

July 29, 2022

Will Seuffert
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, Minnesota 55101-2147

RE: Supplemental Comments of the Minnesota Department of Commerce, Division of Energy Resources
Docket No. E015/RP-21-33

Dear Mr. Seuffert:

Attached are the supplemental modeling comments of the Minnesota Department of Commerce, Division of Energy Resources (Department) in the following matter:

Minnesota Power's Application for Approval of its 2021-2035 Integrated Resource Plan.

The Petition was filed on February 1, 2021 by:

Jennifer J. Peterson
Manager, Regulatory Strategy and Policy
30 West Superior Street
Duluth, MN 55802

The Department is available to answer any questions the Minnesota Public Utilities Commission may have.

Sincerely,

/s/ DANIELLE WINNER
Rates Analyst

DW/ja
Attachment



Before the Minnesota Public Utilities Commission

Comments of the Minnesota Department of Commerce Division of Energy Resources

Docket No. E015/RP-21-33

I. INTRODUCTION

On February 1, 2021, February 3, 2021, February 5, 2021, and April 1, 2021, Minnesota Power, a division of ALLETE, Inc., (MP or the Company) filed the Company's *Application for Approval of its 2021-2035 Integrated Resource Plan* (Petition).

On August 13, 2021 the Minnesota Office of Administrative Hearings filed its *Summary of Public Testimony*, providing an overview of the public meetings held for this proceeding.

On April 29, 2022 the following parties filed Comments:

- Citizens Utility Board of Minnesota (CUB)
- City of Cohasset (City);
- Clean Energy Organizations (CEOs);¹
- Glenda Valdez;
- International Brotherhood of Electrical Workers Local Union 31;
- International Union of Operating Engineers Local 49;
- Laborers District Council of Minnesota and North Dakota;
- Large Power Intervenors (LPI);²
- Minnesota Department of Commerce, Division of Energy Resources (Department);
- Office of the Attorney General—Residential Utilities Division (OAG); and
- Union of Concerned Scientists.

On July 8, 2022 the CEOs requested that the Commission establish July 29, 2022 as the due date for new or revised EnCompass modeling and August 29, 2022 as the due date for reply comments. On July 13, 2022 the Commission issued a notice adopting the CEO's proposed schedule.

¹ For this proceeding the CEOs are Fresh Energy, Clean Grid Alliance, Sierra Club, and the Minnesota Center for Environmental Advocacy.

² LPI is an ad hoc consortium of industrial Large Power and Large Light and Power customers of Minnesota Power consisting for purposes of this filing of Blandin Paper Company; Boise White Paper, L.L.C., a Packaging Corporation of America company, formerly known as Boise, Inc.; Cleveland-Cliffs Minorca Mine Inc.; Enbridge Energy Limited Partnership; Gerdau Ameristeel US Inc.; Hibbing Taconite Company; Northern Foundry, LLC; Sappi Cloquet, LLC; USG Interiors, Inc.; United States Steel Corporation (Keetac and Minntac Mines); and United Taconite, LLC.

II. DEPARTMENT SUPPLEMENTAL MODELING

A. DEPARTMENT'S CORRECTED BASE CASE

After submitting its April 29, 2022 Comments, the Department met with MP to discuss the Department's modeling results. In that meeting, MP flagged three issues with the Department's modeling inputs:

- The "overnight capital costs" associated with the thermal unit options to address Boswell-area bulk system issues in the FastExit Boswell scenarios had not been included in the Department's runs;³
- An adjustment made to the end effects monthly sales data was made in error; and
- An adjustment made to the end effects time series hourly data would have created a mismatch between MISO prices and hourly sales data.

While the second two items are less likely to have impacted the results of EnCompass since they were only during the end effects (post-2035) period, the first item is significant. The Department corrected the inputs for the three above errors.

The Department subsequently requested an extension to rerun its modeling, incorporating the above changes. In the course of updating its modeling, the Department noticed three additional errors with the original modeling:

- The Department's Sales Forecast/Nemadji Trail study insufficiently incorporated the high sales forecast input data. Although the higher forecast was incorporated into the end effects period, it was not incorporated into the planning period.
- The Department's No Regulatory/High Environmental carbon future externalities value contained a calculation error in the Department's post-processing net present value calculation.
- The Department's carbon dioxide (CO₂) emissions results contained a calculation error in the Department's post-processing calculation.

