800	$ 224,200	$ 256,000	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Advertising and Promotions, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A						per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B						per year	
Allocation of General Portfolio Costs, Size C						per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A	$ -	per year	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B	$ -	per year	
Est. Total Revenue Requirement for Capital Projects, Size C	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year	
Incentives per Participant, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year	

Calculations & Other Explanation:

Expected price per credit ($/credit):	$ 44	$ 48	$ 53	$ 59	$ 64	Assuming upper end of cost range provided by the RFI respodent for each year

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A	$ 44	$ 48	$ 53	$ 59	$ 64	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B	$ 44	$ 48	$ 53	$ 59	$ 64	per participant	
Total Pilot Upfront Costs, Size C	$ 44	$ 48	$ 53	$ 59	$ 64	per participant	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Third Party Funding, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Third Party Funding, Size C	$ -	$ -	$ -	$ -	$ -	per participant	
Description of source of external funding:	IRA, etc						

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note t some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant.*
Direct Participant Pilot Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Direct Participant Pilot Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

PARTICIPANT NON-ENERGY COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any increased in costs like equipment operating costs or increased water costs. Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Participant Non-Energy Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any operating savings like water savings.*
Participant Non-Energy Savings, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Savings, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	1	years
Average Lifetime for Savings/Pilot Tech, Size B	1	years
Average Lifetime for Savings/Pilot Tech, Size C	1	years

Calculations & Other Explanation:

Offset purchases only reduce emissions for the year they are purchased. New offsets need to be purchased again for subsequent years.

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	0.00	Dth/Participant
Avg. Dth/Participant Saved, Size B	0.00	Dth/Participant
Avg. Dth/Participant Saved, Size C	0.00	Dth/Participant

Calculations & Other Explanation:

Avg. Non-Gas Fuel Units/Part. Saved, Size A	0.00	kWh/Participant	*Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Non-Gas Fuel Units/Part. Saved, Size B	0.00	kWh/Participant	
Avg. Non-Gas Fuel Units/Part. Saved, Size C	0.00	kWh/Participant	

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	0.00	kWh/Participant
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	0.00	kWh/Participant
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	0.00	kWh/Participant

Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5	
Total Annual Dth Saved, Size A	0.00	0.00	0.00	0.00	0.00	Dth
Total Annual Dth Saved, Size B	0.00	0.00	0.00	0.00	0.00	Dth
Total Annual Dth Saved, Size C	0.00	0.00	0.00	0.00	0.00	Dth

Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario: No Electricity Impact

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from National Renewable Energy Laboratory (NREL) Standard Scenarios. If the renewable natural gas facility is using a higher proportion of carbon free electricity than is available by default from their electric utility, either from on-site generation, by subscribing to a

Calculations & Other Explanation:

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	1,000	1,000	1,000	1,000	1,000	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	1,000	1,000	1,000	1,000	1,000	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	1,000	1,000	1,000	1,000	1,000	kg CO2e/participant
High						kg CO2e/participant

Calculations & Other Explanation:

Each credit represents an offset of 1 tCO2 (equivalent to 1,000 kg CO2).

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor: 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

Values now linked directly back to planning assumptions tab (possible given the combination of formerly separate Exhibits P and N into a single file)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria. Note, to calculate this metric, you can make one cost estimate for year 1 and then use the escalation rate to estimate each

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5	
Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2	n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals.
equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)

Calculations & Other Explanation:

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor: 8.22%

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales

Calculations & Other Explanation:

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

		USD Cost Unit:
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth

Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E1999/CI-14-643, utilities may use the value most applicable for the pilot or measure.

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Direct Job Creation, Size A	0	0	0	0	1	1	0	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life		
Net Direct Job Creation, Size B	1	1	1	1	1	5		# of jobs	*may be eliminated by proposed pilots.*
Net Direct Job Creation, Size C	1	1	1	2	2	7		# of jobs	

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life		
Net Indirect Job Creation, Size A	0	0	0	0	0	0	0	# of jobs	*Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Net Indirect Job Creation, Size B	0	0	0	0	0	0		# of jobs	
Net Indirect Job Creation, Size C	0	0	0	0	0	0		# of jobs	

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Induced Job Creation, Size A	0	0	0	0	0	0	0	# of jobs
Net Induced Job Creation, Size A	0	0	0	0	0	0		# of jobs
Net Induced Job Creation, Size A	0	0	0	1	1	2		# of jobs

Calculations & Other Explanation:

Job numbers are estimated as Full Time Equivalents (FTE) and are rounded off.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year	*Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year	*The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

Definition: *It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.*

NGIA Participants' Perspective Notes:

Definition: *It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*

NGIA Nonparticipating Customers' Perspective Notes:

Definition: *As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*

Shade can reduce cooling and heating costs for nearby buildings

Effects on Other Energy Systems and Energy Security:

Definition:

NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.

Shade can reduce need for cooling in summer months

GHG Emissions Notes:

Definition: *An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for*

	discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.
Other Pollution Notes:	
Definition:	*Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*
	Trees can reduce urban heat effects, reduce stormwater runoff, prevent air pollution from reaching homes; pilot targets areas of low tree coverage which correspond with poverty
Waste Reduction and Reuse Notes:	
Definition:	*Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.*
Policy Notes:	
Definition:	*NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*
Net Job Creation Notes:	
Definition:	*An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Economic Development Notes:	
Definition:	*The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*
Public Co-Benefits Notes:	
Definition:	*There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.*
	Reduces stormwater runoff costs; supports Minneapolis Park and Recreation Board tree planting and maintenance
Market Development Notes:	
Definition:	*The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized*
Direct Innovation Support Notes:	
Definition:	*This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.*
Resource Scalability and Role in a Decarbonized System Notes:	
Definition:	*While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.*

ICF

CNP11 – Carbon Capture Archetype for Industrial or Large Commercial Facility

Click here to go back to the list of all pilots

NGIA Pilot Profiles Workbook

DESCRIPTION

Pilot Project Code:	**CNP11**
Pilot Project Name:	*Carbon Capture Archetype for Industrial or Large Commercial Facility*
Customer Class/ Sector:	**C&I**
Low-Income Community Benefit?	**N**
Target Area:	**Territory-wide**
Primary Innovative Resource Category:	**Carbon Capture**

Select primary Innovation Category. Others can be listed here:

Pilot Description:
CNP would offer incentives covering a portion of the equipment and installation cost of capture carbon systems for industrial or large commercial customers. These systems would be installed directly onsite for 1-3 customers.

Overview of Program/ Implementation Approach:
Program would begin with a site identification and customer recruitment phase.
Customer would own and operate the carbon capture system.
CenterPoint Energy would creat a measurement and verification plan to monitor system performance for a period of time following installation.

Other Comments / Information:
Possible that some participants could be larger or smaller than the carbon capture size below.

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

	Year 1	Year 2	Year 3	Year 4	Year 5	
Pilot Year						
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A	0	0	1	0	0	*Incremental units added, annual (not cumulative).*
Participating Units, Size B	0	0	2	0	0	
Participating Units, Size C	0	0	3	0	0	

Unit of Participation = Facility implementing carbon capture system — plant size (# of 25-tonne/day units)

Calculations & Other Explanation:
Based on Post-Combustion Capture (amine)

	Size A
Capture Capacity	25
	9268

Industrial Facility's Natural Gas Firing Rate: 22 MMBtu/ Hour base size facility Natural Gas Firing Rate

Examples for Capture Cost Alone. Based on natural gas combusion in boilers and process heater with flue gases of 8% CO2 at atmospheric pressure and 90% capture. Facility operates at 75% capacity utilization.

	Facility Size			GHG Emissions & Capture Volumes at 100% Capacity Utilization (not used in analysis)					This column used in the analysis
	Natural Gas Firing Rate in MMBtu per Hour	Equivalent pounds of steam per hour (80% efficient boiler)	Equivalent MW (7000 Btu/kWh)	Fuel Use (MMBtu per year @100%CU)	Combustion CO2 (metric tons per year @100%CU)	Combustion CO2 (metric tons per day @100% CU)	Capture Capacity (CO2 metric tons/day)	CO2 Capturable (metric tons per year @100% CU)	**CO2 Captured (metric tons per year @expected% CU)**
Size A: 1 facility	22	14,657	3.13	191,625	10,298	28	25	9,268	**6,951**
Size B: 2 facilities	2 sites @ 22			383,250	20,596	56	51	18,536	**13,902**
Size C: 3 facilities	3 sites @ 22			574,875	30,893	85	76	27,804	**20,853**

Capture %: 90%
Small Industrial Boiler (10-100 mmBtu/hr input) GREET NG Combustion Factor (kg CO2e/MMBtu HHV): 53.74
Facility capacity utilization factor: 75%
Concentration (% CO2): 8%
Pressure (psi): 14.70
CO2 Partial Pressure (psi): 1.18

1194 Btu/pound of steam (for size comparisons)
7000 Btu/kWh (for size comparisons)

	Number of Trucks needed for facility scale of 22 MMBtu/Hr NG-firing rate (generating 25 tCO2/d)	*(ICF analysis)*
Size A	1	Rounding up to whole truck
Size B	2	Assumes facilities participating in pilot Sizes B and C do not share trucks across facilities
Size C	3	

Tractor Lifetime in Years	7.5
Trailer Lifetime in Years	20

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 134,800	$ 21,630	$ 1,654,779	$ 122,947	$ 11,030	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ 134,800	$ 21,630	$ 3,284,779	$ 222,947	$ 11,030	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ 134,800	$ 21,630	$ 4,913,529	$ 322,947	$ 11,030	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 134,800	$ 21,630	$ 154,779	$ 122,947	$ 11,030	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 134,800	$ 21,630	$ 284,779	$ 222,947	$ 11,030	total cost per year	
Fixed O&M Cost, Size C	$ 134,800	$ 21,630	$ 413,529	$ 322,947	$ 11,030	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 134,800	$ 21,630	$ 152,279	$ 122,947	$ 11,030	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 134,800	$ 21,630	$ 282,279	$ 222,947	$ 11,030	per year	
Total Project Delivery, Size C	$ 134,800	$ 21,630	$ 412,279	$ 322,947	$ 11,030	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 9,800	$ 21,630	$ 22,279	$ 22,947	$ 11,030	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 9,800	$ 21,630	$ 22,279	$ 22,947	$ 11,030	per year	
Internal Project Delivery, Size C	$ 9,800	$ 21,630	$ 22,279	$ 22,947	$ 11,030	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ 125,000	$ -	$ 130,000	$ 100,000	$ -	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ 125,000	$ -	$ 260,000	$ 200,000	$ -	per year	
External Project Delivery, Size C	$ 125,000	$ -	$ 390,000	$ 300,000	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ -		$ 2,500			per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ -		$ 2,500			per year	

UTILITY PILOT COSTS

Advertising and Promotions, Size C	$ -		$ 1,250			per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A						per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B						per year	
Allocation of General Portfolio Costs, Size C						per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A	$ -	per year	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B	$ -	per year	
Est. Total Revenue Requirement for Capital Projects, Size C	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ -	$ -	$ 1,500,000	$ -	$ -	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ -	$ -	$ 3,000,000	$ -	$ -	per year	
Incentives, Size C	$ -	$ -	$ 4,500,000	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	#DIV/0!	#DIV/0!	$ 1,500,000.00	#DIV/0!	#DIV/0!	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	#DIV/0!	#DIV/0!	$ 1,500,000.00	#DIV/0!	#DIV/0!	per participant per year	
Incentives per Participant, Size C	#DIV/0!	#DIV/0!	$ 1,500,000.00	#DIV/0!	#DIV/0!	per participant per year	

Calculations & Other Explanation:

	Size A	
tonnes CO2/day:	25	
tonnes CO2/year:	9268	
Capex:	$ 2,846,718	*(via GCSI)*

Parameters for Capture, Compression, etc. Economics	**Value**		
Capacity utilization factor	75%	Compressor electricity use kWh/metric ton	109
Life in years	20	Compressor electricity use kWh/day (@100% CU) for single CC unit	2,768
Electricity price ($/kWh for C&I in MN)	$ 0.098	Compressor Capacity (kW) for single CC unit	115
Price of NG to C&I in MN ($/MMBtu)	$ 6.38	Electricity kWh input per HP-hour	0.785
$/HP for compressor/pump/dehyd.	$ 2,500.00	Compressor Capacity (HP) for single CC unit	147

Include customer incentives to cover the cost of an engineering study and upfront equipment costs; could also account for site identification costs.

Support for Engineering Studies:	$ 30,000	might cost 200K total	$ 200,000	
Funding for CCU LCA:	$ 100,000	(pre-project)		
CNP Incentive to Cover X% of Expected CAPEX:	100%	(up to $1.5M cap)		
Scoping Study / Customer Identification:	$125,000			
Pilot Program M&V and Updated LCA:	$100,000	50 (M&V) + 50K (post-project LCA update)		

CAPEX Categories	Size A		
Carbon Capture Equipment	$ 1,880,428	Capex = 10,226 *(CO2 TPA)^0.8	ICF team created an equation from the GCCSI cost examples to represent the CAPEX as a functi
CO2 Dehydration/ Compression Equipment	$ 367,290		
CO2 Transportation (Trucking) Equipment	$ 599,000	Semi trailer ($449k), tank, equipment, and tractor (truck) ($150k), total capital cost of $599,000/truck, not including tractor	

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A			$ 3,346,718			per participant per year	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B			$ 3,346,718			per participant per year	
Total Pilot Upfront Costs, Size C			$ 3,346,718			per participant per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Third Party Funding, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year	
Third Party Funding, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year	

Description of source of external funding:

While carbon capture units could qualify for IRA incentives, the size that has been selected for the archetype here is expected to be too small to meet the minimum threshold. It is possible that the pilot could identify larger projects that would qualify for IRA funding.

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ -	$ -	$ 1,846,718	$ -	$ -	per participant per year	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note 1: some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant.*
Direct Participant Pilot Costs, Size B	$ -	$ -	$ 1,846,718	$ -	$ -	per participant per year	
Direct Participant Pilot Costs, Size C	$ -	$ -	$ 1,846,718	$ -	$ -	per participant per year	

Calculations & Other Explanation:

Year 1	Year 2	Year 3	Year 4	Year 5

Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bure*

Refund from IRA: 0% ***There is a minimum for carbon capture projects that are not direct air capture and not at an electrical generating facility; the project has to capture at least 12,500 metric tons of carbon oxide per year.***

Portion of Costs IRA incentive applicable: $ 2,846,718 ***IRA Discount on Capital Costs; assuming project would qualify for 30% investment tax credit pursuant to 26 USC 48E as an energy storage facility (which includes thermal energy storage property as defined in 26 USC 48); assume labor requirements will be satified so as to quaify for 30% as opposed to 6%; do not assume that project is insta***

Assuming too small for IRA for now, if instead of 3 participants for Size C get one bigger one, could qualify (future opportunities to explore)

Additional CAPEX: replacements	Size A	Size B	Size C	
CO2 Transportation's Truck Tractor with 7.5 year life (2 replacements) over 20 year pilot life	$ 300,000	$ 600,000	$ 900,000	PV of two $150,000 tractor replacements needed for 7.5 year tractor life (neglecting tractor/trailer salvage values)

PARTICIPANT NON-ENERGY COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Costs, Size A			$ 801,655	$ 832,278	$ 864,072	per participant per year of pilot life	*This includes any increased in costs like equipment operating costs or increased water costs. Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Participant Non-Energy Costs, Size B			$ 801,655	$ 832,278	$ 864,072	per participant per year of pilot life	
Participant Non-Energy Costs, Size C			$ 801,655	$ 832,278	$ 864,072	per participant per year of pilot life	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use*

Non fuel consumables VOM costs for carbon capture $ 22 /tonne CO2 *(via GCSI)* Non-fuel cost of $22/ metric ton of CO2 is computed from the GCCI report. It is mostly made up of chemicals and other consumables.

Fixed O&M for carbon capture

Year 1	Year 2	Year 3	Year 4	Year 5		
$ -	$ -	$ 376,432	$ 376,432	$ 376,432	$ 270,000	*(via GCSI)*
$ -	$ -	$ 1,129,297	$ 1,129,297	$ 1,129,297	0.0566	*Fixed O&M of 270,000/ year plus 0.0566 * Capex is based on the GCCSI study from which the cost algorithm was created.*
$ -	$ -	$ 1,882,161	$ 1,882,161	$ 1,882,161		

O&M for compression: 5% of the capex for compression, dehydration (inc. insur.+ prop. taxes)

O&M for trucking the CO2 (2-way Transport 250 Miles per Trip - 1 way, 125 mi. trip with CO2; 1 way empty as return)

Assumes 125-mile 1-way trips (all return trips are empty) which translates to ~77,300 miles annually for all 2-way round-trips needed based on CO2 production and truck capacity. Non-fuel O&M and diesel fuel O&M. Est. 309 trips/year needed for CO2 quantity captured at single facility (Size A), given truck full load weight of commodity of 22,482 kg; 781 kg/m^3 density of CO2 in pressurized tanks at ~1,750 psi and trailer tank water vol. 28,770 L.

	Year 1	Year 2	Year 3	Year 4	Year 5
Covers insurance, staff, overhead, licenses and permits, tire replacement, and fuel O&M costs (at $0.92/liter, or ~$0.75/mile) for max 2-way 250 miles per year	$ -	$ -	$ 253,936	$ 253,936	$ 253,936
	$ -	$ -	$ 761,808	$ 761,808	$ 761,808
	$ -	$ -	$ 1,269,680	$ 1,269,680	$ 1,269,680

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any operating savings like water savings.*
Participant Non-Energy Savings, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Savings, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	20	years
Average Lifetime for Savings/Pilot Tech, Size B	20	years
Average Lifetime for Savings/Pilot Tech, Size C	20	years

Calculations & Other Explanation:

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	(23,633)	Dth/Participant
Avg. Dth/Participant Saved, Size B	(23,633)	Dth/Participant
Avg. Dth/Participant Saved, Size C	(23,633)	Dth/Participant

Calculations & Other Explanation:

3.4 MMBtu fuel needed/metric ton of CO2 captured
No natural gas combustion saved; carbon intensity of process just reduced.

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	0.00	kWh/Participant	*Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Non-Gas Fuel Units/Part. Saved, Size B	0.00	kWh/Participant	
Avg. Non-Gas Fuel Units/Part. Saved, Size C	0.00	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	757,662	kWh/Participant	*Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	757,662	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	757,662	kWh/Participant	

Calculations & Other Explanation:

Compression electricity use kWh/year (at expected % capacity utilization)

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5	
Total Annual Dth Saved, Size A			(23,633)	(23,633)	(23,633)	Dth
Total Annual Dth Saved, Size B			(47,267)	(47,267)	(47,267)	Dth
Total Annual Dth Saved, Size C			(70,900)	(70,900)	(70,900)	Dth

Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario: NREL

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from National Renewable Energy Laboratory (NREL)

Calculations & Other Explanation:

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low			0.00	0.00	0.00	kg CO2e/participant
Expected			4,170,616	4,170,616	4,170,616	kg CO2e/participant
High			6,951,027	6,951,027	6,951,027	kg CO2e/participant

Lifecycle GHG Intensity, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low			0.00	0.00	0.00	kg CO2e/participant
Expected			4,170,616	4,170,616	4,170,615	kg CO2e/participant
High			6,951,027	6,951,027	6,951,027	kg CO2e/participant

Lifecycle GHG Intensity, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low			0.00	0.00	0.00	kg CO2e/participant
Expected			4,170,616	4,170,616	4,170,615	kg CO2e/participant
High			6,951,027	6,951,027	6,951,027	kg CO2e/participant

Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.

Calculations & Other Explanation:

Minnesota is not in proximity to geologic formations that would typically be used to permanently sequester carbon, so industrial facilities looking to capture CO2 would likely be looking for another process that would utilize that CO2.

This pilot assumes CO2 is captured from CNP industrial client, then utilized in concrete. In traditional concrete production, cement is cured with water, causing the calcium to react with the CO2 in the surrounding air and turning it back into strengthened calcium carbonate.

Research (via Carbon Cure and related studies) suggests that of CO2 sent to concrete production, only ~60% is absorbed in the concrete. There are potentially large GHG savings if the utilization approach is an emissions improvment relative to the original concrete production. However, this analysis assumes that CNP would only take credit for the reduced industrial emissions at capture facility, and that offtaker would claim concrete's GHG improvement.

Due to research limits, an LCA is built into the cost of the pilot to better reflect GHG impact.

Actual emissions will be pilot-specific depending on industrial facility and CO2 user. This estimate is based on Carbon Cure study, but the ultimate carbon capture projects in NGIA could end up using the CO2 in a very different way.

	kg CO2e/Dth
Default Geologic Gas Emissions Factor	66.14
Geologic Gas Combustion Emissions Factor	53.74

	CO2 Captured from Geologic Gas Combustion (metric tons per year @expected% CU)
Size A	6,951
Size B	13,902

83,412,320.32

4,170.6 For a Centerpoint facility capturing 6,951 metric tons per year of CO2, about 60% would be absorbed into concrete; 60% based on Carbon Cure findings.

Size C 20,853

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

Values now linked directly back to planning assumptions tab (possible given the combination of formerly separate Exhibits P and N into a single file)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5	
Escalation rate	n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)

Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2027 to all users in the West North Central Region as estimated in the Energy Information Administration's 2023 Annual Energy Outlook

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals.
equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)

Calculations & Other Explanation:

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor 8.22%

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales

Calculations & Other Explanation:

OTHER QUANTITATIVE CRITERIA:

		USD Cost Unit:
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth

Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E999/CI-14-643, utilities may use the value most applicable for the pilot or measure.

Calculations & Other Explanation:

OTHER NON-GHG

2024 Gas environmental damage from all criteria pollutants combined $ 0.37

POLLUTANTS

2022 Gas environmental damage from all criteria pollutants combined	$	0.34	
Escalation rate from legislation	0.0779	2022 USD adjustment to 2024 USD	
Annual escalation rate	3.82%		Annual escalation rate calculated as the average of the 12-month percentage change in the "all items" customer price index available from the United States Bureau of Labor Statistics between 2018 and 2022. https://www.bls.gov/charts/consumer-price-inde

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Direct Job Creation, Size A	1	0	5	1	1	8	16	# of jobs
Net Direct Job Creation, Size B	1	0	9	2	2	14	30	# of jobs
Net Direct Job Creation, Size C	1	0	14	4	1	19	45	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Indirect Job Creation, Size A	1	0	5	1	1	7	19	# of jobs
Net Indirect Job Creation, Size B	0	0	9	2	2	14	35	# of jobs
Net Indirect Job Creation, Size C	0	0	14	4	2	20	53	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Induced Job Creation, Size A	1	0	6	1	1	9	20	# of jobs
Net Induced Job Creation, Size A	0	0	12	3	2	17	28	# of jobs
Net Induced Job Creation, Size A	0	0	18	4	1	23	56	# of jobs

Calculations & Other Explanation:
Job numbers are estimated as Full Time Equivalents (FTE) and are rounded off.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year	*Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year	*The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.

