

Electric Vehicles	Transportation Electrification Plan					2024	GOAL
2024 Net Present Cost Benefit Summary Analysis For All Participants Benefits (Positive Values) Costs (Negative Values)							
			Electric Rate				
	Participant Test	Utility Test	Impact Test	Societal Test	Minnesota Test		
	(\$Total)	(\$Total)	(\$Total)	(\$Total)	(\$Total)		
Electric System Impacts							
TEP Program Costs (CapEx Revenue Requirements)	N/A	(9,915,210)	(9,915,210)	(9,915,210)	(9,915,210)		
Generation Capacity	N/A	(6,882,979)	(6,882,979)	(7,496,822)	(7,496,822)		
Transmission and Distribution Capacity	N/A	(773,476)	(773,476)	(843,419)	(843,419)		
Energy Generation	N/A	(17,991,735)	(17,991,735)	(19,702,777)	(19,702,777)		
Market Effects and Ancillary Services	N/A	(512,964)	(512,964)	(560,860)	(560,860)		
Subtotal	N/A	(36,076,364)	(36,076,364)	(38,519,088)	(38,519,088)		
Environmental Externalities and Non-Energy Impacts							
Electric Environmental Externalities	N/A	N/A	N/A	(3,855,316)	(3,855,316)		
Gas Environmental Externalities	N/A	N/A	N/A	0	0		
Other Fuels Environmental Externalities	N/A	N/A	N/A	29,683,463	29,683,463		
Electric Non-Energy Benefits	N/A	N/A	N/A	0	0		
Gas Non-Energy Benefits	N/A	N/A	N/A	0	0		
Other Fuels Benefits	222,623,276	N/A	N/A	222,623,276	222,623,276		
Utility Performance Incentives	N/A	0	0	0	0		
Utility Non-Energy Benefits	N/A	0	0	0	0		
Subtotal	222,623,276	0	0	248,451,423	248,451,423		
Participant Impacts							
Electric Bill	(70,162,850)	N/A	63,934,664	N/A	N/A		
Gas Bill	0	N/A	N/A	N/A	N/A		
Participant Rebates and Incentives	0	N/A	N/A	0	N/A		
Incremental Capital	(222,683,000)	N/A	N/A	(222,683,000)	N/A		
Incremental O&M	83,544,181	N/A	N/A	83,544,181	N/A		
Subtotal	(209,301,669)	N/A	63,934,664	(139,138,819)	N/A		
Utility Impacts							
Utility Project Costs							
TEP Program Costs (O&M Revenue Requirements)	N/A	3,796,708	3,796,708	3,796,708	3,796,708		
Project Administration	N/A	0	0	0	0		
Advertising & Promotion	N/A	0	0	0	0		
Measurement & Verification	N/A	0	0	0	0		
Rebates	N/A	0	0	0	0		
Other	N/A	0	0	0	0		
Subtotal	N/A	3,796,708	3,796,708	3,796,708	3,796,708		
Benefits	306,167,457	3,796,708	67,731,372	339,647,628	256,103,447		
Costs	(292,845,850)	(26,161,154)	(26,161,154)	(255,142,194)	(32,459,194)		
Net Benefit (Cost)	13,321,607	(22,364,446)	41,570,218	84,505,434	223,644,253		
Benefit/Cost Ratio	1.05	0.15	2.59	1.33	7.89		

Beneficial Electrification Impacts	
Lifetime (Weighted on Generator kWh)	10.0 years
T & D Loss Factor (Energy)	8.70%
T & D Loss Factor (Demand)	10.56%
System Coincident kW Saved at Generator	-7733.95 kW
Annual kWh Saved at Customer	-49,800,987 kWh
Annual kWh Saved at Generator	-54,133,673 kWh
Annual Gallons of Gasoline Saved	7,000,479 Gal.
Annual Gallons of Diesel Saved	0 Gal.
Incremental Evs	13,099
Incremental EBuss	0
First year Carbon Emissions Reductions	
Electric Electrification	-16,121 tons CO2
Other Fuel Electrification	68,578 tons CO2
TOTAL	52,457 tons CO2
Lifetime Carbon Emissions Reductions	
Electric Electrification	-87,917 tons CO2
Other Fuel Electrification	685,784 tons CO2
TOTAL	597,867 tons CO2