The Department corrected the above errors.

Finally, as noted in its April 29, 2022 Comments, the Department worked with MP to incorporate the potential effects of one of the Midcontinent Independent System Operator, Inc.'s (MISO) proposed Tranche 1 Long Range Transmission Plan (LRTP) lines. This line would be sufficient to mitigate reliability issues associated with retiring the Boswell units but would recover the cost from MISO customers per MISO's tariff. This change impacts the cost assumptions in the Boswell constraints

³ This led EnCompass to have a bias towards adding thermal units and making the FastExit the least cost plan.

because the LRTP line is assumed as definite in the model, rather than only potentially triggered by the unit retirements. This has the potential to impact both plan costs and expansion plans of various Boswell retirement plans.

The Department therefore studied the effects of a change case in which the LRTP is approved and incorporated its new analysis into these Comments. The MISO board will vote on the proposed LRTP line shortly before the instant Comments are due.

The Department appreciates that MP has been willing to work with the Department to update its modeling and also appreciates that the Commission, MP, and other stakeholders have been flexible with reworking the docket timeline. Although modeling is always an iterative process, the experience and knowledge gap has been especially large in this proceeding as the Department transitions to the EnCompass model and continues to bring in new modeling staff.

B. DEPARTMENT'S UPDATED MODELING RESULTS

The Department continued to use the same resource alternatives as the Company; a table of potential alternatives can be found in Attachment 1 to these Comments.

The Department examined the following variables:

- 5 Boswell retirement scenarios;
- 6 carbon futures;
- 32 of MP's 38 contingencies;
- MISO's proposed LRTP lines;
- Sales forecast levels; and
- Nemadji Trail Energy Center (NTEC) ownership level and in-service date.

The Department continued to perform both expansion plan and production cost simulations for every run. Results used in the instant Comments reflect production cost data, since this data incorporates the results of both simulation types. For further discussion on this distinction, see the discussion starting on page 37 of the Department's April 29, 2022 Comments.

In the following discussion, the Department presents its cost and expansion plan outcomes from its examination of each of these variables.

1. Boswell Scenarios

The Department examined the same five Boswell retirement scenarios examined by MP. These scenarios are shown in the following table, which has been reproduced from Table 11 of the Department's April 29, 2022 Comments:

Dept Table 1. MP’s Boswell Retirement Scenarios examined for the planning period (2021-2035), no retirement action taken in blank cells

	Boswell 3 Retirement Date	Boswell 4 Retirement Date
Status Quo	-	-
PrefPlan	2029	-
Early3	2025	-
Early4	-	2030
FastExit	2025	2030

Additionally, as discussed in the Department’s April 29, 2022 Comments, MP’s model forces specific capacity expansion decisions based upon the Boswell retirement scenario. These “Boswell constraints” are meant to mitigate reliability issues posed by Boswell unit retirement. The Department continued to use MP’s Boswell constraints in its modeling. Visual representations four of the Boswell constraints can be found in Attachment 2, Figures 1-4 to these Comments.⁴

a. Boswell Scenarios: Cost Results

The following table shows the Department’s cost results for each Boswell retirement scenario, using the base contingency in a Mid/Mid carbon future.⁵ In these Comments the Department evaluates plan costs using the 2021 net present value of the revenue requirement + externalities, using MP’s assumed discount rate of 7.0639 percent. Values listed are in \$000,000 units; therefore, for example, the StatusQuo plan cost in the below table is \$8.06 billion in 2021 dollars.

Dept Table 2. Department’s total cost results for each Boswell retirement scenario (Conditions: Mid/Mid Carbon Future, Base Contingency)

NPV Plan Costs (\$Million)	StatusQuo	PrefPlan	Early3	Early4	FastExit
Revenue Requirement	\$8,062	\$8,128	\$8,151	\$8,227	\$8,329
Externalities	\$2,022	\$1,901	\$1,897	\$1,857	\$1,709
Revenue Requirement + Externalities (Total Plan Cost)	\$10,084	\$10,030	\$10,048	\$10,084	\$10,038

⁴ Note that the StatusQuo scenario does not have any Boswell constraints because there is no need to build new reliability mitigation measures. This also means that to meet MP’s engineering requirements, StatusQuo does not permit new intermediate or peaking gas resources to be built.