Definition:

NGIA Participants' Perspective Notes:

Definition: *It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*

May assist MN businesses in achieving GHG goals

NGIA Nonparticipating Customers' Perspective Notes:

Definition: *As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*

Effects on Other Energy Systems and Energy Security:

Definition: *NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.*

GHG Emissions Notes:

Definition: *An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*

Other Pollution Notes:

Definition: *Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*

Waste Reduction and Reuse Notes:

Definition: *Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.*

Policy Notes:

Definition: *NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*

Net Job Creation Notes:

Definition: *An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*

Economic Development Notes:

Definition: *The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*

Likely that many projects will satisfy IRA labor requirements; will help MN build carbon capture workforce as carbon capture poised for growth due to IRA

Public Co-Benefits Notes:

Definition: *There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.*

Market Development Notes:

Definition:

	The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized
	May help MN businesses appeal to customers interested in sustainability; carbon capture may produce by-products for resale
Direct Innovation Support Notes:	
Definition:	*This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.*
	Opportunity for customers to learn about novel options for reducing GHGs from their systems
Resource Scalability and Role in a Decarbonized System Notes:	
Definition:	*While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.*
	Carbon capture poised to become more affordable and scalable as a result of IRA; carbon capture may be best decarb options for high heat load processes; carbon capture can be used in conjunction with RNG to drive net negative emissions

Click here to go back to the list of all pilots NGIA Pilot Profiles Workbook

CNP13 - Carbon Capture Rebates for Commercial Buildings

March 15th 2024 Update: The assumed participating units have been reduced, to reflect expectations for a slower/longer ramp up period to year 5 participation levels. The portion of units accounted for in the SMB audit program has also been dropped slight

DESCRIPTION

Pilot Project Code:	**CNP13**
Pilot Project Name:	*Carbon Capture Rebates for Commercial Buildings*
Customer Class/ Sector:	**C&I**
Low-Income Community Benefit?	**N**
Target Area:	**Territory-wide**
Primary Innovative Resource Category:	**Carbon Capture**

Select primary Innovation Category. Others can be listed her

Pilot Description:

CenterPoint Energy proposes to provide rebates to commercial customers that install CarbinX carbon capture systems manufactured by the Canadian company CleanO2.

Overview of Program/ Implementation Approach:

Customer would own and operate CarbinX Unit with standard support from CleanO2. In addition to the manufacturer maintaining the units, they arrange for the potassium carbonate by-product to be collected on a regular basis, with customers earning revenue for its sale.

Other Comments / Information:

CenterPoint Energy is currently piloting CarbinX units through CIP R&D. Pending results of those test, CIP may offer a rebate for the energy efficiency component of the CarbinX savings (which could reduce NGIA incentive levels).

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

Pilot Year	Year 1	Year 2	Year 3	Year 4	Year 5	
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A	3	8	18	38	73	*Incremental units added, annual (not cumulative).*
Participating Units, Size B	73	148	148	148	148	
Participating Units, Size C	148	298	298	298	298	

Unit of Participation = CarbinX systems installed

Calculations & Other Explanation:

CarbinX Units assumed to be installed in (Size A) of Pilot 20:	2	2	2	2	2	Since the equivalent incentives would be offered directly through pilot #20, reducing participation here to reflect (a portion) of that participation from pilot #20

Total Participation Scenarios for Carbin X Unit Installs **March 15th 2024 Update:** The assumed participating units have been reduced, to reflect expectations for a slower/longer ramp up period to year 5 participation levels. The portion of units accounted for in the SMB audit program has also been dropped slightly (from

Participating Units, Size A	5	10	20	40	75
Participating Units, Size B	75	150	150	150	150
Participating Units, Size C	150	300	300	300	300

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 72,000	$ 103,470	$ 164,984	$ 134,544	$ 206,150	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ 497,000	$ 948,470	$ 949,984	$ 359,544	$ 361,150	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ 985,000	$ 1,887,310	$ 1,889,689	$ 700,140	$ 702,664	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 54,000	$ 55,470	$ 56,984	$ 58,544	$ 60,150	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 59,000	$ 60,470	$ 61,984	$ 63,544	$ 65,150	total cost per year	
Fixed O&M Cost, Size C	$ 97,000	$ 99,310	$ 101,689	$ 104,140	$ 106,664	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 49,000	$ 50,470	$ 51,984	$ 53,544	$ 55,150	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 49,000	$ 50,470	$ 51,984	$ 53,544	$ 55,150	per year	
Total Project Delivery, Size C	$ 77,000	$ 79,310	$ 81,689	$ 84,140	$ 86,664	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 49,000	$ 50,470	$ 51,984	$ 53,544	$ 55,150	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 49,000	$ 50,470	$ 51,984	$ 53,544	$ 55,150	per year	
Internal Project Delivery, Size C	$ 77,000	$ 79,310	$ 81,689	$ 84,140	$ 86,664	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ -	$ -	$ -	$ -	$ -	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ -	$ -	$ -	$ -	$ -	per year	
External Project Delivery, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	per year	

UTILITY PILOT COSTS

Advertising and Promotions, Size C	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A						per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B						per year	
Allocation of General Portfolio Costs, Size C						per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A		per year	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B		per year	
Est. Total Revenue Requirement for Capital Projects, Size C		per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ 18,000	$ 48,000	$ 108,000	$ 76,000	$ 146,000	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ 438,000	$ 888,000	$ 888,000	$ 296,000	$ 296,000	per year	
Incentives, Size C	$ 888,000	$ 1,788,000	$ 1,788,000	$ 596,000	$ 596,000	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	$ 6,000	$ 6,000	$ 6,000	$ 2,000	$ 2,000	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	$ 6,000	$ 6,000	$ 6,000	$ 2,000	$ 2,000	per participant per year	
Incentives per Participant, Size C	$ 6,000	$ 6,000	$ 6,000	$ 2,000	$ 2,000	per participant per year	

Calculations & Other Explanation:

Plan for NGIA incentives is to support the installation of the units.

	Year 1	Year 2	Year 3	Year 4	Year 5
Incentive per installation:	$6,000	$6,000	$6,000	$2,000	$2,000

Note, in years 1 - 3, CenterPoint plans to offer an $8,000 rebate for initial installations, and a $3,000 rebate for a customer's subsequent installations at additional sites. We assume 60% of incentives will go to first time installations, and 40% to subsequent installations, resulting in an average of $6,000 rebate per installation. Additionally, these incentives might be varied over pilot years (e.g. higher for initial installations, and then scaled down overtime) or by different types/sizes of facility.

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A	$ 39,000	$ 40,490	$ 42,037	$ 43,642	$ 45,309	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B	$ 39,000	$ 40,490	$ 42,037	$ 43,642	$ 45,309	per participant	
Total Pilot Upfront Costs, Size C	$ 39,000	$ 40,490	$ 42,037	$ 43,642	$ 45,309	per participant	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Third Party Funding, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Third Party Funding, Size C	$ -	$ -	$ -	$ -	$ -	per participant	

Description of source of external funding:

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ 33,000	$ 34,490	$ 36,037	$ 41,642	$ 43,309	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note I: some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant.*
Direct Participant Pilot Costs, Size B	$ 33,000	$ 34,490	$ 36,037	$ 41,642	$ 43,309	per participant	
Direct Participant Pilot Costs, Size C	$ 33,000	$ 34,490	$ 36,037	$ 41,642	$ 43,309	per participant	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any increased in costs like equipment operating costs or increased water costs. Participant Non-Energy Costs will be used in the*

PARTICIPANT NON-ENERGY COSTS

Participant Non-Energy Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*Participant Cost tests for the NGIA evaluation criteria.*
Participant Non-Energy Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use*

Note, there are on-going costs for the unit, in particular raw material costs for chemicals that need to continually be replenished for the capture unit to function. However this category of cost (any O&M and raw material costs) is covered already by CleanO2 under the on-going service agreement they put in place with customers. Essentially the recurring revenue that customers receive from CleanO2 for the by-product has been reduced to cover raw materials and maintenance costs.

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	per participant per year of pilot life	*This includes any operating savings like water savings.*
Participant Non-Energy Savings, Size B	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	per participant per year of pilot life	
Participant Non-Energy Savings, Size C	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	per participant per year of pilot life	

Calculations & Other Explanation:

Total Annual CO2 Captured	708	kg CO2 / year
By-product generated per kg of CO2 captured	3.14	kg of
Revenue customer receives per year from sale of by-	$0.90	per kg of

The balanced chemical equation says that 112 kg of KOH will react with 44 kg of CO2 to form 138 kg of K2CO3 plus 18 kg of H2O.

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	20	years
Average Lifetime for Savings/Pilot Tech, Size B	20	years
Average Lifetime for Savings/Pilot Tech, Size C	20	years

Calculations & Other Explanation:

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	89.3	Dth/Participant	Estimated savings based on manufacturer expectations for overall GHG reduction and assumed split between carbon capture savings and demand reduction savings
Avg. Dth/Participant Saved, Size B	89.3	Dth/Participant	
Avg. Dth/Participant Saved, Size C	89.3	Dth/Participant	

Calculations & Other Explanation:

Link to summary: https://static1.squarespace.com/static/622f8140267a852825aa0eaf/t/6255d1a45d553

GHG Emissions results vary based on installation, and depend on a variety of factors including boiler size and runtime. Analysis here is largely based on work done by University of British Columbia researchers, studying a system connected to a 250,000 BTU domestic hot water boiler in a 30,000 square foot office located in Calgary, Alberta, Canada, which is smaller than the expected average boiler application.
CleanO2 has indicated that for an expected average application, 8200 kg CO2/year is a more typical expectation for GHG emission reductions (from both EE gains and captured CO2) for boilers operating year round, and typically they would expect systems to operate for 8 months of the year. For the purposes of this analysis, we are using the ratio between the LCA GHG reduction (2905 kg CO2E/yr) and the GHG reduction for the larger unit (8000 kg CO2E/yr) to scale up each of the categories noted in the LCA study (listed below).

	LCA System - 250,000 BTU DHW Boiler in Office Building		**CarbinX Installation on Expected Average Size Boiler/Boiler Runtime**	
Total Reduction in Natural Gas Emissions:	**2,905**	**kg CO2 / year**	5,467	**kg CO2 / year**
Baseline scenario natural gas emissions:	12,063	kg CO2 / year		
Natural gas emissions with unit in place:	9,158	kg CO2 / year		
Savings from captured emissions:	905	kg CO2 / year	708	kg CO2 / year
Savings from boiler efficiency improvement (heat recovery):	2,000	kg CO2 / year	4,758	kg CO2 / year
Default Geologic Gas Emissions Factor	66.14	kg CO2e/Dth		
Implied Gas Savings	30.2	Dth/year	89.3	Dth/year

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	0.00	kWh/Participant	*Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Non-Gas Fuel Units/Part. Saved, Size B	0.00	kWh/Participant	
Avg. Non-Gas Fuel Units/Part. Saved, Size C	0.00	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	993	kWh/Participant	*Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	993	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	993	kWh/Participant	

Calculations & Other Explanation:

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5	
Total Annual Dth Saved, Size A	268	714	1,607	3,394	6,519	Dth
Total Annual Dth Saved, Size B	6,519	13,217	13,217	13,217	13,217	Dth
Total Annual Dth Saved, Size C	13,217	26,612	26,612	26,612	26,612	Dth

Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario NREL

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix

Calculations & Other Explanation:

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	2,662	2,662	2,662	2,662	2,662	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	2,662	2,662	2,662	2,662	2,662	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	2,662	2,662	2,662	2,662	2,662	kg CO2e/participant
High						kg CO2e/participant

Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.

Calculations & Other Explanation:

LCA Results*

Annual Production of CO2 in Baseline Scenario:	20,466	kg CO2e / year
Annual Production of CO2 in Scenario with Unit Installed:	15,066	kg CO2e / year
Combustion Emission Reductions (already captured elsewhere):	2,000	kg CO2e / year
Life Cycle Savings (LCA Size Unit):	3,400	kg CO2e / year

Life Cycle Savings (Updated Expected Average Unit Sizing): **2,662** **kg CO2e /**

Again, scaling the LCA results based on new size here. Most of the LCA savings are from how the by-product can be used to displace other fossil fuel-based chemical inputs, and the lifecycle savings for the larger units should also scale this component of the GHG savings (given the higher volumes of by-

* Lifecyle Analysis (LCA) factors in Annual Consumption of natural gas, production of the K2CO3 that is displaced by the unit's by-product, increase in production of KOH required for the units, electricity consumed by device, production of the feed chemicals required by capture unit, transportation of chemicals, and manufacture of the machines.

The LCA approach is consistent with the principles of GHG accounting in the NGIA framework.

The 2000 kg CO23 / year reduction in emissions from natural gas combustion emision factor is subtracted from these savings simply because the spreadsheet these numbers feed into will automatically add that same amount of savings for this pilot (taking it out here, so when it is added later on these savings will not be double counted).

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

Values now linked directly back to planning assumptions tab (possible given the combination of formerly separate Exhibits P and N into a single file)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

Year 1	Year 2	Year 3	Year 4	Year 5	
n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)

Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals.
equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)

Calculations & Other Explanation:

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor 8.22%

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales

Calculations & Other Explanation:

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

		USD Cost Unit:	
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth	*Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E1999/CI-14-643, utilities may use the value most applicable for the pilot or measure.*
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth	
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth	

Calculations & Other Explanation:

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life		
Net Direct Job Creation, Size A	4	8	8	9	10	38	50	# of jobs	*Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Net Direct Job Creation, Size B	7	15	16	18	22	78	95	# of jobs	
Net Direct Job Creation, Size C	14	30	33	35	43	155	193	# of jobs	

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life		
Net Indirect Job Creation, Size A	2	4	5	5	6	22	30	# of jobs	*Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Net Indirect Job Creation, Size B	4	9	10	10	13	47	57	# of jobs	
Net Indirect Job Creation, Size C	9	19	20	21	26	94	116	# of jobs	

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Induced Job Creation, Size A	3	4	5	5	7	24	31	# of jobs
Net Induced Job Creation, Size A	4	9	10	11	13	48	60	# of jobs
Net Induced Job Creation, Size A	9	19	21	22	27	97	121	# of jobs

March 15th 2024 Update: Note that Net Job Creation impacts have not been updated with the current changes to this pilot.

Calculations & Other Explanation:

Job numbers are estimated as Full Time Equivalents (FTE) and are rounded off.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year	*Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year	*The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

Definition: *It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.*

NGIA Participants' Perspective Notes:

Definition: *It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*

	May assist MN businesses in achieving GHG goals
NGIA Nonparticipating Customers' Perspective Notes:	
Definition:	*As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*
Effects on Other Energy Systems and Energy Security:	
Definition:	*NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.*
	Reduces overall energy consumption
GHG Emissions Notes:	
Definition:	*An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*
Other Pollution Notes:	
Definition:	*Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*
Waste Reduction and Reuse Notes:	
Definition:	*Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.*
Policy Notes:	
Definition:	*NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*
	Reduces fossil gas throughput
Net Job Creation Notes:	
Definition:	*An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Economic Development Notes:	
Definition:	*The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*
	Manufacturer intends to establish MN office in 2023

Public Co-Benefits Notes:

Definition: *There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.*

Market Development Notes:

Definition: *The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized*

May help MN businesses appeal to customers interested in sustainability; carbon capture will produce by-products for resale

Direct Innovation Support Notes:

Definition: *This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA.40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.*

Opportunity for customers to learn about novel options for reducing GHGs from their systems; version 4 unit is forthcoming with expected larger carbon capture percentages and application to more building types

Resource Scalability and Role in a Decarbonized System Notes:

Definition: *While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.*

Carbon capture may be used in conjunction with RNG to drive net negative emissions

ICF

CNP14 - New Networked Geothermal Systems Pilot

Click here to go back to the list of all pilots

NGIA Pilot Profiles Workbook

DESCRIPTION

Pilot Project Code:	**CNP14**
Pilot Project Name:	*New Networked Geothermal Systems Pilot*
Customer Class/ Sector:	**C&I & Res**
Low-Income Community Benefit?	**Y - preference for location in a low income community**
Target Area:	**Urban**
Primary Innovative Resource Category:	**District Energy**

Select primary Innovation Category. Others can be listed here:

Pilot Description:

CenterPoint Energy proposes to develop a new networked geothermal system to provide building heat and cooling for a neighborhood currently served by the Company. This involves installation of a new 'distributed' geothermal system where individual customers would have a heat pump accessing a common water loop (instead of their own geothermal wells or air source heat pumps). The pilot begins with a feasibility study, planning and modeling, and site selection, prior to design and construction.

Overview of Program/ Implementation Approach:

The proposed approach follows pilots being planned by gas utilities, including National Grid, in Massachusetts. CenterPoint Energy would own and operate the geothermal shared loop system, which would be installed in phases over the 5-year program period. Entire sections of the neighborhood(s) would be shifted off the natural gas distribution system at the same time. In addition to converting gas space and water heating to ground source heat pumps drawing on the shared loop, any other gas appliances would be converted to electric appliances. The pilot program would cover all of these upfront costs for customers, requiring only a roughly 5% co-payment / participant fee from customers in the participating neighborhood.

Other Comments / Information:

Metrics are applied on a per-ton basis, with different size assumptions (200 tons, 500 tons, and 1,000 tons of total heating/cooling capacity, installed in phases over a 5 year period). A neighborhood including a low-income community with varied loads (residential, retail, office, grocery) is preferred.

There is significant uncertainty in the costs and savings that would result from this pilot, and a more detailed engineering study, neighborhood selection, and system design is required to better understand the opportunity for CenterPoint Energy.

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

Pilot Year	Year 1	Year 2	Year 3	Year 4	Year 5	
Calendar Year	2024	2025	2026	2027	2028	
Size A: 200 Ton Heating/Cooling Capacity	0	0	100	100	0	*Units: Tons, shown as the incremental tons installed each year (not cumulative total); Includes a rough approximation of how capital investment for large pilot options might be spread over multiple years.*
Size B: 500 Ton Heating/Cooling Capacity	0	0	200	300	0	
Size C: 1000 Ton Heating/Cooling Capacity	0	0	200	400	400	

Unit of Participation = **Tons Heating/Cooling Capacity**

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5
Cumulative Networked Geothermal System Size (Tons Capacity), Size A	-	-	100	200	200
Cumulative Networked Geothermal System Size (Tons Capacity), Size B	-	-	200	500	500
Cumulative Networked Geothermal System Size (Tons Capacity), Size B	-	-	200	600	1,000

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 410,000	$ 483,827	$ 515,050	$ 637,928	$ 751,282	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ 449,189	$ 1,074,381	$ 1,161,828	$ 1,463,807	$ 1,707,170	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ 638,378	$ 2,182,511	$ 2,269,958	$ 2,628,161	$ 3,163,072	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 410,000	$ 483,827	$ 458,827	$ 494,121	$ 579,415	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 449,189	$ 1,074,381	$ 1,049,381	$ 1,119,969	$ 1,275,851	total cost per year	
Fixed O&M Cost, Size C	$ 638,378	$ 2,182,511	$ 2,157,511	$ 2,228,100	$ 2,419,276	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 385,000	$ 458,827	$ 458,827	$ 494,121	$ 579,415	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 424,189	$ 1,049,381	$ 1,049,381	$ 1,119,969	$ 1,275,851	per year	
Total Project Delivery, Size C	$ 613,378	$ 2,157,511	$ 2,157,511	$ 2,228,100	$ 2,419,276	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 150,000	$ 150,000	$ 150,000	$ 185,294	$ 220,588	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 189,189	$ 189,189	$ 189,189	$ 259,777	$ 365,660	per year	
Internal Project Delivery, Size C	$ 378,378	$ 378,378	$ 378,378	$ 448,967	$ 590,143	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ 235,000	$ 308,827	$ 308,827	$ 308,827	$ 358,827	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ 235,000	$ 860,191	$ 860,191	$ 860,191	$ 910,191	per year	
External Project Delivery, Size C	$ 235,000	$ 1,779,133	$ 1,779,133	$ 1,779,133	$ 1,829,133	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$25,000	$25,000	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$25,000	$25,000	$ -	$ -	$ -	per year	
Advertising and Promotions, Size C	$25,000	$25,000	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A	$ -	$ -	$ -	$ -	$ -	per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Allocation of General Portfolio Costs, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*

UTILITY PILOT COSTS

Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total utility capital investment, Size A	$ -	$ -	$ 617,647	$ 617,647	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
Total utility capital investment, Size B	$ -	$ -	$ 1,235,294	$ 1,852,941	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ 1,235,294	$ 2,470,588	$ 2,470,588	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ 56,223	$ 143,807	$ 171,867	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ 112,447	$ 343,838	$ 431,318	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ 112,447	$ 400,062	$ 743,796	per year	

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A	$ 3,705,572	total cost	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B	$ 9,263,930	total cost	
Est. Total Revenue Requirement for Capital Projects, Size C	$ 18,527,861	total cost	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	#DIV/0!	#DIV/0!	$ -	$ -	#DIV/0!	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	#DIV/0!	#DIV/0!	$ -	$ -	#DIV/0!	per participant per year	
Incentives per Participant, Size C	#DIV/0!	#DIV/0!	$ -	$ -	$ -	per participant per year	

Calculations & Other Explanation:

Feasibility Study Cost: $200,000 **M&V - Total Cost for Whole Pilot:** $50,000

One of the more comprehensive cost estimates for a networked geothermal pilot that is available is from National Grid's Boston Gas Company.
This breakdown has been pasted into cells R124 to Z163 of this tab. This breakdown is used to develop estimates for the following cost categories, which are then used to estimate costs for different pilot sizes here.
One update made to the National Grid Numbers was the Capex per ton, which are instead using networked geothermal CAPEX cost data provided by HEET/BuroHappold as part of the 'Future of Gas' study in Massachussets. More specifically using the base cost option for medium-density mixed neighborhoods (e.g. mic

CapEx (HEET/BuroHappold):	**$ 8,824 per ton**					**Total $ per ton**	
GSHPs (National Grid):	$ -	$967	$1,934	$967	$0	**$3,867**	
CapEx (National Grid):	$ -	*$1,717*	*$3,433*	*$1,717*	*$0*	*$6,867*	*row 140 instead)*
OpEx- Internal Project Delivery (National Grid):	$ 405	$ 405	$ 378	$ 378	$ 378	**$1,946**	**$1,892 Internal Project Delivery after Marketing Costs Removed**
OpEx- External Project Delivery (National Grid):	$ 38	$ 1,052	$ 1,876	$ 1,025	$ 173	**$4,163**	
Customer Co-pay (National Grid):	$0	($31)	($153)	($276)	($218)	**-$679**	
Size A	200 Tons						
Size B	500 Tons					**$16,164**	**per ton (after customer co-pay)**
Size C	1000 Tons					**$16,843**	**per ton (total cost without customer co-pay)**

Annual O&M Costs as % of CAPEX: 4%

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A	$ 28,504	$ 28,504	$ 28,504	$ 28,504	$ 28,504	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B	$ 28,504	$ 28,504	$ 28,504	$ 28,504	$ 28,504	per participant	
Total Pilot Upfront Costs, Size C	$ 28,504	$ 28,504	$ 28,504	$ 28,504	$ 28,504	per participant	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A	$ 2,647	$ 2,647	$ 2,647	$ 2,647	$ 2,647	per participant	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria. In this case we are assuming project would qualify for 30% investment tax credit pursuant to 26 USC 48E as an energy storage facility (which includes thermal energy storage property as defined in 26 USC 48); assume labor requirements will be satified so as to qualify for 30% as opposed to 6%; do not assume that project is installed in an energy community, which would increase*
Third Party Funding, Size B	$ 2,647	$ 2,647	$ 2,647	$ 2,647	$ 2,647	per participant	
Third Party Funding, Size C	$ 2,647	$ 2,647	$ 2,647	$ 2,647	$ 2,647	per participant	

Description of source of external funding: IRA funding shown above assumed to reduce CNP capital costs, does not reduce participants' direct costs.