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Electric Vehicles	Transportation Electrification Plan					2025	GOAL
2025 Net Present Cost Benefit Summary Analysis For All Participants Benefits (Positive Values) Costs (Negative Values)							
	Participant Test	Utility Test	Electric Rate Impact Test	Societal Test	Minnesota Test		
	(\$Total)	(\$Total)	(\$Total)	(\$Total)	(\$Total)		
Electric System Impacts							
TEP Program Costs (CapEx Revenue Requirements)	N/A	(16,078,387)	(16,078,387)	(16,078,387)	(16,078,387)		
Generation Capacity	N/A	(7,643,378)	(7,643,378)	(8,325,036)	(8,325,036)		
Transmission and Distribution Capacity	N/A	(864,920)	(864,920)	(943,132)	(943,132)		
Energy Generation	N/A	(20,361,810)	(20,361,810)	(22,232,106)	(22,232,106)		
Market Effects and Ancillary Services	N/A	(577,402)	(577,402)	(630,005)	(630,005)		
Subtotal	N/A	(45,525,898)	(45,525,898)	(48,208,667)	(48,208,667)		
Environmental Externalities and Non-Energy Impacts							
Electric Environmental Externalities	N/A	N/A	N/A	(3,840,019)	(3,840,019)		
Gas Environmental Externalities	N/A	N/A	N/A	0	0		
Other Fuels Environmental Externalities	N/A	N/A	N/A	33,013,545	33,013,545		
Electric Non-Energy Benefits	N/A	N/A	N/A	0	0		
Gas Non-Energy Benefits	N/A	N/A	N/A	0	0		
Other Fuels Benefits	243,204,755	N/A	N/A	243,204,755	243,204,755		
Utility Performance Incentives	N/A	0	0	0	0		
Utility Non-Energy Benefits	N/A	0	0	0	0		
Subtotal	243,204,755	0	0	272,378,281	272,378,281		
Participant Impacts							
Electric Bill	(75,007,300)	N/A	68,353,778	N/A	N/A		
Gas Bill	0	N/A	N/A	N/A	N/A		
Participant Rebates and Incentives	0	N/A	N/A	0	N/A		
Incremental Capital	(243,270,000)	N/A	N/A	(243,270,000)	N/A		
Incremental O&M	91,267,824	N/A	N/A	91,267,824	N/A		
Subtotal	(227,009,476)	N/A	68,353,778	(152,002,176)	N/A		
Utility Impacts							
Utility Project Costs							
TEP Program Costs (O&M Revenue Requirements)	N/A	5,681,557	5,681,557	5,681,557	5,681,557		
Project Administration	N/A	0	0	0	0		
Advertising & Promotion	N/A	0	0	0	0		
Measurement & Verification	N/A	0	0	0	0		
Rebates	N/A	0	0	0	0		
Other	N/A	0	0	0	0		
Subtotal	N/A	5,681,557	5,681,557	5,681,557	5,681,557		
Benefits	334,472,579	5,681,557	74,035,335	373,167,680	281,899,856		
Costs	(318,277,300)	(29,447,510)	(29,447,510)	(279,240,298)	(35,970,298)		
Net Benefit (Cost)	16,195,278	(23,765,954)	44,587,824	93,927,382	245,929,558		
Benefit/Cost Ratio	1.05	0.19	2.51	1.34	7.84		

Beneficial Electrification Impacts	
Lifetime (Weighted on Generator kWh)	10.0 years
T & D Loss Factor (Energy)	8.70%
T & D Loss Factor (Demand)	10.56%
System Coincident kW Saved at Generator	-8448.95 kW
Annual kWh Saved at Customer	-54,405,078 kWh
Annual kWh Saved at Generator	-59,138,320 kWh
Annual Gallons of Gasoline Saved	7,647,672 Gal.
Annual Gallons of Diesel Saved	0 Gal.
Incremental Evs	14,310
Incremental Ebus	0
First year Carbon Emissions Reductions	
Electric Electrification	-11,612 tons CO2
Other Fuel Electrification	74,918 tons CO2
TOTAL	63,307 tons CO2
Lifetime Carbon Emissions Reductions	
Electric Electrification	-86,392 tons CO2
Other Fuel Electrification	749,185 tons CO2
TOTAL	662,793 tons CO2