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ 679	$ 679	$ 679	$ 679	$ 679	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note 1: some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant.*
Direct Participant Pilot Costs, Size B	$ 679	$ 679	$ 679	$ 679	$ 679	per participant	
Direct Participant Pilot Costs, Size C	$ 679	$ 679	$ 679	$ 679	$ 679	per participant	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use*

IRA Discount on Capital Costs: 30%

Assuming project would qualify for 30% investment tax credit pursuant to 26 USC 48E as an energy storage facility (which includes thermal energy storage property as defined in 26 USC 48); assume labor requirements will be satified so as to qualify for 30% as opposed to 6%; do not assume that project is installed in an energy community, which would increase credit amount to 40%.

PARTICIPANT NON-ENERGY COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any increased in costs like equipment operating costs or increased water costs. Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note, to calculate this metric, you can make one cost estimate for year 1 and then use the escalation rate to estimate each remaining year.*
Participant Non-Energy Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use*

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any operating savings like water savings.*
Participant Non-Energy Savings, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Savings, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	40	years
Average Lifetime for Savings/Pilot Tech, Size B	40	years
Average Lifetime for Savings/Pilot Tech, Size C	40	years

Calculations & Other Explanation:

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	41.9	Dth/Participant	participants are tons, so this is annual gas savings per ton
Avg. Dth/Participant Saved, Size B	41.9	Dth/Participant	represents annual savings after all equipment is installed (year 4)
Avg. Dth/Participant Saved, Size C	41.9	Dth/Participant	

Calculations & Other Explanation:

Geothermal Heating capacity factor	**33%**	(compared to capacity, how much heating energy is used throughout the year)		Three geothermal analyses in New York (NYSEG/RG&E) were heating-dominant as expected in Minnesota
Btu/hr, Size A	2,823,529			Heating capacity factors for these sites were approximately 33% (Rochester), 50% (Ithaca), and 66% (Norwich)
Btu/hr, Size B	7,058,824			Minnesota TRM 3.0 Residential Space Heating Hours per year, for Zone 3 (Southern MN / Twin Cities): 1932 Equivalent Full Load Heating Hours
Btu/hr, Size C	14,117,647			1932 FLHE / 8760 hours/year = 22% capacity factor for just space heating, not accounting for water heating (and commercial buildings served might have higher portio
Annual Dth, size A	8,157	40.78		But there is also the impact of loads not always being co-incident, letting the system provide heat to more buildings given that heating needs may be staggered/offse
Annual Dth, size B	20,392	40.78	Dth per ton	For now we are basing geothermal capacity factor off the lowest value observed in New York analyses above, 33% (the total savings still seem relatively high compared
Annual Dth, size C	40,784	40.78		Ultimately, the more detailed feasibility study and planning for this pilot would need to assess this value and the gas savings more precisely
Replaced Boiler / Furnace Efficiency	**85%**			
Additional savings from converted cooking/drying appliances:	1.11	Dth/ton (participant)		For Midwest region, RECS survey data shows that gas consumption for cooking and drying is equal to 2.72% of gas consumption for space heating and water heating (expected to be displaced by geothermal)

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	0.00	kWh/Participant	*Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Non-Gas Fuel Units/Part. Saved, Size B	0.00	kWh/Participant	
Avg. Non-Gas Fuel Units/Part. Saved, Size C	0.00	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	1,407	kWh/Participant	*Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	1,407	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	1,407	kWh/Participant	

Calculations & Other Explanation: Rochester pilot geothermal project (residential/office/retail mixed use loads) showed an increase of 1,407 kWh electricity consumption per ton of geothermal capacity primarily due to increased electricity consumption for space heating in Winter months

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5	
Total Annual Dth Saved, Size A	-	-	4,189	4,189	-	Dth
Total Annual Dth Saved, Size B	-	-	8,379	12,568	-	Dth
Total Annual Dth Saved, Size C	-	-	8,379	16,757	16,757	Dth

Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario	NREL	*Select one of the listed grid mix scenarios taking into account that:*

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from National Renewable

Calculations & Other Explanation:

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.

Calculations & Other Explanation:

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

Values now linked directly back to planning assumptions tab (possible given the combination of formerly separate Exhibits P and N into a single file)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

Year 1	Year 2	Year 3	Year 4	Year 5	
n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)

Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 202

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals.
equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)

Calculations & Other Explanation:

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor 8.22%

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales

Calculations & Other Explanation:

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

		USD Cost Unit:
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth

Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E1999/CI-14-643, utilities may use the value most applicable for the pilot or measure.

Calculations & Other Explanation:

2024 Gas environmental damage from all criteria pollutants combined	$	0.37	
2022 Gas environmental damage from all criteria pollutants combined	$	0.34	per Dth

The factor is calculated using the median range of the final metropolitan fringe environmental cost values approved by the Minnesota Public Utilities Commission (Commission)27 for carbon dioxide (CO2), sulfur dioxide (SO2), fine particulate matter (PM2.5), carbon monoxide (CO), nitrogen oxides (NOx), and lead (Pb); along with estimated natural gas emission factor (or factors) for each emission provided by the Environmental Protection Agency Source: AP-42, Fifth Edition, Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources

Escalation rate from legislation	0.0779	2022 USD adjustment to 2024 USD	
Annual escalation rate	3.82%		

Annual escalation rate calculated as the average of the 12-month percentage change in the "all items" customer price index available from the United States Bureau of Labor Statistics between 2018 and 2022. https://www.bls.gov/charts/consumer-price-index/consumer-price-index-by-category-line-chart.htm

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Direct Job Creation, Size A	1	1	2	2	2	8	16	# of jobs
Net Direct Job Creation, Size B	1	3	5	7	3	19	34	# of jobs
Net Direct Job Creation, Size C	3	7	7	10	25	52	64	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Indirect Job Creation, Size A	1	1	2	2	1	7	27	# of jobs
Net Indirect Job Creation, Size B	1	2	4	5	3	16	50	# of jobs
Net Indirect Job Creation, Size C	2	5	5	8	20	41	88	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Induced Job Creation, Size A	1	1	2	2	1	7	34	# of jobs
Net Induced Job Creation, Size A	1	2	4	6	3	16	74	# of jobs
Net Induced Job Creation, Size A	2	5	5	9	22	44	142	# of jobs

Calculations & Other Explanation:
Job numbers are estimated as Full Time Equivalents (FTE) and are rounded off.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year

Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

Calculations & Other Explanation:

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year

The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

Definition: *It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.*

NGIA Participants' Perspective Notes:

Definition: *It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*

NGIA Nonparticipating Customers' Perspective Notes:

Definition: *As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*

Effects on Other Energy Systems and Energy Security:

Definition: *NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.*

System will also support cooling reducing demand on electric system

GHG Emissions Notes:

Definition: *An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*

Other Pollution Notes:

Definition:

Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.

Waste Reduction and Reuse Notes:

Definition:

Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.

Policy Notes:

Definition:

NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.

Reduces fossil gas throughput; increases use of renewable energy

Net Job Creation Notes:

Definition:

An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

-

Economic Development Notes:

Definition:

The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.

Will pay prevailing wages; will seek apprentices; will seek to hire from local community; will take advantage of higher IRA credits due to labor practices; networked geothermal projects represent clean energy opportunity for workers from traditional fossil fuel jobs; locally produced technologies will be considered

Public Co-Benefits Notes:

Definition:

There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.

Market Development Notes:

Definition:

The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized

Direct Innovation Support Notes:

Definition:

This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.

Major opportunity for gas utility to learn about delivering energy in a new way

Resource Scalability and Role in a Decarbonized System Notes:

Definition:

While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.

ICF

CNP15 - Decarbonizing Existing District Energy Systems

Click here to go back to the list of all pilots

NGIA Pilot Profiles Workbook

DESCRIPTION

Pilot Project Code:	**CNP15**
Pilot Project Name:	*Decarbonizing Existing District Energy Systems*
Customer Class/ Sector:	**C&I**
Low-Income Community Benefit?	**N**
Target Area:	**Urban**
Primary Innovative Resource Category:	**District Energy**

Select primary Innovation Category. Others can be listed here: renewable natural gas, biogas, power-to-hydrogen, carbon capture, strategic electrification, energy

Pilot Description:

CenterPoint Energy proposes a two-part pilot to help existing district energy systems that currently use geologic gas, to identify opportunities to reduce the lifecycle GHG impact of their systems. First, CenterPoint Energy proposes to support customers who hire expert engineering firms, or similar, to complete feasibility studies to identify decarbonization opportunities. Second, CenterPoint Energy would support customers in implementing GHG reduction projects.

Overview of Program/ Implementation Approach:

CenterPoint energy would provide an incentive in support of feasibility/engineering studies looking at opportunities to reduce emissions from existing district energy customers, with the utility planning to cover 20% of the total study cost up to a cap of $30,000. While incentive approaches/structures to encourage customers to adopt the findings of these studies are still under consideration, CenterPoint is considering leveraging a similar approach to CIP custom programs, with incentives determined based on the minimum of several cost caps (in CIP, this is 1 year payback, 50% of incremental costs, or $5/Dth annual gas savings). CenterPoint expects the $/Dth cap to be the limiting factor for most projects considered under NGIA, and is considering higher incentive levels than the $5/Dth for NGIA incentives. CenterPoint also plans to be a cap on the incentive for any given project at a maxium of $1.5 million. Projects that are eligible for rebates in CIP would not be eligible for these NGIA rebates.

Other Comments / Information:

Note – for now this pilot has been based on high-level assumptions surrounding a potential opportunity at a large district energy customer. This customer is already conducting and engineering study of decarbonization options, and however the final results were not ready before the NGIA plan filing.

Sizes B and C of this pilot will be based on the same savings assumptions, but are an opportunity to set aside funding to support additional district energy customers over the 5-year period covered by the first NGIA plan.

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

Pilot Year	Year 1	Year 2	Year 3	Year 4	Year 5	
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A	0	1	0	0	0	*Incremental units added, annual (not cumulative).*
Participating Units, Size B	0	1	1	0	0	
Participating Units, Size C	0	1	1	1	0	

Unit of Participation = District energy system implementing GHG reduction projects

Calculations & Other Explanation:

UTILITY PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 39,800	$ 1,260,094	$ 10,397	$ 10,709	$ 61,030	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ 39,800	$ 1,290,094	$ 1,260,397	$ 10,709	$ 61,030	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ 39,800	$ 1,290,094	$ 1,290,397	$ 1,260,709	$ 61,030	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 61,030	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 61,030	total cost per year	
Fixed O&M Cost, Size C	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 61,030	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 61,030	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 61,030	per year	
Total Project Delivery, Size C	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 61,030	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	
Internal Project Delivery, Size C	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ -	$ -	$ -	$ -	$ 50,000	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ -	$ -	$ -	$ -	$ 50,000	per year	
External Project Delivery, Size C	$ -	$ -	$ -	$ -	$ 50,000	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Advertising and Promotions, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A						per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B						per year	
Allocation of General Portfolio Costs, Size C						per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A	$ -	per year	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B	$ -	per year	
Est. Total Revenue Requirement for Capital Projects, Size C	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ 30,000	$ 1,250,000	$ -	$ -	$ -	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ 30,000	$ 1,280,000	$ 1,250,000	$ -	$ -	per year	
Incentives, Size C	$ 30,000	$ 1,280,000	$ 1,280,000	$ 1,250,000	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	#DIV/0!	$ 1,250,000	#DIV/0!	#DIV/0!	#DIV/0!	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	#DIV/0!	$ 1,280,000	$ 1,250,000	#DIV/0!	#DIV/0!	per participant per year	
Incentives per Participant, Size C	#DIV/0!	$ 1,280,000	$ 1,280,000	$ 1,250,000	#DIV/0!	per participant per year	

Calculations & Other Explanation:

In line with approaches used in CIP custom programs, plan to assess incentives based on the minimum of several caps. Limited to project reaching a 1 year payback, limited to covering 50% of incremental costs, limited to an incentive of $X/Dth annual gas savings, and with a maximum incentive capped at $1.5 million.
For this project, based on the economics, expect the $/Dth to be the limiting factor for incentives. This capped incentive level is planned to be higher than in CIP, given the need for additional support on emerging technology options not cost-effective through CIP.

Incentive Cap: $ 25 $/Dth annual gas savings — Note CIP custom incentive is based on $5/Dth annual savings

Support for Feasibility/Engineering Study: $30,000 CNP plans to cover 20% of total study cost, up to $30K cap.
Engineering Study Total Cost: $200,000 CNP expects these costs to be in the range of $160k to $200k.

Total Project Cost: 2,475,000
Baseline Upgrade Option: $ - Assuming baseline option would be to keep performing routine maintenance and make existing boilers and steam chillers last as long as possible. This would not improve efficiency, and it would not add anything to their current maintenance costs. So tr
Total Incremental Project Cost: 2,475,000
M&V - Total Cost for Whole Pilot: $50,000

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A	$ 2,675,000	$ 2,675,000	$ 2,675,000	$ 2,675,000	$ 2,675,000	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B	$ 2,675,000	$ 2,675,000	$ 2,675,000	$ 2,675,000	$ 2,675,000	per participant	
Total Pilot Upfront Costs, Size C	$ 2,675,000	$ 2,675,000	$ 2,675,000	$ 2,675,000	$ 2,675,000	per participant	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A						per participant	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Third Party Funding, Size B						per participant	
Third Party Funding, Size C						per participant	

Description of source of external funding: IRA, etc

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ 2,645,000	$ 1,425,000	$ 2,675,000	$ 2,675,000	$ 2,675,000	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note t some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant.*
Direct Participant Pilot Costs, Size B	$ 2,645,000	$ 1,395,000	$ 1,425,000	$ 2,675,000	$ 2,675,000	per participant	
Direct Participant Pilot Costs, Size C	$ 2,645,000	$ 1,395,000	$ 1,395,000	$ 1,425,000	$ 2,675,000	per participant	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use*

PARTICIPANT NON-ENERGY COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any increased in costs like equipment operating costs or increased water costs. Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Participant Non-Energy Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United St*

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any operating savings like water savings.*
Participant Non-Energy Savings, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Savings, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	20	years
Average Lifetime for Savings/Pilot Tech, Size B	20	years
Average Lifetime for Savings/Pilot Tech, Size C	20	years

Calculations & Other Explanation:

NATURAL GAS

Avg. Dth/Participant Saved, Size A	50,000	Dth/Participant	High level estimate of potential reduction in gas consumption, based on current levels of gas use for steam production used in steam chillers, and a separate project being considered at a district energy site.
Avg. Dth/Participant Saved, Size B	50,000	Dth/Participant	
Avg. Dth/Participant Saved, Size C	50,000	Dth/Participant	

Calculations & Other Explanation:

Current District Energy System Gas Consumption: 540,000 Dth/year

ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

This district energy system is currently undergoing a study of decarbonization options, which will inform the actual types of projects the customer looks to pursue. The final results of this study will not be complete in time for the expected NGIA plan filing date, so we are proceeding with a placeholder project for now, based roughly on some preliminary results from that study. The idea here is to show representative costs and emission reductions, to potentially allocate NGIA funding to this type of project. May not be an energy efficiency or electrification project in the end.

New Electric Chiller Capacity:	5,500	tons
Cost for New Chillers:	$450	$/ton
Chiller Electricity Consumption:	0.61	kWh/ton-hr
Estimated Cooling Load:	4,000,000	ton-hours

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	0.00	kWh/Participant	*Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Non-Gas Fuel Units/Part. Saved, Size B	0.00	kWh/Participant	
Avg. Non-Gas Fuel Units/Part. Saved, Size C	0.00	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	2,440,000	kWh/Participant	*Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	2,440,000	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	2,440,000	kWh/Participant	

Calculations & Other Explanation:

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5	
Total Annual Dth Saved, Size A	-	50,000	-	-	-	Dth
Total Annual Dth Saved, Size B	-	50,000	50,000	-	-	Dth
Total Annual Dth Saved, Size C	-	50,000	50,000	50,000	-	Dth

Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario: NREL

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from National

Calculations & Other Explanation:

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.

Calculations & Other Explanation:

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor: 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

Values now linked directly back to planning assumptions ta

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

Year 1	Year 2	Year 3	Year 4	Year 5	
n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)

Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals.
equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)

Calculations & Other Explanation:

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor: 8.22%

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales

Calculations & Other Explanation:

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

	USD Cost Unit:	
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth

Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E1l999/CI-14-643, utilities may use the value most applicable for the pilot or measure.

Calculations & Other Explanation:

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Direct Job Creation, Size A	0	11	2	2	2	16	28	# of jobs
Net Direct Job Creation, Size B	0	6	7	3	4	84	58	# of jobs
Net Direct Job Creation, Size C	0	11	10	11	5	37	89	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Indirect Job Creation, Size A	0	5	1	1	1	8	17	# of jobs
Net Indirect Job Creation, Size B	0	3	4	1	2	49	34	# of jobs
Net Indirect Job Creation, Size C	0	5	6	7	3	21	53	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Induced Job Creation, Size A	0	7	1	1	1	10	17	# of jobs
Net Induced Job Creation, Size A	0	4	4	1	2	53	36	# of jobs
Net Induced Job Creation, Size A	0	7	6	7	3	23	55	# of jobs

Calculations & Other Explanation:
Job numbers are estimated as Full Time Equivalents (FTE) and are rounded off.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year

Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

Calculations & Other Explanation:

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year

The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

Definition: *It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.*

NGIA Participants' Perspective Notes:

Definition: *It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*

NGIA Nonparticipating Customers' Perspective Notes:

Definition: *As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*

Effects on Other Energy Systems and Energy Security:	
Definition:	*NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.*
	May promote strategic electrification; may reduce overall energy use
GHG Emissions Notes:	
Definition:	*An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*
Other Pollution Notes:	
Definition:	*Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*
Waste Reduction and Reuse Notes:	
Definition:	*Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.*
Policy Notes:	
Definition:	*NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*
	Reduces fossil gas throughput; may increase use of renewable energy
Net Job Creation Notes:	
Definition:	*An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Economic Development Notes:	
Definition:	*The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*
	Projects may follow IRA labor requirements to take advantage of higher tax credits
Public Co-Benefits Notes:	
Definition:	*There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.*
Market Development Notes:	
Definition:	*The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized*
Direct Innovation Support Notes:	
Definition:	*This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.*

Resource Scalability and Role in a Decarbonized System Notes:

Definition:

While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.

Click here to go back to the list of all pilots

NGIA Pilot Profiles Workbook

CNP16 - New District Energy System

DESCRIPTION

Pilot Project Code:	**CNP16**
Pilot Project Name:	*New District Energy System*
Customer Class/ Sector:	*C&I & Res*
Low-Income Community Benefit?	**Y**
Target Area:	**Territory-wide**
Primary Innovative Resource Category:	**District Energy**

Select primary Innovation Category. Others can be listed here: Electrification, Energy Efficiency

Pilot Description:
CenterPoint Energy proposes a two-part pilot to help current natural gas customers considering developing district energy systems. First, CenterPoint Energy proposes to support customers who hire expert engineering firms, or similar, to complete feasibility studies for new district energy systems. Second, CenterPoint Energy would support customers in developing new district energy systems

Overview of Program/ Implementation Approach:
CenterPoint energy would provide an incentive in support of feasibility/engineering studies looking at opportunities to reduce emissions from existing district energy customers, with the utility planning to cover 20% of the total study cost up to a cap of $30,000. While incentive approaches/structures to encourage customers to adopt the findings of these studies are still under consideration, CenterPoint is considering leveraging a similar approach to CIP custom programs, with incentives determined based on the minimum of three cost caps (1 year payback, 50% of incremental costs, or $5/Dth annual gas savings). Generally speaking CenterPoint expectations the $/Dth cap to be the limiting factor for most projects considered under NGIA, and is considering higher incentive levels than the $5/Dth for NGIA incentives. Projects that are eligible for rebates in CIP would not be eligible for these NGIA rebates.

Other Comments / Information:
Program budget would be sized to support 1-3 new systems.

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

	Year 1	Year 2	Year 3	Year 4	Year 5	
Pilot Year						
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A	0	1	0	0	0	*Incremental units added, annual (not cumulative).*
Participating Units, Size B	0	1	1	0	0	
Participating Units, Size C	0	1	1	1	0	

Unit of Participation = District Energy system constructed

Calculations & Other Explanation: Size A would represent the RFI respondent's project, while sizes B and C assume additional projects of this nature.

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 9,800	$ 271,729	$ 10,397	$ 10,709	$ 61,030	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ 9,800	$ 271,729	$ 282,032	$ 10,709	$ 61,030	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ 9,800	$ 271,729	$ 282,032	$ 282,344	$ 61,030	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 61,030	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 61,030	total cost per year	
Fixed O&M Cost, Size C	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 61,030	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 61,030	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 61,030	per year	
Total Project Delivery, Size C	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 61,030	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	
Internal Project Delivery, Size C	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ -	$ -	$ -	$ -	$ 50,000	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ -	$ -	$ -	$ -	$ 50,000	per year	
External Project Delivery, Size C	$ -	$ -	$ -	$ -	$ 50,000	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Advertising and Promotions, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A						per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B						per year	
Allocation of General Portfolio Costs, Size C						per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*

UTILITY PILOT COSTS

Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A	$ -	per year	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B	$ -	per year	
Est. Total Revenue Requirement for Capital Projects, Size C	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ -	$ 261,635	$ -	$ -	$ -	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ -	$ 261,635	$ 271,635	$ -	$ -	per year	
Incentives, Size C	$ -	$ 261,635	$ 271,635	$ 271,635	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	#DIV/0!	$ 261,635	#DIV/0!	#DIV/0!	#DIV/0!	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	#DIV/0!	$ 261,635	$ 271,635	#DIV/0!	#DIV/0!	per participant per year	
Incentives per Participant, Size C	#DIV/0!	$ 261,635	$ 271,635	$ 271,635	#DIV/0!	per participant per year	

Calculations & Other Explanation:

In line with approaches used in CIP custom programs, plan to assess incentives based on the minimum of several caps. Limited to project reaching a 1 year payback, limited to covering 50% of incremental costs, limited to an incentive of $X/Dth annual gas savings, and with a maximum incentive capped at $1.5 million.
For this project, based on the economics, expect the $/Dth to be the limiting factor for incentives. This capped incentive level is planned to be higher than in CIP, given the need for additional support on emerging technology options not cost-effective through CIP.

Incentive Cap: $ 25 $/Dth annual gas savings — Note CIP custom incentive is based on $5/Dth annual savings

Support for Engineering Study: $10,000 This funding not included for the first participant (where an engineering study has already been completed), but for sizes with additional projects of this nature CenterPoint could cover a portion of costs for an engineering study, similar to the approa

Total Project Cost: 12,375,000
Baseline Upgrade Option: $ 2,110,000
Total Incremental Project Cost: 10,265,000
M&V - Total Cost for Whole Pilot: $50,000 flat rate assumed, regardless of pilot size

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A	$ 10,265,000	$ 10,265,000	$ 10,265,000	$ 10,265,000	$ 10,265,000	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B	$ 10,265,000	$ 10,265,000	$ 10,265,000	$ 10,265,000	$ 10,265,000	per participant	
Total Pilot Upfront Costs, Size C	$ 10,265,000	$ 10,265,000	$ 10,265,000	$ 10,265,000	$ 10,265,000	per participant	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A	$ -	$ 1,665,600	$ -	$ -	$ -	per participant	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria. In this case we are assuming project would qualify for 30% investment tax credit pursuant to 26 USC 48E as an energy storage facility (which includes thermal energy storage property as defined in 26 USC 48); assume labor requirements will be satified so as to quaify for 30% as opposed to 6%; do not assume that project is installed in an energy community, which would increase credit amount to 40%*
Third Party Funding, Size B	$ -	$ 1,665,600	$ 1,665,600	$ -	$ -	per participant	
Third Party Funding, Size C	$ -	$ 1,665,600	$ 1,665,600	$ 1,665,600	$ -	per participant	
Description of source of external funding:	IRA estimate shown above, RFI respondent also pursuing other funding sources.						

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ 10,265,000	$ 8,337,765	$ 10,265,000	$ 10,265,000	$ 10,265,000	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note I: some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant.*
Direct Participant Pilot Costs, Size B	$ 10,265,000	$ 8,337,765	$ 8,327,765	$ 10,265,000	$ 10,265,000	per participant	
Direct Participant Pilot Costs, Size C	$ 10,265,000	$ 8,337,765	$ 8,327,765	$ 8,327,765	$ 10,265,000	per participant	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

Refund from IRA: 30% *IRA Discount on Capital Costs; assuming project would qualify for 30% investment tax credit pursuant to 26 USC 48E as an energy storage facility (which includes thermal energy storage property as defined in 26 USC 48); assume labor requirements will be satified so as to*
Portion of Costs IRA incentive applicable: $ 5,552,000 *(not all of the costs involved in this project would be eligible for IRA incentives)*

PARTICIPANT NON-ENERGY COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any increased in costs like equipment operating costs or increased water costs. Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Participant Non-Energy Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United*

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any operating savings like water savings.*

PARTICIPANT NON-ENERGY SAVINGS

Participant Non-Energy Savings, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life
Participant Non-Energy Savings, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life

Calculations & Other Explanation:

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	30	years
Average Lifetime for Savings/Pilot Tech, Size B	30	years
Average Lifetime for Savings/Pilot Tech, Size C	30	years

Calculations & Other Explanation:

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	10,465	Dth/Participant	*Expected savings provided by RFI respondent*
Avg. Dth/Participant Saved, Size B	10,465	Dth/Participant	
Avg. Dth/Participant Saved, Size C	10,465	Dth/Participant	

Calculations & Other Explanation:

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A		kWh/Participant	*Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Non-Gas Fuel Units/Part. Saved, Size B		kWh/Participant	
Avg. Non-Gas Fuel Units/Part. Saved, Size C		kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	116,117	kWh/Participant	*This is the net increase in electricity consumption (summer cooling electricity requirements will decrease, but there is a larger increase in electricity consumption for new space heating loads), provided by the RFI respondent.*
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	116,117	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	116,117	kWh/Participant	

Calculations & Other Explanation:

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5	
Total Annual Dth Saved, Size A	-	10,465	-	-	-	Dth
Total Annual Dth Saved, Size B	-	10,465	10,465	-	-	Dth
Total Annual Dth Saved, Size C	-	10,465	10,465	10,465	-	Dth

Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario: Xcel

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from National Renewable Energy Laboratory (NREL) Standard Scenarios. If the renewable natural gas facility is using a higher proportion of carbon free electricity than is available by default from their electric utility—either from on-site generation, by subscribing to a Commission-approved electric utility green tariff with renewable energy credits retired on the facility's behalf, or, for approval on a case-by-case basis, using other carbon-free generation sources—the filing gas utility may input facility-specific electric generation information into GREET

Calculations & Other Explanation:

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.

Calculations & Other Explanation:

	GHG Intensity		
	Size A	Size B	Size C
	kg CO2e/Dth		
Low Scenario			
Expected Scenario			
High Scenario			

Using this calculation structure is optional; if modifications are needed, please use the hidden rows or raise with project leads.

	kg CO2e/Dth
Default Geologic Gas Emissions Factor	66.14

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

Variable O&M Cost, Applies to all project sizes	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
	$ -	$ -	$ -	$ -	$ -	per Dth
	-5.250%	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria. Note, to calculate this metric, you can make one cost estimate for year 1 and then use the escalation rate to estimate each Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2027 to all users in the West

Calculations & Other Explanation:

NON-GAS FUEL COST

Non-Gas (i.e., Electric) Fuel Cost		USD (Nominal) Cost Unit:
	$ 44.14	per MWh

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals.
equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)

Calculations & Other Explanation:

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor 8.22%

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales

Calculations & Other Explanation:

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

		USD Cost Unit:
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth

Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E1999/CI-14-643, utilities may use the value most applicable for the pilot or measure.

Calculations & Other Explanation:

NET JOB CREATION

Net Direct Job Creation, Size A	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
	0	22	0	0	0	22	3	# of jobs
Net Direct Job Creation, Size B	0	22	20	0	0	42	6	# of jobs
Net Direct Job Creation, Size C	0	22	20	20	0	62	11	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

Net Indirect Job Creation, Size A	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
	0	14	0	0	0	14	2	# of jobs
Net Indirect Job Creation, Size B	0	14	13	0	0	27	4	# of jobs
Net Indirect Job Creation, Size C	0	14	13	13	0	39	6	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

Net Induced Job Creation, Size A	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
	0	13	0	0	0	13	9	# of jobs
Net Induced Job Creation, Size A	0	13	13	1	1	27	18	# of jobs
Net Induced Job Creation, Size A	0	13	13	13	1	40	27	# of jobs

Calculations & Other Explanation:

Job numbers are estimated as Full Time Equivalents (FTE) and are rounded off.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year

Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

Calculations & Other Explanation:

Water Pollution, Size A	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
	$ -	$ -	$ -	$ -	$ -	per year

The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this

WATER POLLUTION	Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year	*metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
	Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

Definition: *It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.*

NGIA Participants' Perspective Notes:

Definition: *It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*

NGIA Nonparticipating Customers' Perspective Notes:

Definition: *As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*

Effects on Other Energy Systems and Energy Security:

Definition: *NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.*

System will also support cooling reducing demand on electric system

GHG Emissions Notes:

Definition: *An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*

Other Pollution Notes:

Definition: *Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*

Waste Reduction and Reuse Notes:

Definition: *Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.*

Policy Notes:

Definition: *NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*

Reduces fossil gas throughput; increases use of renewable energy

Net Job Creation Notes:	
Definition:	*An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Economic Development Notes:	
Definition:	*The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*
	Projects may follow IRA labor requirements to take advantage of higher tax credits
Public Co-Benefits Notes:	
Definition:	*There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.*
Market Development Notes:	
Definition:	*The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized*
Direct Innovation Support Notes:	
Definition:	*This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.*
Resource Scalability and Role in a Decarbonized System Notes:	
Definition:	*While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.*

ICF

CNP17 - Industrial Electrification Incentive Program

Click here to go back to the list of all pilots

NGIA Pilot Profiles Workbook

DESCRIPTION

Pilot Project Code:	**CNP17**
Pilot Project Name:	*Industrial Electrification Incentive Program*
Customer Class/Sector:	**C&I**
Low-Income Community Benefit?	**N**
Target Area:	**Territory-wide**
Primary Innovative Resource Category:	**Strategic Electrification**

Select primary Innovation Category. Others can be listed here:

Pilot Description:
CenterPoint Energy proposes to provide support for industrial customers to electrify low-to-medium heat processes using heat pump technologies.

Overview of Program/ Implementation Approach:
Phase 1: The program would begin with a study looking at technical potential, heat pump technologies to be used, and identification of potential customers who could pilot heat pump technologies.
Phase 2: Installation at 3 - 9 facilities, including system design, installation and commissioning
Phase 3: Measurement and verification of system performance, and analysis of results.
Phase 1 would take up to 1 year. Phases 2 and 3 may take up to 2 years.

Other Comments / Information:

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

Pilot Year	Year 1	Year 2	Year 3	Year 4	Year 5	
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A	0	3	0	0	0	*Incremental units added, annual (not cumulative).*
Participating Units, Size B	0	3	3	0	0	
Participating Units, Size C	0	3	6	0	0	

Unit of Participation = Facility

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 149,000	$ 502,970	$ 10,397	$ 10,709	$ 11,030	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ 149,000	$ 502,970	$ 454,484	$ 10,709	$ 11,030	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ 149,000	$ 502,970	$ 854,484	$ 10,709	$ 11,030	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 149,000	$ 502,970	$ 10,397	$ 10,709	$ 11,030	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 149,000	$ 502,970	$ 454,484	$ 10,709	$ 11,030	total cost per year	
Fixed O&M Cost, Size C	$ 149,000	$ 502,970	$ 854,484	$ 10,709	$ 11,030	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 149,000	$ 500,470	$ 10,397	$ 10,709	$ 11,030	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 149,000	$ 500,470	$ 451,984	$ 10,709	$ 11,030	per year	
Total Project Delivery, Size C	$ 149,000	$ 500,470	$ 851,984	$ 10,709	$ 11,030	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 49,000	$ 50,470	$ 10,397	$ 10,709	$ 11,030	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 49,000	$ 50,470	$ 51,984	$ 10,709	$ 11,030	per year	
Internal Project Delivery, Size C	$ 49,000	$ 50,470	$ 51,984	$ 10,709	$ 11,030	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ 100,000	$ 450,000	$ -	$ -	$ -	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ 100,000	$ 450,000	$ 400,000	$ -	$ -	per year	
External Project Delivery, Size C	$ 100,000	$ 450,000	$ 800,000	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ -	$ 2,500	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ -	$ 2,500	$ 2,500	$ -	$ -	per year	

UTILITY PILOT COSTS

Advertising and Promotions, Size C	$ -	$ 2,500	$ 2,500	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A						per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B						per year	
Allocation of General Portfolio Costs, Size C						per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A	$ -	per year	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B	$ -	per year	
Est. Total Revenue Requirement for Capital Projects, Size C	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	#DIV/0!	$ -	#DIV/0!	#DIV/0!	#DIV/0!	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	#DIV/0!	$ -	$ -	#DIV/0!	#DIV/0!	per participant per year	
Incentives per Participant, Size C	#DIV/0!	$ -	$ -	#DIV/0!	#DIV/0!	per participant per year	

Calculations & Other Explanation:

Pilot Costs (for 6 heat pump pilot)

Equipment survey and estimation of Pilot testing phase: industrial heat pump installation costs for demonstrations:	$100,000	Fixed for all pilot sizes
	$800,000	Variable, increase/decrease this based on pilot size
Measurement and validation:	$50,000	Fixed for all pilot sizes

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A	$ 133,333	$ 133,333	$ 133,333	$ 133,333	$ 133,333	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B	$ 133,333	$ 133,333	$ 133,333	$ 133,333	$ 133,333	per participant	
Total Pilot Upfront Costs, Size C	$ 133,333	$ 133,333	$ 133,333	$ 133,333	$ 133,333	per participant	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Third Party Funding, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Third Party Funding, Size C	$ -	$ -	$ -	$ -	$ -	per participant	
Description of source of external funding:	IRA, etc						

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note that some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant.*
Direct Participant Pilot Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Direct Participant Pilot Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

PARTICIPANT NON-ENERGY COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Costs, Size A	$ –	$ –	$ –	$ –	$ –	per participant per year of pilot life	*This includes any increased in costs like equipment operating costs or increased water costs. Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Participant Non-Energy Costs, Size B	$ –	$ –	$ –	$ –	$ –	per participant per year of pilot life	
Participant Non-Energy Costs, Size C	$ –	$ –	$ –	$ –	$ –	per participant per year of pilot life	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ –	$ –	$ –	$ –	$ –	per participant per year of pilot life	*This includes any operating savings like water savings.*
Participant Non-Energy Savings, Size B	$ –	$ –	$ –	$ –	$ –	per participant per year of pilot life	
Participant Non-Energy Savings, Size C	$ –	$ –	$ –	$ –	$ –	per participant per year of pilot life	

Calculations & Other Explanation:

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	20	years
Average Lifetime for Savings/Pilot Tech, Size B	20	years
Average Lifetime for Savings/Pilot Tech, Size C	20	years

Calculations & Other Explanation:

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	3135	Dth/Participant
Avg. Dth/Participant Saved, Size B	3135	Dth/Participant
Avg. Dth/Participant Saved, Size C	3135	Dth/Participant

Calculations & Other Explanation:

In the above estimates we match match the level of expected gas savings to the level of expected electricity consumption from the heat pump. We assume an average COP of 3.5 for the heat pump, and that heat from an 80% efficient gas boiler is being displaced. Ultimtately, there is a lot of uncertainty in the savings that will be achieved, given how site and application specific these will be.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	0.00	kWh/Participant	*Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Non-Gas Fuel Units/Part. Saved, Size B	0.00	kWh/Participant	
Avg. Non-Gas Fuel Units/Part. Saved, Size C	0.00	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	210,000	kWh/Participant	*Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	210,000	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	210,000	kWh/Participant	

AVG. NON-GAS FUEL UNITS/ PART.

Calculations & Other Explanation:

Calculated potential electricity consumption based on 70 kW heat pump (RFI respondent suggested 40-100kW range might be targeted), 4000 hours per year operation (e.g. 16 hours/day * 5 days/week* 50 weeks/year), and assume running at average of 75% load factor for that time. Ultimtately, there is a lot of uncertainty in the electricity consumption that will be added, given how site and application specific this will be.

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5	
Total Annual Dth Saved, Size A	-	9,404	-	-	-	Dth
Total Annual Dth Saved, Size B	-	9,404	9,404	-	-	Dth
Total Annual Dth Saved, Size C	-	9,404	18,809	-	-	Dth

Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario: NREL wind 50/50

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from

Calculations & Other Explanation:

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.

Calculations & Other Explanation:

	GHG Intensity		
	Size A	**Size B**	**Size C**
	kg CO2e/Dth		
Low Scenario			
Expected Scenario			
High Scenario			

Using this calculation structure is optional; if modifications are needed, please use the hidden rows or raise with project leads.

	kg CO2e/Dth
Default Geologic Gas Emissions Factor	66.14

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

Peak Reduction Factor: 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

PEAK REDUCTION FACTOR

VARIABLE O&M

Values now linked directly back to planning assumptions tab (possible given the combination of formerly separate Exhibits P and N into a single file)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.
Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2027 to all users in the Wes

Calculations & Other Explanation:

Year 1	Year 2	Year 3	Year 4	Year 5	
n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:	
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh	*The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals.* *equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)*

Calculations & Other Explanation:

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor	8.22%	%	*The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales*

Calculations & Other Explanation:

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

		USD Cost Unit:	
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth	*Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E1999/CI-14-643, utilities may use the value most applicable for the pilot or measure.*
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth	
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth	

Calculations & Other Explanation:

2024 Gas environmental damage from all criteria pollutants combined	$ 0.37		The factor is calculated using the median range of the final metropolitan fringe environmental cost values approved by the Minnesota Public Utilities Commission (Commission)27 for carbon dioxide (CO_2), sulfur dioxide (SO_2), fine particulate matter ($PM_{2.5}$), carbon monoxide (CO), nitrogen oxides (NO_x), and lead (Pb); along with estimated natural gas emission factor (or factors) for each emission provided by the Environmental Protection Agency Source: AP-42, Fifth Edition, Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources
2022 Gas environmental damage from all criteria pollutants combined	$ 0.34	per Dth	
Escalation rate from legislation	0.0779	2022 USD adjustment to 2024 USD	

	Annual escalation rate	3.82%	Annual escalation rate calculated as the average of the 12-month percentage change in the "all items" customer price index available from the United States Bureau of Labor Statistics between 2018 and 2022. https://www.bls.gov/charts/consumer-price-index/consumer-price-index-by-category-line-chart.htm

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life		
Net Direct Job Creation, Size A	1	3	0	0	0	5	6	# of jobs	*Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Net Direct Job Creation, Size B	1	3	3	1	1	8	13	# of jobs	
Net Direct Job Creation, Size C	1	3	5	1	1	11	19	# of jobs	

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life		
Net Indirect Job Creation, Size A	0	1	0	0	0	2	3	# of jobs	*Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Net Indirect Job Creation, Size B	0	1	1	0	0	3	8	# of jobs	
Net Indirect Job Creation, Size C	0	1	2	1	1	5	11	# of jobs	

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Induced Job Creation, Size A	0	2	0	0	0	3	3	# of jobs
Net Induced Job Creation, Size A	0	2	2	0	0	5	8	# of jobs
Net Induced Job Creation, Size A	0	2	3	1	1	7	12	# of jobs

Calculations & Other Explanation:

Job numbers are estimated as Full Time Equivalents (FTE) and are rounded off.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year	*Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year	*The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

Definition: *It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.*

NGIA Participants' Perspective Notes:

Definition: *It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*

May assist MN businesses in achieving GHG goals

NGIA Nonparticipating Customers' Perspective Notes:

Definition: *As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*

Effects on Other Energy Systems and Energy Security:

Definition: *NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.*

Promotes strategic electrification

GHG Emissions Notes:

Definition: *An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*

Other Pollution Notes:

Definition: *Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*

Waste Reduction and Reuse Notes:

Definition: *Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.*

Policy Notes:

Definition: *NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*

Reduces fossil gas throughput; increases use of renewable energy

Net Job Creation Notes:

Definition: *An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*

Economic Development Notes:

Definition: *The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*

Public Co-Benefits Notes:

Definition:

There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.

Market Development Notes:

Definition:

The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized

May help MN businesses appeal to customers interested in sustainability

Direct Innovation Support Notes:

Definition:

This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.

Opportunity for customers to learn about novel options for reducing GHGs from their systems

Resource Scalability and Role in a Decarbonized System Notes:

Definition:

While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.

Strategic electrification necessary part of net zero strategy

ICF

CNP18 – Commercial hybrid heating pilot

Click here to go back to the list of all pilots

NGIA Pilot Profiles Workbook

DESCRIPTION

Pilot Project Code:	**CNP18**
Pilot Project Name:	*Commercial hybrid heating pilot*
Customer Class/ Sector:	**C&I**
Low-Income Community Benefit?	**N**
Target Area:	**Territory-wide**
Primary Innovative Resource Category:	**Strategic Electrification**

Select primary Innovation Category. Others can be listed here:

Pilot Description:
CenterPoint Energy proposes to provide support for commercial buildings interested in replacing existing Heating, Ventilation, and Air Conditioning ("HVAC") systems with hybrid system using electric heat pumps and gas backup.

Overview of Program/ Implementation Approach:
The programmatic approach used here is based on a similar program run by ConEd in New York. This would be a direct install program from the perspective of vendor handling all aspects of the equipment installation, but the customer would pay the bulk of the vendor costs (60%), with CenterPoint Energy covering the remaining portion of installation costs (40%) and some program administration costs. A significant budget for monitoring/metering, analysis, and reporting on the system results is also included in the pilot funding.

This pilot would be conducted in coordination with ETA, which has chosen hybrid rooftop units as one of its focus technologies. ETA is focused on driving market transformation, but does not have the ability to offer customer incentives such as those included in this NGIA pilot, so there is a lot of natural synergy between both efforts.

Other Comments / Information:
Pilot sizes differ depending on number of participants.