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Electric Vehicles	Transportation Electrification Plan					2026	GOAL
2026 Net Present Cost Benefit Summary Analysis For All Participants Benefits (Positive Values) Costs (Negative Values)							
EBus	Electric Rate						
	Participant Test (\$Total)	Utility Test (\$Total)	Impact Test (\$Total)	Societal Test (\$Total)	Minnesota Test (\$Total)		
Electric System Impacts							
TEP Program Costs (CapEx Revenue Requirements)	N/A	(3,248,082)	(3,248,082)	(3,248,082)	(3,248,082)		
Generation Capacity	N/A	(10,226,817)	(10,226,817)	(11,138,874)	(11,138,874)		
Transmission and Distribution Capacity	N/A	(1,165,344)	(1,165,344)	(1,270,722)	(1,270,722)		
Energy Generation	N/A	(26,821,479)	(26,821,479)	(29,317,276)	(29,317,276)		
Market Effects and Ancillary Services	N/A	(764,273)	(764,273)	(834,537)	(834,537)		
Subtotal	N/A	(42,225,994)	(42,225,994)	(45,809,490)	(45,809,490)		
Environmental Externalities and Non-Energy Impacts							
Electric Environmental Externalities	N/A	N/A	N/A	(4,981,115)	(4,981,115)		
Gas Environmental Externalities	N/A	N/A	N/A	0	0		
Other Fuels Environmental Externalities	N/A	N/A	N/A	44,242,093	44,242,093		
Electric Non-Energy Benefits	N/A	N/A	N/A	0	0		
Gas Non-Energy Benefits	N/A	N/A	N/A	0	0		
Other Fuels Benefits	330,909,628	N/A	N/A	330,909,628	330,909,628		
Utility Performance Incentives	N/A	0	0	0	0		
Utility Non-Energy Benefits	N/A	0	0	0	0		
Subtotal	330,909,628	0	0	370,170,606	370,170,606		
Participant Impacts							
Electric Bill	(100,251,195)	N/A	91,365,160	N/A	N/A		
Gas Bill	0	N/A	N/A	N/A	N/A		
Participant Rebates and Incentives	0	N/A	N/A	0	N/A		
Incremental Capital	(320,644,000)	N/A	N/A	(320,644,000)	N/A		
Incremental O&M	120,206,752	N/A	N/A	120,206,752	N/A		
Subtotal	(300,688,443)	N/A	91,365,160	(200,437,248)	N/A		
Utility Impacts							
Utility Project Costs							
TEP Program Costs (O&M Revenue Requirements)	N/A	3,574,045	3,574,045	3,574,045	3,574,045		
Project Administration	N/A	0	0	0	0		
Advertising & Promotion	N/A	0	0	0	0		
Measurement & Verification	N/A	0	0	0	0		
Rebates	N/A	0	0	0	0		
Other	N/A	0	0	0	0		
Subtotal	N/A	3,574,045	3,574,045	3,574,045	3,574,045		
Benefits	451,116,380	3,574,045	94,939,206	498,932,518	378,725,766		
Costs	(420,895,195)	(38,977,912)	(38,977,912)	(368,186,523)	(47,542,523)		
Net Benefit (Cost)	30,221,185	(35,403,867)	55,961,293	130,745,995	331,183,243		
Benefit/Cost Ratio	1.07	0.09	2.44	1.36	7.97		

Beneficial Electrification Impacts	
Lifetime (Weighted on Generator kWh)	10.0 years
T & D Loss Factor (Energy)	8.70%
T & D Loss Factor (Demand)	10.56%
System Coincident kW Saved at Generator	-11121.17 kW
Annual kWh Saved at Customer	-71,612,235 kWh
Annual kWh Saved at Generator	-77,842,500 kWh
Annual Gallons of Gasoline Saved	10,064,358 Gal.
Annual Gallons of Diesel Saved	5,000 Gal.
Incremental Evs	18,832
Incremental Ebus	2
First year Carbon Emissions Reductions	
Electric Electrification	-14,661 tons CO2
Other Fuel Electrification	98,649 tons CO2
TOTAL	83,988 tons CO2
Lifetime Carbon Emissions Reductions	
Electric Electrification	-110,426 tons CO2
Other Fuel Electrification	986,491 tons CO2
TOTAL	876,064 tons CO2