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

Pilot Year	Year 1	Year 2	Year 3	Year 4	Year 5	
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A	10	15	15	15	15	*Incremental units added, annual (not cumulative).*
Participating Units, Size B	15	30	30	30	30	
Participating Units, Size C	20	45	45	45	45	

Unit of Participation = Facility

Calculations & Other Explanation:

UTILITY PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 696,000	$ 895,310	$ 902,689	$ 740,140	$ 742,664	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ 913,000	$ 1,546,310	$ 1,553,689	$ 1,391,140	$ 1,393,664	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ 1,130,000	$ 2,197,310	$ 2,204,689	$ 2,042,140	$ 2,044,664	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 372,000	$ 409,310	$ 416,689	$ 254,140	$ 256,664	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 427,000	$ 574,310	$ 581,689	$ 419,140	$ 421,664	total cost per year	
Fixed O&M Cost, Size C	$ 482,000	$ 739,310	$ 746,689	$ 584,140	$ 586,664	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 367,000	$ 404,310	$ 411,689	$ 249,140	$ 251,664	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 422,000	$ 569,310	$ 576,689	$ 414,140	$ 416,664	per year	
Total Project Delivery, Size C	$ 477,000	$ 734,310	$ 741,689	$ 579,140	$ 581,664	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 77,000	$ 79,310	$ 81,689	$ 84,140	$ 86,664	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 77,000	$ 79,310	$ 81,689	$ 84,140	$ 86,664	per year	
Internal Project Delivery, Size C	$ 77,000	$ 79,310	$ 81,689	$ 84,140	$ 86,664	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ 290,000	$ 325,000	$ 330,000	$ 165,000	$ 165,000	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ 345,000	$ 490,000	$ 495,000	$ 330,000	$ 330,000	per year	
External Project Delivery, Size C	$ 400,000	$ 655,000	$ 660,000	$ 495,000	$ 495,000	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	per year	
Advertising and Promotions, Size C	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A						per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B						per year	
Allocation of General Portfolio Costs, Size C						per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.* ***Note, while not planning workforce development / market transformation costs here, plan to work in partnership with ETA, who are targeting their market transformation support on this technology.***
Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A	$ -	per year	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B	$ -	per year	
Est. Total Revenue Requirement for Capital Projects, Size C	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ 324,000	$ 486,000	$ 486,000	$ 486,000	$ 486,000	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ 486,000	$ 972,000	$ 972,000	$ 972,000	$ 972,000	per year	
Incentives, Size C	$ 648,000	$ 1,458,000	$ 1,458,000	$ 1,458,000	$ 1,458,000	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	$ 32,400	$ 32,400	$ 32,400	$ 32,400	$ 32,400	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	$ 32,400	$ 32,400	$ 32,400	$ 32,400	$ 32,400	per participant per year	
Incentives per Participant, Size C	$ 32,400	$ 32,400	$ 32,400	$ 32,400	$ 32,400	per participant per year	

Calculations & Other Explanation:

Average Total Project Costs (Implementation and Capital Costs) for Hybrid Heat Pumps:	$81,000	per participant
Expected External Program Implementation Cost:	$11,000	per participant

Monitoring & Reporting Budget

Year 1	Year 2	Year 3	
$ 180,000	$ 160,000	$ 165,000	Based on information from RFI respondent (covers detailed monitoring and analysis of 3-4 systems per year, simple monitoring packages on 50% of the systems, and reporting on the results)

Customer Portion of Costs:	60%
Utility Portion of Costs (incentive):	40%

Note above are total costs, so customer incremental payment would be lower for end of life replacements

Assumed Baseline Cost for End of Life Replacements:	$60,000
Assumed Portion of Replacements that are End of Life Replacements:	72.00%

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A	$ 21,000	$ 21,000	$ 21,000	$ 21,000	$ 21,000	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B	$ 21,000	$ 21,000	$ 21,000	$ 21,000	$ 21,000	per participant	
Total Pilot Upfront Costs, Size C	$ 21,000	$ 21,000	$ 21,000	$ 21,000	$ 21,000	per participant	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A	$ 250	$ 250	$ 250	$ 250	$ 250	per participant	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Third Party Funding, Size B	$ 250	$ 250	$ 250	$ 250	$ 250	per participant	
Third Party Funding, Size C	$ 250	$ 250	$ 250	$ 250	$ 250	per participant	

Description of source of external funding: IRA, etc

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ 5,150	$ 5,150	$ 5,150	$ 5,150	$ 5,150	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note t some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant.*
Direct Participant Pilot Costs, Size B	$ 5,150	$ 5,150	$ 5,150	$ 5,150	$ 5,150	per participant	
Direct Participant Pilot Costs, Size C	$ 5,150	$ 5,150	$ 5,150	$ 5,150	$ 5,150	per participant	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

Assumed Portion of Participants that Qualify for IRA incentives:	50%	In order to qualify for IRA incentives, the retrofit would need to achieve a 25% absolute energy savings for the facility. The archetype project included in this profile would result in a 72% reduction in space heating energy co
Assumed per customer IRA incentive:	$500	Conservative assumption for 179D commercial deduction - assumes only the minimum 25% savings (higher savings qualify for higher deductions); assumes 10% top marginal tax bracket; assumes 10,000 sq foot building (de

PARTICIPANT NON-ENERGY COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any increased in costs like equipment operating costs or increased water costs. Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Participant Non-Energy Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United*

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any operating savings like water savings.*
Participant Non-Energy Savings, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Savings, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	15	years
Average Lifetime for Savings/Pilot Tech, Size B	15	years
Average Lifetime for Savings/Pilot Tech, Size C	15	years

Calculations & Other Explanation:

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	198	Dth/Participant
Avg. Dth/Participant Saved, Size B	198	Dth/Participant
Avg. Dth/Participant Saved, Size C	198	Dth/Participant

Calculations & Other Explanation:

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	2,600	kWh/Participant
Avg. Non-Gas Fuel Units/Part. Saved, Size B	2,600	kWh/Participant
Avg. Non-Gas Fuel Units/Part. Saved, Size C	2,600	kWh/Participant

Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.

Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	10,600	kWh/Participant
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	10,600	kWh/Participant
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	10,600	kWh/Participant

Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5	
Total Annual Dth Saved, Size A	1,980	2,970	2,970	2,970	2,970	Dth
Total Annual Dth Saved, Size B	2,970	5,940	5,940	5,940	5,940	Dth
Total Annual Dth Saved, Size C	3,960	8,910	8,910	8,910	8,910	Dth

Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario: NREL wind 50/50

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from National Renewable Energy Laboratory (NREL) Standard Scenarios. If the renewable natural gas facility is using a higher proportion of carbon free electricity than is available by default from their electric utility, either from on-site generation, by subscribing to a

Calculations & Other Explanation:

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.

Calculations & Other Explanation:

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor: 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

Values now linked directly back to planning assumptions tab (possible given the combination of formerly separate Exhibits P and N into a single file)

Variable O&M Cost, Applies to all project sizes

Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth

Year 1	Year 2	Year 3	Year 4	Year 5	
n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria. Note, to calculate this metric, you can make one cost estimate for year 1 and then use the escalation rate to estimate each Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2027 to all users in the Wes

Calculations & Other Explanation:

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals.
equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)

Calculations & Other Explanation:

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor: 8.22% %

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales

Calculations & Other Explanation:

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

	USD Cost Unit:	
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth

Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E1999/CI-14-643, utilities may use the value most applicable for the pilot or measure.

Calculations & Other Explanation:

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Direct Job Creation, Size A	2	3	3	3	3	14	5	# of jobs
Net Direct Job Creation, Size B	4	6	6	6	6	28	12	# of jobs
Net Direct Job Creation, Size C	4	9	9	8	9	38	17	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Indirect Job Creation, Size A	1	2	2	2	2	9	3	# of jobs
Net Indirect Job Creation, Size B	3	4	4	3	3	17	7	# of jobs
Net Indirect Job Creation, Size C	3	5	5	5	5	22	11	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Induced Job Creation, Size A	2	2	2	2	2	10	3	# of jobs
Net Induced Job Creation, Size A	3	4	4	3	4	18	8	# of jobs
Net Induced Job Creation, Size A	3	5	6	5	5	23	11	# of jobs

Calculations & Other Explanation:

Job numbers are estimated as Full Time Equivalents (FTE) and are rounded off.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year	*Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year	*The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

Definition: *It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.*

NGIA Participants' Perspective Notes:

Definition: *It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*

May assist MN businesses in achieving GHG goals

NGIA Nonparticipating Customers' Perspective Notes:

Definition: *As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*

Effects on Other Energy Systems and Energy Security:	
Definition:	*NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.*
	Promotes strategic electrification
GHG Emissions Notes:	
Definition:	*An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*
Other Pollution Notes:	
Definition:	*Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*
Waste Reduction and Reuse Notes:	
Definition:	*Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.*
Policy Notes:	
Definition:	*NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*
	Reduces fossil gas throughput; increases use of renewable energy
Net Job Creation Notes:	
Definition:	*An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Economic Development Notes:	
Definition:	*The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*
	Projects may follow IRA labor requirements to take advantage of tax benefits
Public Co-Benefits Notes:	
Definition:	*There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.*
Market Development Notes:	
Definition:	*The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized*
	May help MN businesses appeal to customers interested in sustainability
Direct Innovation Support Notes:	
Definition:	*This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.*
	Opportunity for customers to learn about novel options for reducing GHGs from their systems

Resource Scalability and Role in a Decarbonized System Notes:

Definition:

While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.

Strategic electrification necessary part of net zero strategy

ICF

CNP19 - Residential deep energy retrofit + electric ASHP pilot (with gas backup)

Click here to go back to the list of all pilots

NGIA Pilot Profiles Workbook

DESCRIPTION

Pilot Project Code:	**CNP19**
Pilot Project Name:	*Residential deep energy retrofit + electric ASHP pilot (with gas backup)*
Customer Class/ Sector:	**C&I & Res**
Low-Income Community Benefit?	**Yes**
Target Area:	**Territory-wide**
Primary Innovative Resource Category:	**Strategic Electrification**

Select primary Innovation Category. Others can be listed here: Energy efficiency

Pilot Description:

CenterPoint Energy proposes a three-phase pilot program to test a combination of deep energy retrofits and air-source electric heat pumps with gas back-up in a variety of residential building types.

Overview of Program/ Implementation Approach:

The phase 1 building modelling would be used to develop a more detailed 'pilot program design' for phase, deciding on things like the different tiers of measures that the pilot should test (e.g. different levels of energy efficiency retrofit), the types of buildings to target, and recruiting participants. Phase 2 field testing would see contractors engaged to perform the different tiers of retrofits, install the ASHPs (with gas back-up remaining in place), and setting up the metering equipment. Phase 3 would also leverage external vendors to implement the program, with the general expectation that this would shift from a direct install program to an incentive program (targetting a higher number of customers), but the programmatic approach would be not settled until after phase 2. Plan currently targets both single family homes and multi-family homes, and would consider a mix of 'conventional' building shell retrofit technologies as well as a few emerging technology options.

Other Comments / Information:

Participation shown for years 4 and 5, for phase 3, is currently just a placeholder. CenterPoint will use phases 1 and 2 to inform what makes sense for phase 3 (e.g. level of insulation, level of incentives, etc.). But we are planning for the budget included below, based on the assumptions specified for phase 3 and the amount of NGIA budget CenterPoint estimates might make sense to focus here. Need these estimates in order to set aside some level of funding for phase 3.

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

Pilot Year	Year 1	Year 2	Year 3	Year 4	Year 5	
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A	0	7	7	35	70	*Incremental units added, annual (not cumulative).*
Participating Units, Size B	0	14	14	70	140	
Participating Units, Size C	0	21	21	105	210	

Unit of Participation = Buildings retrofitted

Calculations & Other Explanation:

Phase 1 - Scoping Study, Program Design, & Recruitment

Size A	1	0	0	0	0
Size B	1	0	0	0	0
Size C	1	0	0	0	0

Phase 2 - Pilot Testing & Phase 3 Broader Roll Out

		Phase 2		Phase 3	
Size A - Single Family Homes	**0**	**6**	**6**	**30**	**60**
Size B - Single Family Homes	**0**	**12**	**12**	**60**	**120**
Size C - Single Family Homes	**0**	**18**	**18**	**90**	**180**
Size A - Multi Family Homes	**0**	**1**	**1**	**5**	**10**
Size B - Multi Family Homes	**0**	**2**	**2**	**10**	**20**
Size C - Multi Family Homes	**0**	**3**	**3**	**15**	**30**

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 197,000	$ 1,104,690	$ 1,107,069	$ 1,462,115	$ 2,792,614	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ 197,000	$ 2,045,070	$ 2,047,449	$ 2,790,090	$ 5,448,564	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ 197,000	$ 2,985,450	$ 2,987,829	$ 4,118,065	$ 8,104,514	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 197,000	$ 1,104,690	$ 1,107,069	$ 379,140	$ 626,664	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 197,000	$ 2,045,070	$ 2,047,449	$ 624,140	$ 1,116,664	total cost per year	
Fixed O&M Cost, Size C	$ 197,000	$ 2,985,450	$ 2,987,829	$ 869,140	$ 1,606,664	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 197,000	$ 1,094,690	$ 1,097,069	$ 329,140	$ 576,664	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 197,000	$ 2,035,070	$ 2,037,449	$ 574,140	$ 1,066,664	per year	
Total Project Delivery, Size C	$ 197,000	$ 2,975,450	$ 2,977,829	$ 819,140	$ 1,556,664	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 77,000	$ 79,310	$ 81,689	$ 84,140	$ 86,664	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 77,000	$ 79,310	$ 81,689	$ 84,140	$ 86,664	per year	
Internal Project Delivery, Size C	$ 77,000	$ 79,310	$ 81,689	$ 84,140	$ 86,664	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ 120,000	$ 1,015,380	$ 1,015,380	$ 245,000	$ 490,000	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ 120,000	$ 1,955,760	$ 1,955,760	$ 490,000	$ 980,000	per year	
External Project Delivery, Size C	$ 120,000	$ 2,896,140	$ 2,896,140	$ 735,000	$ 1,470,000	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ -	$ 10,000	$ 10,000	$ 50,000	$ 50,000	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ -	$ 10,000	$ 10,000	$ 50,000	$ 50,000	per year	
Advertising and Promotions, Size C	$ -	$ 10,000	$ 10,000	$ 50,000	$ 50,000	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:

UTILITY PILOT COSTS

Allocation of General Portfolio Costs, Size A						per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B						per year	
Allocation of General Portfolio Costs, Size C						per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A						per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Workforce Development or Market Transformation Cost, Size B						per year	
Workforce Development or Market Transformation Cost, Size C						per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A	$ -	per year	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B	$ -	per year	
Est. Total Revenue Requirement for Capital Projects, Size C	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ -	$ -	$ -	$ 1,082,975	$ 2,165,950	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ -	$ -	$ -	$ 2,165,950	$ 4,331,900	per year	
Incentives, Size C	$ -	$ -	$ -	$ 3,248,925	$ 6,497,850	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	#DIV/0!	$ -	$ -	$ 30,942.14	$ 30,942.14	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	#DIV/0!	$ -	$ -	$ 30,942.14	$ 30,942.14	per participant per year	
Incentives per Participant, Size C	#DIV/0!	$ -	$ -	$ 30,942.14	$ 30,942.14	per participant per year	

Calculations & Other Explanation:

Cost for Scoping Study & Program Design: $120,000

	Phase 2 (Full Cost Covered)	Phase 3 (Incentive)
Average Cost per Participating Single Family Home:	$ 67,730	$ 16,933
Average Cost per Participating Multi Family Building:	$ 460,000	$ 115,000

Program Delivery & Management (Per Participant): $7,000

Initial estimates for the breakdown

TIER	Design Load	Estimated Retrofit Costs	Portion of Total Retrofits in this Tier
Tier 1	44 btu/sq ft	$ 29,600	25%
Tier 2	22 btu/sq ft	$ 36,690	25%
Tier 3 - Conventional Tech	10 btu/sq ft	$ 55,630	25%
Tier 4 - R&D Tech	10 btu/sq ft	$ 149,000	25%

Note, similar to Tier 3 cost above, ACEEE estimated deep energy retrofit cost (also including central ASHP) of $52,657 for cold region 1970's home, in their Deep Energy Pathways Report (Amann, et al).

	Year 1	Year 2	Year 3	Year 4	Year 5
Performance Monitoring, Size A:	$0	$ 100,000	$ 100,000	$0	$0
Performance Monitoring, Size B:	$0	$125,000	$125,000	$0	$0
Performance Monitoring, Size C:	$0	$150,000	$150,000	$0	$0

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A	$ -	$ 123,769	$ 123,769	$ 123,769	$ 123,769	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B	$ -	$ 123,769	$ 123,769	$ 123,769	$ 123,769	per participant	
Total Pilot Upfront Costs, Size C	$ -	$ 123,769	$ 123,769	$ 123,769	$ 123,769	per participant	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Third Party Funding, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Third Party Funding, Size C	$ -	$ -	$ -	$ -	$ -	per participant	
Description of source of external funding:	IRA, etc						

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ -	$ -	$ -	$ 92,826	$ 92,826	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note 1: some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant.*
Direct Participant Pilot Costs, Size B	$ -	$ -	$ -	$ 92,826	$ 92,826	per participant	
Direct Participant Pilot Costs, Size C	$ -	$ -	$ -	$ 92,826	$ 92,826	per participant	

In this pilot for phase 2 CenterPoint would cover all costs, while in phase 3 customers would start to cover costs (although the final phase 3 measure packages could look different)

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis	*For an escalation rate, we use the*

PARTICIPANT NON-

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of	*This includes any increased in costs like equipment operating costs or increased water costs. Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Participant Non-Energy Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

PARTICIPANT NON-ENERGY COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	
Participant Non-Energy Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life

Calculations & Other Explanation:

Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States*

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any operating savings like water savings.*
Participant Non-Energy Savings, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Savings, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	32	years	Weighted avg based on savings 40 years building shell, 15 years for ASHPs.
Average Lifetime for Savings/Pilot Tech, Size B	32	years	
Average Lifetime for Savings/Pilot Tech, Size C	32	years	

Calculations & Other Explanation:

	Building Shell	ASHP
Gas Savings:	45	20
Portion of Gas Savings	69%	31%
Measure Life:	40	15

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	135	Dth/Participant	Taking weighted average of single family homes and multi-family.
Avg. Dth/Participant Saved, Size B	135	Dth/Participant	
Avg. Dth/Participant Saved, Size C	135	Dth/Participant	

Calculations & Other Explanation:

TIER	Approx % Load Reduction	Design Load	Portion of Total Retrofits in this Tier	Space Heating load shifted to electric after retrofit	Gas savings due to retrofit (Dth/yr)	Remaining gas load if no ASHP (Dth/yr)	Gas savings from ASHP installation (with Gas back-up) (Dth/yr)	Total Estimated Gas Savings (Dth/yr)	Remaining Gas Space Heating Load (Dth/yr)
Tier 1	20%	44 btu/sq ft	25.0%	50%	15	60	30	45	30
Tier 2	60%	22 btu/sq ft	25.0%	75%	45	30	22.5	67.5	7.5
Tier 3 - Conventional Tech	80%	10 btu/sq ft	25.0%	90%	60	15	13.5	73.5	1.5
Tier 4 - R&D Tech	80%	10 btu/sq ft	25.0%	90%	60	15	13.5	73.5	1.5

Avg. Annual Gas Savings per Participating Single Family Home:	65		129.75	2,076
Avg. Annual Gas Savings per Participating Multi Family Building:	555		1,110.20	17,763
Avg. Electric kWh increase per Participating Single Family Home:	2,025		4,050.50	64,808
Avg. Electric kWh increase per Participating Multi Family Building:	20,447		40,893.17	654,291
Base case gas consumption (per single family home):	75	Dth/yr		

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	0.00	kWh/Participant	*Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Non-Gas Fuel Units/Part. Saved, Size B	0.00	kWh/Participant	
Avg. Non-Gas Fuel Units/Part. Saved, Size C	0.00	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	4,657	kWh/Participant	*Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	4,657	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	4,657	kWh/Participant	

Calculations & Other Explanation:

TIER	Net electric load added (kWh/year)
Tier 1	2,879
Tier 2	2,460
Tier 3 - Conventional Tech	1,381
Tier 4 - R&D Tech	1,381

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5		
Total Annual Dth Saved, Size A	-	944	944	4,722	9,444	Dth	*Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year*
Total Annual Dth Saved, Size B	-	1,889	1,889	9,444	18,887	Dth	
Total Annual Dth Saved, Size C	-	2,833	2,833	14,165	28,331	Dth	

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario	NREL wind 50/50	*Select one of the listed grid mix scenarios taking into account that:*

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from National Renewable

Calculations & Other Explanation:

LIFECYCLE GHG SAVINGS

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity, Size A	Year 1	Year 2	Year 3	Year 4	Year 5		
Low						kg CO2e/participant	*Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels*
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant	

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

High						kg CO2e/participant	*used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.*
Lifecycle GHG Intensity, Size B	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**		
Low						kg CO2e/participant	
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant	
High						kg CO2e/participant	
Lifecycle GHG Intensity, Size C	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**		
Low						kg CO2e/participant	
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant	
High						kg CO2e/participant	

Calculations & Other Explanation:

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor	1%	*The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.*

Calculations & Other Explanation:

VARIABLE O&M

Values now linked directly back to planning assumptions tab (possible given the combination of formerly separate Exhibits P and N into a single file)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth	*The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria. Note, to calculate this metric, you can make one cost estimate for year 1 and then use the escalation rate to estimate each remaining year.*
Calculations & Other Explanation:	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**		
	n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)	*Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2027 to all users in the West North C*

NON-GAS FUEL COST

	USD (Nominal) Cost Unit:		
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh	*The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)*

Calculations & Other Explanation:

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor	8.22%	%	*The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales*

Calculations & Other Explanation:

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

	USD Cost Unit:		
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth	*Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E999/CI-14-643, utilities may use the value most applicable for the pilot or measure.*
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth	
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth	

Calculations & Other Explanation:

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life		
Net Direct Job Creation, Size A	1	4	4	5	9	21	0	# of jobs	*Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Net Direct Job Creation, Size B	3	7	7	9	18	44	0	# of jobs	
Net Direct Job Creation, Size C	1	10	10	14	26	61	0	# of jobs	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total during 5 program years**	**Remainder of project life**		
Net Indirect Job Creation, Size A	0	3	3	3	6	15	0	# of jobs	*Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Net Indirect Job Creation, Size B	1	5	5	6	12	31	0	# of jobs	
Net Indirect Job Creation, Size C	0	7	7	9	18	42	0	# of jobs	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total during 5 program years**	**Remainder of project life**		
Net Induced Job Creation, Size A	0	2	2	3	7	15	32	# of jobs	
Net Induced Job Creation, Size A	1	4	5	7	13	31	65	# of jobs	
Net Induced Job Creation, Size A	0	7	7	10	20	43	98	# of jobs	

Calculations & Other Explanation:

Job numbers are estimated as Full Time Equivalents (FTE) and are rounded off.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year	*Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year

The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

Definition: *It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.*

NGIA Participants' Perspective Notes:

Definition: *It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*

May improve thermal comfort

NGIA Nonparticipating Customers' Perspective Notes:

Definition: *As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*

Effects on Other Energy Systems and Energy Security:

Definition: *NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.*

Promotes strategic electrification

GHG Emissions Notes:

Definition: *An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*

Other Pollution Notes:

Definition: *Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*

Waste Reduction and Reuse Notes:

Definition: *Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.*

Policy Notes:

Definition: *NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*

Reduces fossil gas throughput; increases use of renewable energy

Net Job Creation Notes:

Definition:	*An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Economic Development Notes:	
Definition:	*The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*
Public Co-Benefits Notes:	
Definition:	*There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.*
Market Development Notes:	
Definition:	*The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized*
Direct Innovation Support Notes:	
Definition:	*This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.*
	Opportunity to collaborate with ETA program
Resource Scalability and Role in a Decarbonized System Notes:	
Definition:	*While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.*
	Strategic electrification necessary part of net zero strategy

Click here to go back to the list of all pilots NGIA Pilot Profiles Workbook

CNP20 - Small/medium business GHG audit pilot

March 15th 2024 Update: The assumed portion of audit recipients assumed to install one of the incented measures has been reduced from 3% to 2%, given the expectations for a slower/longer ramp up period to year on the Commercial Carbon Capture (Clean O2) pilot. Updated input cells marked in g

DESCRIPTION

Pilot Project Code:	**CNP20**
Pilot Project Name:	*Small/medium business GHG audit pilot*
Customer Class/ Sector:	**C&I**
Low-Income Community Benefit?	**N**
Target Area:	**Territory-wide**
Primary Innovative Resource Category:	**Energy Efficiency**

Select primary Innovation Category. Others can be listed here: Strategic electrification, carbon capture

Pilot Description:
CenterPoint Energy proposes to expand its existing Natural Gas Energy Analysis ("NGEA") CIP offering to include identification of non-CIP GHG reducing opportunities for small and medium businesses.

Overview of Program/ Implementation Approach:
This NGIA pilot is envisioned as a supplement to the existing CIP NGEA audit program, so that all small/medium businesses participating in the NGEA also receive additional context related to GHG emissions and reduction opportunities (and businesses do not need to undergo a separate second audit for GHG information). In addition to recognizing 'energy leaders', a portion of NGEA audit recipients are assumed to implement some of the GHG opportunities, and receive an incentive payment from this pilot. If the GHG information and/or recognition offered through this pilot leads to a higher adoption rate of NGEA energy efficiency recommendations by audit recipients, those savings would be captured under CIP (not NGIA).

Other Comments / Information:
Participant levels for pilot size B chosen here align with CIP NGEA audit participation planned for the next Triennial, which averages 240/year (220 in 2024, 240 in 2025, 260 in 2026). Pilot A is slightly smaller, Pilot C slightly higher.

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

Pilot Year	Year 1	Year 2	Year 3	Year 4	Year 5	
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A	176	192	208	208	208	*Incremental units added, annual (not cumulative).*
Participating Units, Size B	220	240	260	260	260	
Participating Units, Size C	264	288	312	312	312	

Unit of Participation = Facility receiving GHG Audit

Calculations & Other Explanation:

This pilot is designed to supplement CenterPoint's existing NGEA audit program with additional GHG context.
As such participant levels chosen here align with CIP participation for next Triennial, which averages 240/year (220 in 2024, 240 in 2025, 260 in 2026)

Participant levels aligned with CIP participation:	220	240	260	260	260

In terms of incentives paid out through this pilot the focus is identifying customers that would qualify for incentives from other NGIA pilots, to be directly incented here instead.
As such, we are making the high level assumption for now that 3% of audit recipients will want to implement an NGIA pilot, with those evenly split between commercial hybrid heating (pilot 18) and commercial carbon capture (pilot 13).

Portion of audit recipients implementing NGIA measure: 2% assume half commercial hybrid heating, half CleanO2

March 15th 2024 Update: The assumed portion of audit recipients assumed to install one of the incented measures has been reduced from 3% to 2%, given the expectations for a slower/longer ramp up period to year on the Commercial Carbon Capture

The implication of this is that a number of the cells in this tab reference other tabs (taking an average of the per participant values from pilots #18 and #13).

	2	2	2	2	2

UTILITY PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 272,944	$ 294,318	$ 315,736	$ 308,976	$ 360,582	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ 327,680	$ 354,030	$ 380,424	$ 371,584	$ 423,190	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ 382,416	$ 413,742	$ 445,112	$ 434,192	$ 485,798	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 205,360	$ 220,590	$ 235,864	$ 237,424	$ 289,030	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 243,200	$ 261,870	$ 280,584	$ 282,144	$ 333,750	total cost per year	
Fixed O&M Cost, Size C	$ 281,040	$ 303,150	$ 325,304	$ 326,864	$ 378,470	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 200,360	$ 215,590	$ 230,864	$ 232,424	$ 284,030	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 238,200	$ 256,870	$ 275,584	$ 277,144	$ 328,750	per year	
Total Project Delivery, Size C	$ 276,040	$ 298,150	$ 320,304	$ 321,864	$ 373,470	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 49,000	$ 50,470	$ 51,984	$ 53,544	$ 55,150	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 49,000	$ 50,470	$ 51,984	$ 53,544	$ 55,150	per year	
Internal Project Delivery, Size C	$ 49,000	$ 50,470	$ 51,984	$ 53,544	$ 55,150	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ 151,360	$ 165,120	$ 178,880	$ 178,880	$ 228,880	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ 189,200	$ 206,400	$ 223,600	$ 223,600	$ 273,600	per year	
External Project Delivery, Size C	$ 227,040	$ 247,680	$ 268,320	$ 268,320	$ 318,320	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	per year	
Advertising and Promotions, Size C	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A						per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B						per year	
Allocation of General Portfolio Costs, Size C						per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*

	Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
	Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	
		Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
	Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
	Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
	Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	
		Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
	Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
	Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
	Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	
		Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
	Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
	Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
	Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	
		Total	**USD (Nominal) Cost Unit:**					
	Est. Total Revenue Requirement for Capital Projects, Size A	$ -	per year					*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
	Est. Total Revenue Requirement for Capital Projects, Size B	$ -	per year					
	Est. Total Revenue Requirement for Capital Projects, Size C	$ -	per year					
		Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
	Incentives, Size A	$ 67,584	$ 73,728	$ 79,872	$ 71,552	$ 71,552	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
	Incentives, Size B	$ 84,480	$ 92,160	$ 99,840	$ 89,440	$ 89,440	per year	
	Incentives, Size C	$ 101,376	$ 110,592	$ 119,808	$ 107,328	$ 107,328	per year	
		Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
	Incentives per Participant, Size A	$ 384	$ 384	$ 384	$ 344	$ 344	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
	Incentives per Participant, Size B	$ 384	$ 384	$ 384	$ 344	$ 344	per participant per year	
	Incentives per Participant, Size C	$ 384	$ 384	$ 384	$ 344	$ 344	per participant per year	
	Calculations & Other Explanation:							
	Incremental Cost (per Audit) for NGEA contractor to	$750						
	M&V - Total Cost for Whole Pilot:	$50,000 flat rate assumed, regardless of pilot size						
TOTAL AND DIRECT PARTICIPANT PILOT COSTS		**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
	Total Pilot Upfront Costs, Size A	$ 1,350.00	$ 1,350.00	$ 1,350.00	$ 1,350.00	$ 1,350.00	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
	Total Pilot Upfront Costs, Size B	$ 1,350.00	$ 1,350.00	$ 1,350.00	$ 1,350.00	$ 1,350.00	per participant	
	Total Pilot Upfront Costs, Size C	$ 1,350.00	$ 1,350.00	$ 1,350.00	$ 1,350.00	$ 1,350.00	per participant	
		Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
	Third Party Funding, Size A	$ 2.50	$ 2.50	$ 2.50	$ 2.50	$ 2.50	per participant	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
	Third Party Funding, Size B	$ 2.50	$ 2.50	$ 2.50	$ 2.50	$ 2.50	per participant	
	Third Party Funding, Size C	$ 2.50	$ 2.50	$ 2.50	$ 2.50	$ 2.50	per participant	
	Description of source of external funding:	IRA, etc						
		Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
	Direct Participant Pilot Costs, Size A	$ 381.50	$ 396.40	$ 411.87	$ 467.92	$ 484.59	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note 1: some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant.*
	Direct Participant Pilot Costs, Size B	$ 381.50	$ 396.40	$ 411.87	$ 467.92	$ 484.59	per participant	
	Direct Participant Pilot Costs, Size C	$ 381.50	$ 396.40	$ 411.87	$ 467.92	$ 484.59	per participant	
	Calculations & Other Explanation:	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**		
	Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United*
PARTICIPANT NON-ENERGY COSTS		**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
	Participant Non-Energy Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any increased in costs like equipment operating costs or increased water costs. Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria.*
	Participant Non-Energy Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
	Participant Non-Energy Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
	Calculations & Other Explanation:	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**		
	Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United*
PARTICIPANT NON-ENERGY SAVINGS		**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**USD (Nominal) Cost Unit:**	
	Participant Non-Energy Savings, Size A	$ 20	$ 20	$ 20	$ 20	$ 20	per participant per year of pilot life	*This includes any operating savings like water savings.*
	Participant Non-Energy Savings, Size B	$ 20	$ 20	$ 20	$ 20	$ 20	per participant per year of pilot life	
	Participant Non-Energy Savings, Size C	$ 20	$ 20	$ 20	$ 20	$ 20	per participant per year of pilot life	
	Calculations & Other Explanation:							
PILOT LIFE	**Average Lifetime for Savings/Pilot Tech, Size A**	17.5	years					
	Average Lifetime for Savings/Pilot Tech, Size B	17.5	years					
	Average Lifetime for Savings/Pilot Tech, Size C	17.5	years					
	Calculations & Other Explanation:							
NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED	**Avg. Dth/Participant Saved, Size A**	2.87	Dth/Participant					
	Avg. Dth/Participant Saved, Size B	2.87	Dth/Participant					
	Avg. Dth/Participant Saved, Size C	2.87	Dth/Participant					
	Calculations & Other Explanation:							

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	26 kWh/Participant	*Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Non-Gas Fuel Units/Part. Saved, Size B	26 kWh/Participant	
Avg. Non-Gas Fuel Units/Part. Saved, Size C	26 kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	116 kWh/Participant	*Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	116 kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	116 kWh/Participant	

Calculations & Other Explanation:

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5	
Total Annual Dth Saved, Size A	506	552	598	598	598	Dth
Total Annual Dth Saved, Size B	632	690	747	747	747	Dth
Total Annual Dth Saved, Size C	758	827	896	896	896	Dth

Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario: NREL

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from

Calculations & Other Explanation:

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	26.6	26.6	26.6	26.6	26.6	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	26.6	26.6	26.6	26.6	26.6	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	26.6	26.6	26.6	26.6	26.6	kg CO2e/participant
High						kg CO2e/participant

Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.

Calculations & Other Explanation:

	GHG Intensity		
	Size A	Size B	Size C
	kg CO2e/Dth		
Low Scenario			
Expected Scenario			
High Scenario			

Using this calculation structure is optional; if modifications are needed, please use the hidden rows or raise with project leads.

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor: 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

Values now linked directly back to planning assumptions tab (possible given the combination of formerly separate Exhibits P and N into a single file)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5	
Escalation rate	n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)

Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2027 to all users in the West North Central Region as estimated in the Energy Information Administration's 2023 Annual Energy Outlook

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:		
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh	*The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)*	

Calculations & Other Explanation:

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor	8.22%	*The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales*

Calculations & Other Explanation:

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

		USD Cost Unit:	
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth	*Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E0999/CI-14-643, utilities may use the value most applicable for the pilot or measure.*
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth	
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth	

Calculations & Other Explanation:

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life		
Net Direct Job Creation, Size A	2	2	2	2	2	9	4	# of jobs	*Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Net Direct Job Creation, Size B	2	2	2	2	2	11	5	# of jobs	
Net Direct Job Creation, Size C	2	3	2	3	3	13	6	# of jobs	

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life		
Net Indirect Job Creation, Size A	2	1	1	1	1	7	2	# of jobs	*Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Net Indirect Job Creation, Size B	1	1	1	1	2	7	3	# of jobs	
Net Indirect Job Creation, Size C	1	2	2	2	2	9	3	# of jobs	

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Induced Job Creation, Size A	2	1	1	1	1	7	2	# of jobs
Net Induced Job Creation, Size A	1	1	1	1	2	7	3	# of jobs
Net Induced Job Creation, Size A	1	2	2	2	2	9	4	# of jobs

March 15th 2024 Update: Note that Net Job Creation impacts have not been updated with the current changes to this pilot.

Calculations & Other Explanation:

Job numbers are estimated as Full Time Equivalents (FTE) and are rounded off.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year	*Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year	*The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

Definition:

It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.

NGIA Participants' Perspective Notes:	
Definition:	*It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*
	May assist MN businesses in achieving GHG goals
NGIA Nonparticipating Customers' Perspective Notes:	
Definition:	*As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*
Effects on Other Energy Systems and Energy Security:	
Definition:	*NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.*
	Reduces overall energy consumption
GHG Emissions Notes:	
Definition:	*An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*
Other Pollution Notes:	
Definition:	*Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*
Waste Reduction and Reuse Notes:	
Definition:	*Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.*
Policy Notes:	
Definition:	*NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*
	Reduces fossil gas throughput
Net Job Creation Notes:	
Definition:	*An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Economic Development Notes:	
Definition:	*The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*
Public Co-Benefits Notes:	
Definition:	*There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.*

Market Development Notes:

Definition:

The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized

May help MN businesses appeal to customers interested in sustainability

Direct Innovation Support Notes:

Definition:

This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.

Opportunity for customers to learn about novel options for reducing GHGs from their systems

Resource Scalability and Role in a Decarbonized System Notes:

Definition:

While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.

ICF

CNP21 - Residential Gas Heat Pump

Click here to go back to the list of all pilots

NGIA Pilot Profiles Workbook

DESCRIPTION

Pilot Project Code:	**CNP21**
Pilot Project Name:	*Residential Gas Heat Pump*
Customer Class/ Sector:	**Residential**
Low-Income Community Benefit?	**N**
Target Area:	**Territory-wide**
Primary Innovative Resource Category:	**Energy Efficiency**

Select primary Innovation Category. Others can be listed here:

Pilot Description:
CenterPoint Energy proposes to fund the deployment and testing of 'combi' space and water heating gas heat pump systems in Minnesota homes to evaluate the technology's performance.

Overview of Program/ Implementation Approach:
For the different pilot sizes envisioned here, CenterPoint would fund the deployment and testing of between 6 and 20 'combi' space and water heating gas heat pump systems in Minnesota homes, to evaluate the technology's performance. An initial phase would include market research and analysis to prioritize which gas heat pump units should be included in the field testing. Outreach would be conducted to recruit CenterPoint customers to participate in the pilot, and contractors would be engaged to train them to install and maintain the heat pumps, with support from equipment manufacturers. The installations would be metered and trial data analyzed to develop reporting metrics that would better inform the opportunity for gas heat pumps to be part of future CIP or NGIA programs.

Other Comments / Information:
A minimum of 10 participants (size B) would be ideal to develop more robust performance data.

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

Pilot Year	Year 1	Year 2	Year 3	Year 4	Year 5	
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A	0	3	3	0	0	*Incremental units added, annual (not cumulative).*
Participating Units, Size B	0	5	5	0	0	
Participating Units, Size C	0	10	10	0	0	

Unit of Participation = Gas Heat Pumps Installed

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 19,800	$ 127,594	$ 127,897	$ 60,709	$ 11,030	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ 36,000	$ 214,130	$ 214,779	$ 72,947	$ 23,636	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ 41,000	$ 394,130	$ 394,779	$ 72,947	$ 23,636	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 19,800	$ 127,594	$ 127,897	$ 60,709	$ 11,030	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 36,000	$ 214,130	$ 214,779	$ 72,947	$ 23,636	total cost per year	
Fixed O&M Cost, Size C	$ 41,000	$ 394,130	$ 394,779	$ 72,947	$ 23,636	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 19,800	$ 125,094	$ 125,397	$ 60,709	$ 11,030	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 36,000	$ 211,630	$ 212,279	$ 72,947	$ 23,636	per year	
Total Project Delivery, Size C	$ 41,000	$ 391,630	$ 392,279	$ 72,947	$ 23,636	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 21,000	$ 21,630	$ 22,279	$ 22,947	$ 23,636	per year	
Internal Project Delivery, Size C	$ 21,000	$ 21,630	$ 22,279	$ 22,947	$ 23,636	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ 10,000	$ 115,000	$ 115,000	$ 50,000	$ -	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ 15,000	$ 190,000	$ 190,000	$ 50,000	$ -	per year	
External Project Delivery, Size C	$ 20,000	$ 370,000	$ 370,000	$ 50,000	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ -	$ 2,500	$ 2,500	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ -	$ 2,500	$ 2,500	$ -	$ -	per year	
Advertising and Promotions, Size C	$ -	$ 2,500	$ 2,500	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:

UTILITY PILOT COSTS

Allocation of General Portfolio Costs, Size A						per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B						per year	
Allocation of General Portfolio Costs, Size C						per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A	$ -	per year	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B	$ -	per year	
Est. Total Revenue Requirement for Capital Projects, Size C	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year	
Incentives per Participant, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5
Project Mgmt - Size A	$ 10,000	$ 10,000	$ 10,000	$ -	$ -
Project Mgmt - Size B	$ 15,000	$ 15,000	$ 15,000	$ -	$ -
Project Mgmt - Size C	$ 20,000	$ 20,000	$ 20,000	$ -	$ -
Equipment Installation - Size A	$ -	$ 90,000	$ 90,000	$ -	$ -
Equipment Installation - Size B	$ -	$ 150,000	$ 150,000	$ -	$ -
Equipment Installation - Size C	$ -	$ 300,000	$ 300,000	$ -	$ -
M&V data collection - Size A	$ -	$15,000	$15,000	$ -	$ -
M&V data collection - Size B	$ -	$25,000	$25,000	$ -	$ -
M&V data collection - Size C	$ -	$50,000	$50,000	$ -	$ -
Analysis and Reporting (All Sizes)	$ -	$ -	$ -	$50,000	$ -

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	per participant	
Total Pilot Upfront Costs, Size C	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	per participant	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Third Party Funding, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Third Party Funding, Size C	$ -	$ -	$ -	$ -	$ -	per participant	

Description of source of external funding: IRA, etc

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note I: some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant.*
Direct Participant Pilot Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Direct Participant Pilot Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

Cost per installation (including space and water heating): $30,000

PARTICIPANT NON-ENERGY COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any increased in costs like equipment operating costs or increased water costs. Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Participant Non-Energy Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most recently available data.*

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any operating savings like water savings.*
Participant Non-Energy Savings, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Savings, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	15	years
Average Lifetime for Savings/Pilot Tech, Size B	15	years
Average Lifetime for Savings/Pilot Tech, Size C	15	years

Calculations & Other Explanation:

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	39.5	Dth/Participant
Avg. Dth/Participant Saved, Size B	39.5	Dth/Participant
Avg. Dth/Participant Saved, Size C	39.5	Dth/Participant

Calculations & Other Explanation:

RFI respondent provided estimate for expected annual gas savings of 650-925 therms per dwelling (65-92.5 Dth). This might be possible with larger homes, but to be more conservative we used the efficiency levels provided to calculate potential savings for more of an average CenterPoint residential customer.
Actual savings will depend on factors such as the baseline equipment in place, size of home / heating load, final gas heat pump technologies selected for the pilot.
Thermal Heat Pumps (THPs) can replace residential furnaces and water heaters and are expected to achieve over 1.3 system COP in laboratory conditions, with modelling showing potential for GAHP Combi Nat Gas savings of 36-43% compared to a condensing furnace, and 46-50% compared to non-condensing furnace.

Estimated Gas Heat Pump Efficiency ('Combi' Space & Water Heating Unit):	138%	%	Source: RFI respondent, based on laboratory testing of the gas heat pumps to ANSI Z2.40.4 standard resulting in seasonal Annual Fuel Utilization Efficiency (AFUE) of 138% for cold climates.
Estimated Efficiency of Baseline Gas Equipment (weighted avg. for space and water):	78%	%	Weighted average, assuming baseline space heating equipment has 80% efficiency and baseline water heating equipment is 65% efficient
Assumed Baseline Water Heating Gas Consumption:	15	Dth/year	
Assumed Baseline Space Heating Gas Consumption:	75	Dth/year	
Percent Savings:	-43.8%	%	
Gas Heat Pump Savings:	39.5	Dth/year (per residential home)	

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	0.00	kWh/Participant	*Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Non-Gas Fuel Units/Part. Saved, Size B	0.00	kWh/Participant	
Avg. Non-Gas Fuel Units/Part. Saved, Size C	0.00	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	0.00	kWh/Participant	*Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	0.00	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	0.00	kWh/Participant	

Calculations & Other Explanation:

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5	
Total Annual Dth Saved, Size A	0.00	118.37	118.37	0.00	0.00	Dth
Total Annual Dth Saved, Size B	0.00	197.28	197.28	0.00	0.00	Dth
Total Annual Dth Saved, Size C	0.00	394.57	394.57	0.00	0.00	Dth

Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario: No Electricity Impact

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from National Renewable Energy Laboratory (NREL) Standard Scenarios. If the renewable natural gas facility is using a higher proportion of carbon free electricity than is available by default from their electric utility, either from on-site generation, by subscribing to a

Calculations & Other Explanation:

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant

Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.

	High						kg CO2e/participant

Calculations & Other Explanation:

GHG Intensity			
	Size A	Size B	Size C
	kg CO2e/Dth		
Low Scenario			
Expected Scenario			
High Scenario			

Using this calculation structure is optional; if modifications are needed, please use the hidden rows or raise with project leads.

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

Values now linked directly back to planning assumptions tab (possible given the combination of formerly separate Exhibits P and N into a single file)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria. Note, to calculate this metric, you can make one cost estimate for year 1 and then use the escalation rate to estimate each Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2027 to all users in the

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5	
Escalation rate	n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals.
equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)

Calculations & Other Explanation:

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor 8.22%

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales

Calculations & Other Explanation:

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

		USD Cost Unit:
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth

Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021 Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E1l999/CI-14-643, utilities may use the value most applicable for the pilot or measure.