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Electric Vehicles			Transportation Electrification Plan			2027	GOAL
2027 Net Present Cost Benefit Summary Analysis For All Participants Benefits (Positive Values) Costs (Negative Values)							
EBus							
	Participant	Utility	Electric Rate				
	Test	Test	Impact	Societal	Minnesota		
	(\$Total)	(\$Total)	Test	Test	Test		
			(\$Total)	(\$Total)	(\$Total)		
Electric System Impacts							
TEP Program Costs (CapEx Revenue Requirements)	N/A	(4,484,372)	(4,484,372)	(4,484,372)	(4,484,372)		
Generation Capacity	N/A	(13,431,288)	(13,431,288)	(14,629,128)	(14,629,128)		
Transmission and Distribution Capacity	N/A	(1,530,493)	(1,530,493)	(1,668,890)	(1,668,890)		
Energy Generation	N/A	(35,225,720)	(35,225,720)	(38,503,550)	(38,503,550)		
Market Effects and Ancillary Services	N/A	(1,003,750)	(1,003,750)	(1,096,031)	(1,096,031)		
Subtotal	N/A	(55,675,623)	(55,675,623)	(60,381,972)	(60,381,972)		
Environmental Externalities and Non-Energy Impacts							
Electric Environmental Externalities	N/A	N/A	N/A	(6,541,897)	(6,541,897)		
Gas Environmental Externalities	N/A	N/A	N/A	0	0		
Other Fuels Environmental Externalities	N/A	N/A	N/A	58,084,028	58,084,028		
Electric Non-Energy Benefits	N/A	N/A	N/A	0	0		
Gas Non-Energy Benefits	N/A	N/A	N/A	0	0		
Other Fuels Benefits	434,421,968	N/A	N/A	434,421,968	434,421,968		
Utility Performance Incentives	N/A	0	0	0	0		
Utility Non-Energy Benefits	N/A	0	0	0	0		
Subtotal	434,421,968	0	0	485,964,099	485,964,099		
Participant Impacts							
Electric Bill	(130,439,697)	N/A	118,877,823	N/A	N/A		
Gas Bill	0	N/A	N/A	N/A	N/A		
Participant Rebates and Incentives	0	N/A	N/A	0	N/A		
Incremental Capital	(420,546,000)	N/A	N/A	(420,546,000)	N/A		
Incremental O&M	157,776,620	N/A	N/A	157,776,620	N/A		
Subtotal	(393,209,078)	N/A	118,877,823	(262,769,380)	N/A		
Utility Impacts							
Utility Project Costs							
TEP Program Costs (O&M Revenue Requirements)	N/A	4,496,480	4,496,480	4,496,480	4,496,480		
Project Administration	N/A	0	0	0	0		
Advertising & Promotion	N/A	0	0	0	0		
Measurement & Verification	N/A	0	0	0	0		
Rebates	N/A	0	0	0	0		
Other	N/A	0	0	0	0		
Subtotal	N/A	4,496,480	4,496,480	4,496,480	4,496,480		
Benefits	592,198,588	4,496,480	123,374,303	654,779,095	497,002,475		
Costs	(550,985,697)	(51,191,250)	(51,191,250)	(482,985,496)	(62,439,496)		
Net Benefit (Cost)	41,212,890	(46,694,771)	72,183,052	171,793,599	434,562,979		
Benefit/Cost Ratio	1.07	0.09	2.41	1.36	7.96		

Beneficial Electrification Impacts	
Lifetime (Weighted on Generator kWh)	10.0 years
T & D Loss Factor (Energy)	8.70%
T & D Loss Factor (Demand)	10.56%
System Coincident kW Saved at Generator	-14605.88 kW
Annual kWh Saved at Customer	-94,051,211 kWh
Annual kWh Saved at Generator	-102,233,666 kWh
Annual Gallons of Gasoline Saved	13,220,693 Gal.
Annual Gallons of Diesel Saved	0 Gal.
Incremental Evs	24,738
Incremental Ebus	0
First year Carbon Emissions Reductions	
Electric Electrification	-19,255 tons CO2
Other Fuel Electrification	129,513 tons CO2
TOTAL	110,259 tons CO2
Lifetime Carbon Emissions Reductions	
Electric Electrification	-145,027 tons CO2
Other Fuel Electrification	1,295,132 tons CO2
TOTAL	1,150,104 tons CO2

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.