Calculations & Other Explanation:

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Direct Job Creation, Size A	0	1	1	0	0	2	0	# of jobs
Net Direct Job Creation, Size B	0	1	1	0	0	2	0	# of jobs
Net Direct Job Creation, Size C	0	2	2	0	0	4	0	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Indirect Job Creation, Size A	0	0	0	0	0	1	0	# of jobs
Net Indirect Job Creation, Size B	0	0	0	0	0	1	0	# of jobs
Net Indirect Job Creation, Size C	0	1	1	0	0	2	0	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Induced Job Creation, Size A	0	0	0	0	0	1	0	# of jobs
Net Induced Job Creation, Size A	0	1	1	0	0	2	0	# of jobs
Net Induced Job Creation, Size A	0	1	1	0	0	2	1	# of jobs

Calculations & Other Explanation:

Job numbers are estimated as Full Time Equivalents (FTE) and are rounded off.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year

Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

Calculations & Other Explanation:

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year

The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

Definition: *It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.*

NGIA Participants' Perspective Notes:

Definition: *It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*

NGIA Nonparticipating Customers' Perspective Notes:

Definition: *As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*

Effects on Other Energy Systems and Energy Security:

Definition: *NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.*

Reduces fossil gas throughput; may reduce electric build out needs

GHG Emissions Notes:

Definition: *An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*

Use refrigerants with lower global warming potential

Other Pollution Notes:

Definition: *Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*

Waste Reduction and Reuse Notes:

Definition: *Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.*

Policy Notes:

Definition: *NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*

Reduces fossil gas throughput

Net Job Creation Notes:

Definition:	*An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Economic Development Notes:	
Definition:	*The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*
Public Co-Benefits Notes:	
Definition:	*There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.*
Market Development Notes:	
Definition:	*The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized*
Direct Innovation Support Notes:	
Definition:	*This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.*
	Opportunity to collaborate with ETA program
Resource Scalability and Role in a Decarbonized System Notes:	
Definition:	*While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.*

ICF

CNP22 - Gas Heat Pump for Commercial Buildings

Click here to go back to the list of all pilots

NGIA Pilot Profiles Workbook

DESCRIPTION

Pilot Project Code:	**CNP22**
Pilot Project Name:	*Gas Heat Pump for Commercial Buildings*
Customer Class/ Sector:	**C&I**
Low-Income Community Benefit?	**Y**
Target Area:	**Territory-wide**
Primary Innovative Resource Category:	**Energy Efficiency**

Select primary Innovation Category. Others can be listed here:

Pilot Description:
CenterPoint Energy proposes to fund the deployment and testing of engine-driven and/or absorption gas heat pump systems in Minnesota commercial buildings, to evaluate the technologies' performance.

Overview of Program/ Implementation Approach:
As the technology is new to market and is not yet considered cost effective for CIP, this pilot involves demonstration site installations with equipment monitoring, energy savings documentation, understanding of costs and benefits and a resulting case study. Some sites could be available for site walk-throughs so that contractors, design firms and other technology specifiers can gain first-hand experience and exposure to the technology.

GAHPs are included in the Minnesota Efficient Technology Accelerator's (ETA) starter portfolio. That is a market transformation initiative that will work to accelerate adoption of emerging technologies. This NGIA pilot field demonstration would complement the strategy and planning work that will be completed within the ETA program, and could be completed in coordination with ETA.

Other Comments / Information:
Target candidates for the pilot will depend on the size of pilot ultimately selected, but for the base proposal (three customer installations) the initial plan would be to target a multifamily building with gas boiler heat, a small commercial with gas boiler heat, and a recreational facility with high hot water usage.

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

Pilot Year	Year 1	Year 2	Year 3	Year 4	Year 5	
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A	0	3	0	0	0	*Incremental units added, annual (not cumulative).*
Participating Units, Size B	0	3	3	0	0	
Participating Units, Size C	0	3	6	0	0	

Unit of Participation = Number of Facilities installing gas heat pumps

Calculations & Other Explanation:

UTILITY PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 108,500	$ 461,630	$ 109,779	$ 22,947	$ 23,636	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ 154,333	$ 507,463	$ 508,112	$ 22,947	$ 23,636	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ 221,000	$ 574,130	$ 924,779	$ 22,947	$ 23,636	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 108,500	$ 461,630	$ 109,779	$ 22,947	$ 23,636	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 154,333	$ 507,463	$ 508,112	$ 22,947	$ 23,636	total cost per year	
Fixed O&M Cost, Size C	$ 221,000	$ 574,130	$ 924,779	$ 22,947	$ 23,636	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 108,500	$ 459,130	$ 109,779	$ 22,947	$ 23,636	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 154,333	$ 504,963	$ 505,612	$ 22,947	$ 23,636	per year	
Total Project Delivery, Size C	$ 221,000	$ 571,630	$ 922,279	$ 22,947	$ 23,636	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 21,000	$ 21,630	$ 22,279	$ 22,947	$ 23,636	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 21,000	$ 21,630	$ 22,279	$ 22,947	$ 23,636	per year	
Internal Project Delivery, Size C	$ 21,000	$ 21,630	$ 22,279	$ 22,947	$ 23,636	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ 87,500	$ 437,500	$ 87,500	$ -	$ -	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ 133,333	$ 483,333	$ 483,333	$ -	$ -	per year	
External Project Delivery, Size C	$ 200,000	$ 550,000	$ 900,000	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ -	$ 2,500	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ -	$ 2,500	$ 2,500	$ -	$ -	per year	
Advertising and Promotions, Size C	$ -	$ 2,500	$ 2,500	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A						per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B						per year	
Allocation of General Portfolio Costs, Size C						per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

		Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
	Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
	Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
	Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	

		Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
	Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
	Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
	Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A	$ -	per year	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B	$ -	per year	
Est. Total Revenue Requirement for Capital Projects, Size C	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	#DIV/0!	$ -	#DIV/0!	#DIV/0!	#DIV/0!	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	#DIV/0!	$ -	$ -	#DIV/0!	#DIV/0!	per participant per year	
Incentives per Participant, Size C	#DIV/0!	$ -	$ -	#DIV/0!	#DIV/0!	per participant per year	

Calculations & Other Explanation:

Equipment and installation costs (for 3 participants, assume this scales linearly for larger pilots):	$350,000 $
Site selection, pilot data collection and monitoring, analysis (for 3 participants):	$262,500 $
Site selection, pilot data collection and monitoring, analysis (for 6 participants):	$400,000 $
Site selection, pilot data collection and monitoring, analysis (for 9 participants):	$600,000 $

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A	$ 116,667	$ 116,667	$ 116,667	$ 116,667	$ 116,667	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B	$ 116,667	$ 116,667	$ 116,667	$ 116,667	$ 116,667	per participant	
Total Pilot Upfront Costs, Size C	$ 116,667	$ 116,667	$ 116,667	$ 116,667	$ 116,667	per participant	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Third Party Funding, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Third Party Funding, Size C	$ -	$ -	$ -	$ -	$ -	per participant	

Description of source of external funding: IRA, etc

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note 1: some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant.*
Direct Participant Pilot Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Direct Participant Pilot Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United States Bureau of Labor Statistics, as reported in December for each of the last five years. Using the most*

PARTICIPANT NON-ENERGY COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any increased in costs like equipment operating costs or increased water costs. Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Participant Non-Energy Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available*

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any operating savings like water savings.*
Participant Non-Energy Savings, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Savings, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	15	years
Average Lifetime for Savings/Pilot Tech, Size B	15	years
Average Lifetime for Savings/Pilot Tech, Size C	15	years

Calculations & Other Explanation:

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	724	Dth/Participant
Avg. Dth/Participant Saved, Size B	724	Dth/Participant
Avg. Dth/Participant Saved, Size C	724	Dth/Participant

Calculations & Other Explanation:

Equivalent Full Load Hours of Heating:	1904	hours/year
Gas Heat Pump Unit Capacity:	140,000	Btu/hour
Number of Heat Pumps per Building/Participant:	3	
Expected Savings:	48%	%

	Estimated Gas Consumption with Gas Heat Pumps:	799.7	Dth/year
	Estimated Gas Consumption Before Gas Heat Pumps:	1,523.2	Dth/year
	Estimated Savings:	**723.5**	Dth/year

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	0.00	kWh/Participant	*Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Non-Gas Fuel Units/Part. Saved, Size B	0.00	kWh/Participant	
Avg. Non-Gas Fuel Units/Part. Saved, Size C	0.00	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	0.00	kWh/Participant	*Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	0.00	kWh/Participant	
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	0.00	kWh/Participant	

Note: some gas heat pumps can also provide space cooling (this would provide electricity savings, but then would increase gas consumption). The quantification of this pilot is currently based on the assumption that units would not serve space cooling loads, but in the heat pump technology selection and participant recruitment phases it could be determined that some installations provide cooling (to also test such parameters).

Calculations & Other Explanation:

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5		
Total Annual Dth Saved, Size A	-	2,171	-	-	-	Dth	*Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year*
Total Annual Dth Saved, Size B	-	2,171	2,171	-	-	Dth	
Total Annual Dth Saved, Size C	-	2,171	4,341	-	-	Dth	

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario: No Electricity Impact

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from National

Calculations & Other Explanation:

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.

Calculations & Other Explanation:

	GHG Intensity		
	Size A	Size B	Size C
	kg CO2e/Dth		
Low Scenario			
Expected Scenario			
High Scenario			

Using this calculation structure is optional; if modifications are needed, please use the hidden rows or raise with project leads.

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor: 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

Values now linked directly back to planning assumptions tab (possible given the combination of formerly separate Exhibits P and N into a single file)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5	
Escalation rate	n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)

Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2027 to all u

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)

Calculations & Other Explanation:

Non-Gas Fuel Loss Factor: 8.22%

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss

NON-GAS FUEL LOSS FACTOR

Calculations & Other Explanation:

factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017–2019 average retail sales

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

		USD Cost Unit:	
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth	
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth	
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth	

Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E0999/CI-14-643, utilities may use the value most applicable for the pilot or measure.

Calculations & Other Explanation:

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Direct Job Creation, Size A	0	2	0	0	0	2	1	# of jobs
Net Direct Job Creation, Size B	1	2	2	0	0	4	1	# of jobs
Net Direct Job Creation, Size C	1	2	3	0	0	6	1	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Indirect Job Creation, Size A	0	1	0	0	0	2	0	# of jobs
Net Indirect Job Creation, Size B	0	1	1	0	0	3	1	# of jobs
Net Indirect Job Creation, Size C	0	1	2	0	0	4	1	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Induced Job Creation, Size A	0	1	0	0	0	2	0	# of jobs
Net Induced Job Creation, Size A	0	1	1	0	0	3	1	# of jobs
Net Induced Job Creation, Size A	0	1	2	0	0	4	1	# of jobs

Calculations & Other Explanation:

Job numbers are estimated as Full Time Equivalents (FTE) and are rounded off.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year

Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

Calculations & Other Explanation:

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year

The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

Definition: *It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.*

NGIA Participants' Perspective Notes:

Definition: *It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*

May assist MN businesses in achieving GHG goals

NGIA Nonparticipating Customers' Perspective Notes:

Definition: *As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*

Effects on Other Energy Systems and Energy Security:	
Definition:	*NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.*
	Reduces fossil gas throughput; may reduce electric build out needs
GHG Emissions Notes:	
Definition:	*An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*
	Use refrigerants with lower global warming potential
Other Pollution Notes:	
Definition:	*Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*
Waste Reduction and Reuse Notes:	
Definition:	*Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.*
Policy Notes:	
Definition:	*NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*
	Reduces fossil gas throughput
Net Job Creation Notes:	
Definition:	*An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*
Economic Development Notes:	
Definition:	*The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*
Public Co-Benefits Notes:	
Definition:	*There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.*
Market Development Notes:	
Definition:	*The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized*
	May help MN businesses appeal to customers interested in sustainability
Direct Innovation Support Notes:	
Definition:	*This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.*

Resource Scalability and Role in a Decarbonized System Notes:

Definition:

While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.

ICF

CNP24 - Solar Thermal Heating for C&I

Click here to go back to the list of all pilots

NGIA Pilot Profiles Workbook

DESCRIPTION

Pilot Project Code:	**CNP24**
Pilot Project Name:	*Solar Thermal Heating for C&I*
Customer Class/ Sector:	**C&I**
Low-Income Community Benefit?	**N**
Target Area:	**Territory-wide**
Primary Innovative Resource Category:	**Energy Efficiency**

Select primary Innovation Category. Others can be listed here:

Pilot Description:
This pilot would offer incentives for customers who install transpired solar air systems, which help facilities that have large make-up air loads reduce their energy consumption. The pilot would offer commercial and industrial customers an incentive to partially offset the cost to install the solar wall. This assumes that the projects in question, which have relatively high upfront costs, would not be cost-effective enough to qualify for any CIP incentives (if any projects did qualify for CIP they would be directed to that program instead of NGIA). Support for initial feasibility study is also included.

Overview of Program / Implementation Approach:
While incentive approaches/structures to encourage customers to adopt the findings of these studies are still under consideration, CenterPoint is considering leveraging a similar approach to CIP custom programs, with incentives determined based on the minimum of three cost caps (in CIP, this is 1 year payback, 50% of incremental costs, or $5/Dth annual gas savings). CenterPoint expects the $/Dth cap to be the limiting factor for most projects considered under NGIA, and is considering higher incentive levels than the $5/Dth for NGIA incentives. Projects that are eligible for rebates in CIP would not be eligible for these NGIA rebates.

Other Comments / Information:
The level of participating units included here was based on a scan of CenterPoint customers that would seem to be potential candidates for the technology (e.g., facilities with large make-up air loads that can't use energy recovery wheels because of concerns of cross-contamination between inlet and exhaust air streams). It is unclear how successful the pilot would be in recruiting participants and/or how impactful the incentives envisioned here would be at influencing customers to install these systems. Ultimately, participation could also include larger or smaller solar walls than the archetype assumed here (2000 sqft).

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

Pilot Year	Year 1	Year 2	Year 3	Year 4	Year 5	
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A	2	2	2	2	2	*Incremental units added, annual (not cumulative).*
Participating Units, Size B	3	3	3	3	3	
Participating Units, Size C	5	5	5	5	5	

Unit of Participation = 2000 Square Foot Solar Wall Project installed

Calculations & Other Explanation:

Assumptions for Archetype Project (knowing that project size and savings will be highly site-specific)

Size of Solar Collector:	2000	square feet
Annual Gas Savings:	581.1	MMBtu/year
Percent Gas Savings for HVAC:	17	%
System Cost:	$ 160,000	$

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 70,105	$ 70,399	$ 90,702	$ 91,014	$ 91,335	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ 99,633	$ 99,927	$ 130,229	$ 130,541	$ 130,862	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ 158,688	$ 158,982	$ 209,284	$ 209,596	$ 209,917	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 41,050	$ 41,344	$ 41,647	$ 41,959	$ 42,280	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 56,050	$ 56,344	$ 56,647	$ 56,959	$ 57,280	total cost per year	
Fixed O&M Cost, Size C	$ 86,050	$ 86,344	$ 86,647	$ 86,959	$ 87,280	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 39,800	$ 40,094	$ 40,397	$ 40,709	$ 41,030	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 54,800	$ 55,094	$ 55,397	$ 55,709	$ 56,030	per year	
Total Project Delivery, Size C	$ 84,800	$ 85,094	$ 85,397	$ 85,709	$ 86,030	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	
Internal Project Delivery, Size C	$ 9,800	$ 10,094	$ 10,397	$ 10,709	$ 11,030	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ 45,000	$ 45,000	$ 45,000	$ 45,000	$ 45,000	per year	
External Project Delivery, Size C	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ 1,250	$ 1,250	$ 1,250	$ 1,250	$ 1,250	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ 1,250	$ 1,250	$ 1,250	$ 1,250	$ 1,250	per year	
Advertising and Promotions, Size C	$ 1,250	$ 1,250	$ 1,250	$ 1,250	$ 1,250	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A						per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B						per year	
Allocation of General Portfolio Costs, Size C						per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

UTILITY PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A	$ -	per year	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B	$ -	per year	
Est. Total Revenue Requirement for Capital Projects, Size C	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ 29,055	$ 29,055	$ 49,055	$ 49,055	$ 49,055	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ 43,583	$ 43,583	$ 73,583	$ 73,583	$ 73,583	per year	
Incentives, Size C	$ 72,638	$ 72,638	$ 122,638	$ 122,638	$ 122,638	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	$ 14,528	$ 14,528	$ 24,528	$ 24,528	$ 24,528	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	$ 14,528	$ 14,528	$ 24,528	$ 24,528	$ 24,528	per participant per year	
Incentives per Participant, Size C	$ 14,528	$ 14,528	$ 24,528	$ 24,528	$ 24,528	per participant per year	

Calculations & Other Explanation:

Incentive Cap: $ 25 $/Dth annual gas savings

Study Support: $10,000 $/participant

Additional Sites that Receive Audit Funding But Do Not Complete Project: 50% %

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	per participant	
Total Pilot Upfront Costs, Size C	$ 160,000	$ 160,000	$ 160,000	$ 160,000	$ 160,000	per participant	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A						per participant	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Third Party Funding, Size B						per participant	
Third Party Funding, Size C						per participant	

Description of source of external funding: IRA, etc

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ 145,473	$ 145,473	$ 145,473	$ 145,473	$ 145,473	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note t some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant.*
Direct Participant Pilot Costs, Size B	$ 145,473	$ 145,473	$ 145,473	$ 145,473	$ 145,473	per participant	
Direct Participant Pilot Costs, Size C	$ 145,473	$ 145,473	$ 145,473	$ 145,473	$ 145,473	per participant	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use*

PARTICIPANT NON-ENERGY COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any increased in costs like equipment operating costs or increased water costs. Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Participant Non-Energy Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use*

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any operating savings like water savings.*
Participant Non-Energy Savings, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Savings, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	20	years
Average Lifetime for Savings/Pilot Tech, Size B	20	years
Average Lifetime for Savings/Pilot Tech, Size C	20	years

Calculations & Other Explanation:

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	581	Dth/Participant
Avg. Dth/Participant Saved, Size B	581	Dth/Participant
Avg. Dth/Participant Saved, Size C	581	Dth/Participant

Calculations & Other Explanation:

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	0.00	kWh/Participant
Avg. Non-Gas Fuel Units/Part. Saved, Size B	0.00	kWh/Participant
Avg. Non-Gas Fuel Units/Part. Saved, Size C	0.00	kWh/Participant

Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.

Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	0.00	kWh/Participant
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	0.00	kWh/Participant
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	0.00	kWh/Participant

Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5	
Total Annual Dth Saved, Size A	1,162	1,162	1,162	1,162	1,162	Dth
Total Annual Dth Saved, Size B	1,743	1,743	1,743	1,743	1,743	Dth
Total Annual Dth Saved, Size C	2,906	2,906	2,906	2,906	2,906	Dth

Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario: No Electricity Impact

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from National Renewable Energy Laboratory (NREL) Standard Scenarios. If the renewable natural gas facility is using a higher proportion of carbon free electricity than is available by default from their electric utility, either from on-site generation, by subscribing to a

Calculations & Other Explanation:

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.

Calculations & Other Explanation:

GHG Intensity			
	Size A	Size B	Size C
	kg CO2e/Dth		
Low Scenario			
Expected Scenario			
High Scenario			

Using this calculation structure is optional; if modifications are needed, please use the hidden rows or raise with project leads.

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor: 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

Values now linked directly back to planning assumptions tab (possible given the combination of formerly separate Exhibits P and N into a single file)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5	
Escalation rate	n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)

Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2027 to all users in the Wes

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals.
equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)

Calculations & Other Explanation:

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor: 8.22%

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales

Calculations & Other Explanation:

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

	USD Cost Unit:	
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth

Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E1l999/CI-14-643, utilities may use the value most applicable for the pilot or measure.

Calculations & Other Explanation:

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Direct Job Creation, Size A	1	1	1	1	1	4	0	# of jobs
Net Direct Job Creation, Size B	1	1	1	2	2	7	0	# of jobs
Net Direct Job Creation, Size C	2	2	2	2	2	11	0	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Indirect Job Creation, Size A	1	1	1	1	1	3	0	# of jobs
Net Indirect Job Creation, Size B	1	1	1	1	1	4	0	# of jobs
Net Indirect Job Creation, Size C	1	1	1	1	1	7	0	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Induced Job Creation, Size A	1	1	1	1	1	3	28	# of jobs
Net Induced Job Creation, Size A	1	1	1	1	1	4	56	# of jobs
Net Induced Job Creation, Size A	1	1	1	1	2	7	85	# of jobs

Calculations & Other Explanation:

Job numbers are estimated as Full Time Equivalents (FTE) and are rounded off.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year	*Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year	*The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.*
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year	

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

Definition: *It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.*

NGIA Participants' Perspective Notes:

Definition: *It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*

May assist MN businesses in achieving GHG goals

NGIA Nonparticipating Customers' Perspective Notes:

Definition: *As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*

Effects on Other Energy Systems and Energy Security:

Definition:

NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.

Reduces overall energy consumption

GHG Emissions Notes:

Definition:

An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.

Other Pollution Notes:

Definition:

Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.

Waste Reduction and Reuse Notes:

Definition:

Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.

Policy Notes:

Definition:

NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.

Reduces fossil gas throughput; increases use of renewable energy

Net Job Creation Notes:

Definition:

An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

Economic Development Notes:

Definition:

The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.

Projects may follow IRA labor requirements to take advantage of tax benefits

Public Co-Benefits Notes:

Definition:

There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.

Market Development Notes:

Definition:

The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized

May help MN businesses appeal to customers interested in sustainability

Direct Innovation Support Notes:

Definition:

This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.

Opportunity for customers to learn about novel options for reducing GHGs from their systems

Resource Scalability and Role in a Decarbonized System Notes:	
Definition:	*While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.*

Click here to go back to the list of all pilots

NGIA Pilot Profiles Workbook

CNP25 - Industrial and Large Commercial GHG Audit Pilot

DESCRIPTION

Pilot Project Code:	**CNP25**
Pilot Project Name:	*Industrial and Large Commercial GHG Audit Pilot*
Customer Class/ Sector:	**C&I**
Low-Income Community Benefit?	**N**
Target Area:	**Territory-wide**
Primary Innovative Resource Category:	**Energy Efficiency**

Select primary Innovation Category. Others can be listed here: Strategic electrification, renewable natural gas, biogas, carbon capture

Pilot Description:
CenterPoint Energy proposes to expand its existing Process Efficiency and Commercial Efficiency CIP offering to include identification of non-CIP GHG reducing opportunities for industrial and large commercial customers.

Overview of Program/ Implementation Approach:
This would build off the existing CIP program, enhancing those energy audits to include GHG emissions context/data, as well as emission reduction opportunities. The plan would not be to conduct extra audits, just enhance current number of audits funded through CIP. Additionally, a new 'custom incentive stream' would be established for specific types of technologies that have not traditionally been cost-effective under CIP but could leverage funding from NGIA to help them proceed. There are a number of types of opportunities identified in past CIP audits, where recommendations are not typically implemented.

The focus categories would include:
1. Electric heat pumps for certain process hot water needs (including reviewing and applying appropriate new technologies)
2. Heat recovery opportunities for process hot water/ process cooling and winter makeup air heating
3. Process efficiency improvements through improved process heat exchange / integration

Other Comments / Information:
For this initial estimate we establish one representative project to assess the potential economics of this pilot. We expect the actual project sizes could be smaller or larger that this example, and that different types of technologies (in the three categories outlined above) could qualify.

KEY PILOT-SPECIFIC INPUTS:

NUMBER OF PARTICIPANTS

Pilot Year	Year 1	Year 2	Year 3	Year 4	Year 5	
Calendar Year	2024	2025	2026	2027	2028	
Participating Units, Size A	1	1	1	1	1	*Incremental units added, annual (not cumulative).*
Participating Units, Size B	2	2	2	2	2	
Participating Units, Size C	3	3	3	3	3	

Unit of Participation = **GHG Reduction Project Implemented**

Calculations & Other Explanation:

	2024	2025	2026	2027	2028
Planned CIP Audits per Year:	10	10	10	10	10

(Not all audits results in projects implemented)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Annual Total Utility Incremental Cost, Size A	$ 259,438	$ 260,068	$ 260,716	$ 261,385	$ 312,073	total cost per year	*These incremental utility costs are what will count against the NGIA budget cap for this measure and will be used in the Utility Cost, and Non Participant Cost tests for the NGIA evaluation criteria. This is the sum of utility admin costs to run pilot, any incentive funding to support project deployment, and/or the utility's annual revenue requirement for capital investments made on select pilots.*
Annual Total Utility Incremental Cost, Size B	$ 396,275	$ 396,905	$ 397,554	$ 398,222	$ 448,911	total cost per year	
Annual Total Utility Incremental Cost, Size C	$ 533,113	$ 533,743	$ 534,391	$ 535,060	$ 585,748	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Fixed O&M Cost, Size A	$ 122,600	$ 123,230	$ 123,879	$ 124,547	$ 175,236	total cost per year	*Fixed O&M Cost is the result of adding up Total Project Delivery, Advertising and Promotions, Utility Administration, Trade Ally Incentives, and Workforce Development of Market Transformation Cost*
Fixed O&M Cost, Size B	$ 122,600	$ 123,230	$ 123,879	$ 124,547	$ 175,236	total cost per year	
Fixed O&M Cost, Size C	$ 122,600	$ 123,230	$ 123,879	$ 124,547	$ 175,236	total cost per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Project Delivery, Size A	$ 121,000	$ 121,630	$ 122,279	$ 122,947	$ 173,636	per year	*Total internal and external project delivery*
Total Project Delivery, Size B	$ 121,000	$ 121,630	$ 122,279	$ 122,947	$ 173,636	per year	
Total Project Delivery, Size C	$ 121,000	$ 121,630	$ 122,279	$ 122,947	$ 173,636	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Internal Project Delivery, Size A	$ 21,000	$ 21,630	$ 22,279	$ 22,947	$ 23,636	per year	*CNP staff. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Internal Project Delivery, Size B	$ 21,000	$ 21,630	$ 22,279	$ 22,947	$ 23,636	per year	
Internal Project Delivery, Size C	$ 21,000	$ 21,630	$ 22,279	$ 22,947	$ 23,636	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
External Project Delivery, Size A	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 150,000	per year	*External vendor costs would include direct install costs where CNP reimburses the vendor. These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
External Project Delivery, Size B	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 150,000	per year	
External Project Delivery, Size C	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 150,000	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Advertising and Promotions, Size A	$ 1,600	$ 1,600	$ 1,600	$ 1,600	$ 1,600	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Advertising and Promotions, Size B	$ 1,600	$ 1,600	$ 1,600	$ 1,600	$ 1,600	per year	
Advertising and Promotions, Size C	$ 1,600	$ 1,600	$ 1,600	$ 1,600	$ 1,600	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Allocation of General Portfolio Costs, Size A						per year	*Share of portfolio level costs, including plan development costs, regulatory costs, and general portfolio costs*
Allocation of General Portfolio Costs, Size B						per year	
Allocation of General Portfolio Costs, Size C						per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Trade Ally Incentives, Size A	$ -	$ -	$ -	$ -	$ -	per year	*If applicable, include here the annual amount of trade ally incentives (e.g. midstream program)*
Trade Ally Incentives, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Trade Ally Incentives, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:

UTILITY PILOT COSTS

Workforce Development or Market Transformation Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Workforce Development or Market Transformation Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Workforce Development or Market Transformation Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Other Fixed O&M Cost, Size A	$ -	$ -	$ -	$ -	$ -	per year	*These costs are sub-set of the Utility "Fixed O&M Cost" category above.*
Other Fixed O&M Cost, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Other Fixed O&M Cost, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total utility capital investment, Size A	$ -	$ -	$ -	$ -	$ -	per year	*This tracks expectations for when this pilot would require capital investments from the utility, if applicable. This will not directly feed into the incremental costs for NGIA, but instead will be used to estimate the timing and level of annual revenue requirement resulting from these capital investments (shown below).*
Total utility capital investment, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Total utility capital investment, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Est. Annual Revenue Requirement for Capital Projects, Size A	$ -	$ -	$ -	$ -	$ -	per year	*For capital projects, the incremental cost impact on the NGIA budget is the annual revenue requirement (return of and on capital additions), as well as the utility "Fixed O&M Costs" captured above. This revenue requirement is calculated from the magnitude & timing of capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment.*
Est. Annual Revenue Requirement for Capital Projects, Size B	$ -	$ -	$ -	$ -	$ -	per year	
Est. Annual Revenue Requirement for Capital Projects, Size C	$ -	$ -	$ -	$ -	$ -	per year	

	Total	USD (Nominal) Cost Unit:	
Est. Total Revenue Requirement for Capital Projects, Size A	$ -	per year	*The total revenue requirement is calculated from the magnitude & timing of total capital investment captured above, based on expected measure life (and depreciation time period), as well as the utility's return on investment. This cost is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Est. Total Revenue Requirement for Capital Projects, Size B	$ -	per year	
Est. Total Revenue Requirement for Capital Projects, Size C	$ -	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives, Size A	$ 136,838	$ 136,838	$ 136,838	$ 136,838	$ 136,838	per year	*This tracks total incentives paid directly to customers (customer rebates like money, gift cards or other fungible payments, etc). Do not include here cost of customer benefits delivered directly to the customer by a program vendor (paying for the cost of energy/GHG audits or direct install measures), or making a capital investment in a customer's project where the customer doesn't hold equipment ownership. Incentives will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Incentives, Size B	$ 273,675	$ 273,675	$ 273,675	$ 273,675	$ 273,675	per year	
Incentives, Size C	$ 410,513	$ 410,513	$ 410,513	$ 410,513	$ 410,513	per year	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Incentives per Participant, Size A	$ 136,838	$ 136,838	$ 136,838	$ 136,838	$ 136,838	per participant per year	*Incentives per participant is a function of total incentives paid directly to customers.*
Incentives per Participant, Size B	$ 136,838	$ 136,838	$ 136,838	$ 136,838	$ 136,838	per participant per year	
Incentives per Participant, Size C	$ 136,838	$ 136,838	$ 136,838	$ 136,838	$ 136,838	per participant per year	

Calculations & Other Explanation:

M&V - Total Cost for Whole Pilot: $50,000 flat rate assumed, regardless of pilot size

Incentive Cap: $ 25 $/Dth annual gas savings

NGIA-related CNP Cost Per Customer Enrolled $10,000

Total Project Cost: $ 300,000 Costs from a Furnace Exhaust Heat Recovery Project identified in a CIP industrial audit, that was not eligible for CIP rebates, had an expected payback of 6-7 years, and was not implemented by the customer
Baseline Upgrade Option: $ - (Baseline option is no upgrade / this is not an end of life measure)
Total Incremental Project Cost: $ 300,000

TOTAL AND DIRECT PARTICIPANT PILOT COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Total Pilot Upfront Costs, Size A	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	per participant	*This represents the total equipment and installation costs for technologies implemented as part of this pilot (specifically non-utility capital projects that were captured separately above). This cost does not account for what portion of costs may be covered by utility incentives, nor include utility program admin costs.*
Total Pilot Upfront Costs, Size B	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	per participant	
Total Pilot Upfront Costs, Size C	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	per participant	

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Third Party Funding, Size A	$ -	$ -	$ -	$ -	$ -	per participant	*If there are expectations for external funding sources (e.g. IRA, etc) account for those values here. This funding is noted here for reference, it's not used to calculate any of the NGIA evaluation criteria.*
Third Party Funding, Size B	$ -	$ -	$ -	$ -	$ -	per participant	
Third Party Funding, Size C	$ -	$ -	$ -	$ -	$ -	per participant	

Description of source of external funding: IRA, etc

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Direct Participant Pilot Costs, Size A	$ 163,163	$ 163,163	$ 163,163	$ 163,163	$ 163,163	per participant	*This represents the upfront costs to participants who participate in this pilot. This is a calculated value, where utility incentives are subtracted from the total upfront project costs. Direct Participant Pilot costs will be used in the Participant Cost tests for the NGIA evaluation criteria. Note that some pilots taking a 'Direct Install' approach may see the utility covering all costs, with no upfront financial contribution from the participant.*
Direct Participant Pilot Costs, Size B	$ 163,163	$ 163,163	$ 163,163	$ 163,163	$ 163,163	per participant	
Direct Participant Pilot Costs, Size C	$ 163,163	$ 163,163	$ 163,163	$ 163,163	$ 163,163	per participant	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United*

PARTICIPANT NON-ENERGY COSTS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Costs, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any increased in costs like equipment operating costs or increased water costs. Participant Non-Energy Costs will be used in the Participant Cost tests for the NGIA evaluation criteria.*
Participant Non-Energy Costs, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Costs, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5		
Escalation rate	3.82%	3.82%	3.82%	3.82%	3.82%	(for each pilot analysis year)	*For an escalation rate, we use the average of the 12-month percentage change in the "all items" consumer price index available from the United*

PARTICIPANT NON-ENERGY SAVINGS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:	
Participant Non-Energy Savings, Size A	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	*This includes any operating savings like water savings.*
Participant Non-Energy Savings, Size B	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	
Participant Non-Energy Savings, Size C	$ -	$ -	$ -	$ -	$ -	per participant per year of pilot life	

Calculations & Other Explanation:

PILOT LIFE

Average Lifetime for Savings/Pilot Tech, Size A	20	years
Average Lifetime for Savings/Pilot Tech, Size B	20	years
Average Lifetime for Savings/Pilot Tech, Size C	20	years

Calculations & Other Explanation:

NATURAL GAS ENERGY SAVINGS: AVG. Dth/ PARTICIPANT SAVED

Avg. Dth/Participant Saved, Size A	5.474	Dth/Participant
Avg. Dth/Participant Saved, Size B	5.474	Dth/Participant
Avg. Dth/Participant Saved, Size C	5.474	Dth/Participant

Calculations & Other Explanation:

AVG. NON-GAS FUEL UNITS/ PART.

Avg. Non-Gas Fuel Units/Part. Saved, Size A	0.00	kWh/Participant
Avg. Non-Gas Fuel Units/Part. Saved, Size B	0.00	kWh/Participant
Avg. Non-Gas Fuel Units/Part. Saved, Size C	0.00	kWh/Participant

Units are kWh; could technically be other non-NG. Avg. Non-Gas Fuel Units/Part. Saved will be used in the Participant Cost tests for the NGIA evaluation criteria.

Avg. Additional Non-Gas Fuel Units/Part.Used, Size A	76,107	kWh/Participant
Avg. Additional Non-Gas Fuel Units/Part.Used, Size B	76,107	kWh/Participant
Avg. Additional Non-Gas Fuel Units/Part.Used, Size C	76,107	kWh/Participant

Avg. Additional Non-Gas Fuel Units/Part. Used will be used in the Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

TOTAL ANNUAL Dth SAVED

	Year 1	Year 2	Year 3	Year 4	Year 5	
Total Annual Dth Saved, Size A	5,474	5,474	5,474	5,474	5,474	Dth
Total Annual Dth Saved, Size B	10,947	10,947	10,947	10,947	10,947	Dth
Total Annual Dth Saved, Size C	16,421	16,421	16,421	16,421	16,421	Dth

Natural gas energy savings that result from multiplying savings per participant times the total number of new participants in a given year

Calculations & Other Explanation:

GRID MIX SCENARIO

Grid Mix Scenario: NREL

Select one of the listed grid mix scenarios taking into account that:

•Utilities shall use electric-utility-specific generation mix information for the renewable natural gas facility when it is reasonably available. When electric utility-specific information is not available, the filing gas utility will use a state-specific generation mix taken from

Calculations & Other Explanation:

LIFECYCLE GHG INTENSITY BY PROJECT SIZE

This section does not apply to all pilot types. The GHG changes from decreased natural gas and/or electricity consumption will be calculated based on values above. However, for pilots where NGIA requires lifecycle GHG savings (e.g. RNG, hydrogen, carbon capture) this section accounts for the lifecycle change in GHG emissions (per unit of participation).

Lifecycle GHG Intensity, Size A

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size B

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Lifecycle GHG Intensity, Size C

	Year 1	Year 2	Year 3	Year 4	Year 5	
Low						kg CO2e/participant
Expected	0.00	0.00	0.00	0.00	0.00	kg CO2e/participant
High						kg CO2e/participant

Utilities shall file a high, low, and expected greenhouse gas intensity for innovative resources included in a proposed Natural Gas Innovation Act innovation (NGIA) plan, where applicable. High and low scenarios shall incorporate at least low and high assumptions for electricity use and other fuels used in the resource's lifecycle. Expected greenhouse gas intensity values will be used in cost-benefit calculations and when determining the expected greenhouse gas reduction of pilot programs and NGIA plans.

OTHER PILOT-SPECIFIC PARAMETERS (formerly 'General Parameters' in CIP Calculator):

PEAK REDUCTION FACTOR

Peak Reduction Factor: 1%

The estimated average annual effect of the project on system peak. It is estimated to be 1% for energy efficiency pilots. The method for other innovative resources should be considered in the context of specific utility proposals. Peak Reduction Factor will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria.

Calculations & Other Explanation:

VARIABLE O&M

Values now linked directly back to planning assumptions tab (possible given the combination of formerly separate Exhibits P and N into a single file)

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Variable O&M Cost, Applies to all project sizes	$ 0.05	$ 0.04	$ 0.04	$ 0.04	$ 0.04	per Dth

The CIP methodology is used for energy efficiency. However, the value for other innovative resources should be considered in the context of specific utility proposals. For example, resources like power-to-hydrogen and RNG may not decrease O&M costs as they also need to be transported to customers on the distribution system. Variable O&M will be used in the Utility Cost and Non Participant Cost tests for the NGIA evaluation criteria. Note, to calculate this metric, you can make one cost estimate for year 1 and then use the escalation rate to estimate each Annual Escalation Rate calculated using the average percent change in the price of natural gas between 2023 through 2027 to all users in the Wes

Calculations & Other Explanation:

	Year 1	Year 2	Year 3	Year 4	Year 5	
Escalation rate	n/a	-5.250%	-5.250%	-5.250%	-5.250%	(for each pilot analysis year)

NON-GAS FUEL COST

		USD (Nominal) Cost Unit:
Non-Gas (i.e., Electric) Fuel Cost	$ 44.14	per MWh

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals.
equal to the average of daily real-time final market locational marginal prices (LMP) at the Minnesota Hub from January 1, 2022 to December 31, 2022 using data from Midwest Independent System Operator (MISO)

Calculations & Other Explanation:

NON-GAS FUEL LOSS FACTOR

Non-Gas Fuel Loss Factor: 8.22%

The CIP methodology is used for all resources other than strategic electrification. The method for strategic electrification should be considered in the context of specific utility pilot proposals. In the most recent CIP, Staff used the weighted average of the most recent loss factors reported by Minnesota Power, Xcel Energy, and Otter Tail Power's reported 2021 transmission and distribution loss factors and weighting by the utilities' 2017-2019 average retail sales

Calculations & Other Explanation:

OTHER QUANTITATIVE CRITERIA:

OTHER NON-GHG POLLUTANTS

		USD Cost Unit:
Other Non-GHG Pollutants, Size A	$ 0.37	per Dth
Other Non-GHG Pollutants, Size B	$ 0.37	per Dth
Other Non-GHG Pollutants, Size C	$ 0.37	per Dth

Generally no change from CIP methodology. The factor is calculated using the final environmental cost values approved by Minnesota Public Utilities Commission (Commission). The factors are reported in 2021 dollars in Table 2 below, which were calculated by inflating the Commission's approved dollar per ton environmental cost values using escalation rate to adjust by observed inflation between 2014 and 2021. Stakeholders expressed a preference for allowing utilities to select different externality values for pilots targeting specific geographies or populations. For example, an energy efficiency project that targets an urban area might use the urban value rather than the metropolitan fringe value. Similarly, a project targeting a low-income population might use a high value rather than the median. Utilities can make deviations such as these in their NGIA plans if they can provide justification for the change. Instead of requiring the use of median metropolitan fringe values for all non-GHG pollutants, as shown in Table 1 of the Commission's January 3, 2018 Order in Docket No. E1999/CI-14-643, utilities may use the value most applicable for the pilot or measure.

Calculations & Other Explanation:

NET JOB CREATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Direct Job Creation, Size A	2	2	2	2	2	10	10	# of jobs
Net Direct Job Creation, Size B	3	3	3	4	3	16	20	# of jobs
Net Direct Job Creation, Size C	4	5	5	5	6	25	31	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Indirect Job Creation, Size A	1	1	1	1	1	6	6	# of jobs
Net Indirect Job Creation, Size B	2	2	2	2	2	10	13	# of jobs
Net Indirect Job Creation, Size C	3	3	3	3	4	15	19	# of jobs

Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total during 5 program years	Remainder of project life	
Net Induced Job Creation, Size A	1	1	1	1	1	6	6	# of jobs
Net Induced Job Creation, Size A	2	2	2	2	2	10	13	# of jobs
Net Induced Job Creation, Size A	3	3	3	3	4	16	20	# of jobs

Calculations & Other Explanation:

Job numbers are estimated as Full Time Equivalents (FTE) and are rounded off.

PUBLIC CO-BENEFITS

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Public Co-Benefits, Size A	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size B	$ -	$ -	$ -	$ -	$ -	per year
Public Co-Benefits, Size C	$ -	$ -	$ -	$ -	$ -	per year

Quantifiable in some cases. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

Calculations & Other Explanation:

WATER POLLUTION

	Year 1	Year 2	Year 3	Year 4	Year 5	USD (Nominal) Cost Unit:
Water Pollution, Size A	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size B	$ -	$ -	$ -	$ -	$ -	per year
Water Pollution, Size C	$ -	$ -	$ -	$ -	$ -	per year

The legislation left the door open to quantify any costs and benefits on water pollution. This might be quantifiable for some of the projects. If this metric isn't quantifiable, there is space for any qualitative comments in the Additional Qualitative Considerations section below.

Calculations & Other Explanation:

ADDITIONAL QUALITATIVE CONSIDERATIONS:

NGIA Utility Perspective Notes:

Definition: *It is expected that most of the utility perspective costs and benefits will be quantifiable with and should be heavily informed by the structural values and CIP quantification methods.*

NGIA Participants' Perspective Notes:

Definition: *It is expected that many of the elements of the participant perspective, with respect to the direct effect of pilots, will be quantifiable and will rely on the structural values. Add here any information related to some direct effects of pilots on participants that may not be easily quantifiable. For example, increased comfort in a home and health benefits from pilots that improve indoor air quality are two examples of benefits that may be difficult to quantify.*

May assist MN businesses in achieving GHG goals

NGIA Nonparticipating Customers' Perspective Notes:

Definition: *As with the utility perspective, the direct effects of pilot programs on non-participating customers should be quantified in most cases and can be heavily informed by structural values.*

Effects on Other Energy Systems and Energy Security:

Definition: *NGIA invites the Commission to consider how innovative resources fit into the energy system with a broader perspective than effects on the gas utility and its customers. Measures like strategic electrification specifically require gas utilities and the Commission to avoid negative effects on the electric system. Further, the NGIA empowers the Commission to consider a wide variety of "costs and benefits that may be expected under a plan," one of which is a reduction of reliance on imported resources and national fuel markets.*

Reduces overall energy consumption

GHG Emissions Notes:

Definition: *An innovation plan must include the total lifecycle GHG emissions that the utility projects will be reduced or avoided through implementing the plan. This benefit should be generally quantifiable using the Commission-approved GHG accounting framework and GHG externality values. Note that this row also calls for discussion of any environmental justice effects of the pilot related to GHG emissions, these may not be quantifiable.*

Other Pollution Notes:

Definition: *Include any additional non-GHG environmental costs and benefits. For example, effects on water pollution that may not be quantifiable, or specific air quality benefits to a low income community. Note that this also calls for discussion of any environmental justice effects of the pilot related to non-GHG pollution.*

Waste Reduction and Reuse Notes:

Definition: *Waste reduction, reuse, and anaerobic digestion are goals of the NGIA. Includes reduction of water use.*

Policy Notes:

Definition: *NGIA is intended to help the state achieve certain environmental policy goals including geologic gas throughput reduction and increased use of renewable resources.*

Reduces fossil gas throughput; increases use of renewable energy

Net Job Creation Notes:

Definition: *An innovation plan must include, as applicable, "projected local job impacts resulting from implementation of the plan." Utilities should consider both jobs created by proposed pilots and jobs that may be eliminated by proposed pilots.*

Economic Development Notes:

Definition: *The Commission must make a finding that the innovation plan "promotes local economic development." Creation of jobs is a form of economic development, but economic development is broader. For example, pilots that pay workers a living wage or support apprenticeships or training opportunities would provide additional economic benefits.*

Public Co-Benefits Notes:

Definition: *There may be public benefits for certain pilots. For example, the NGIA is intended to help support wastewater treatment and organics recycling. This category could also include odor effects on Minnesota communities – either reductions in unpleasant odors or increased odor problems.*

Market Development Notes:

Definition: *The NGIA supports the development of new markets or expansion of markets in Minnesota. For example, utilities are required to describe whether proposed plans support the development of alternative agricultural products, as well as the geographic areas of the state where benefits are realized*

May help MN businesses appeal to customers interested in sustainability

Direct Innovation Support Notes:

Definition: *This category is intended to answer how the proposed pilot supports the development and increased deployment of innovative resources beyond the direct program impacts. For example, research and development projects, which are permitted under the NGIA,40 are unlikely to produce significant benefits on their own but are intended to lead to future opportunities.*

Opportunity for customers to learn about novel options for reducing GHGs from their systems

Resource Scalability and Role in a Decarbonized System Notes:

Definition:

While NGIA pilots may have small impacts in the near-term, stakeholders felt it was important for the Commission to consider the potential importance of each resource in a decarbonized energy system. The NGIA requires the Commission to consider changes to natural gas utility and regulatory policy structures needed to meet or exceed Minnesota's GHG reduction goals. NGIA pilots should provide valuable information to the Commission as it considers the energy future of the state.