⁵ For a refresher on each of these variables, see “Contingencies” and “Carbon Futures” sections below.

The Department’s results showed that under these conditions, the least cost plan was PrefPlan, while the highest cost plans were both StatusQuo and Early4.⁶ As Boswell retirement scenario becomes more aggressive, revenue requirement internal costs increase and externalities costs decrease. However, overall the scenarios are very close to each other in total plan cost.

The following table compares the Department’s results to MP’s:

Dept Table 3. Department’s versus MP’s total cost results for each Boswell retirement scenario (Conditions: Mid/Mid Carbon Future, Base Contingency)

Total NPV Plan Cost (\$Million)	StatusQuo	PrefPlan	Early3	Early4	FastExit
Department	\$10,084	\$10,030	\$10,048	\$10,084	\$10,038
MP	\$10,796	\$10,760	\$10,763	\$10,826	\$10,761

The Department observes that under these conditions:

- Both the Department and MP found PrefPlan to be the least cost Boswell retirement scenario, followed by FastExit and Early3;
- The Department found StatusQuo and Early4 to be the highest cost Boswell retirement scenarios, while MP found Early4 to be the highest cost Boswell scenario;
- All of the Department’s runs resulted in lower costs than MP’s runs, due to the Department’s changes to MP’s base case inputs.

b. Boswell Scenarios: Expansion Plan Result

The following table shows the Department’s capacity and transmission expansion plan results for the same five runs, presented by Boswell scenario and resource selection.

⁶ Figures in Table 2 are rounded and thus show a tie for highest cost plan between StatusQuo and Early4, but unrounded results show Early4 to be least cost. Here, the Department treats the results as equal.

Dept Table 4. Department’s capacity (MW) and transmission (number of projects) expansion plan resources chosen for each of the five Boswell retirement scenarios (Conditions: Mid/Mid Carbon Future, Base Contingency)

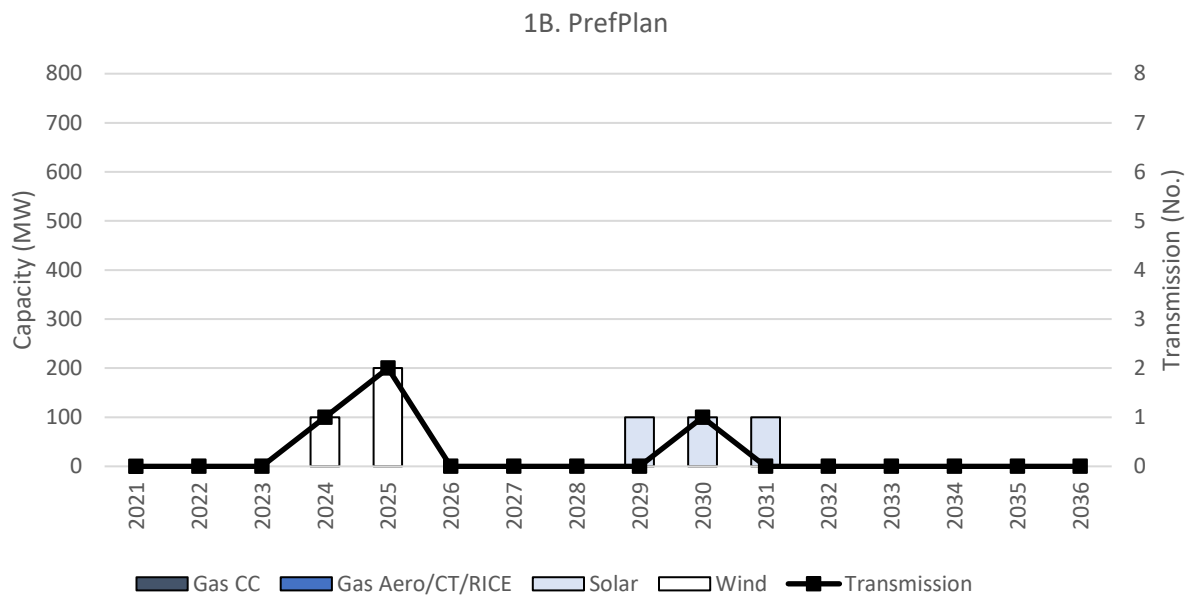
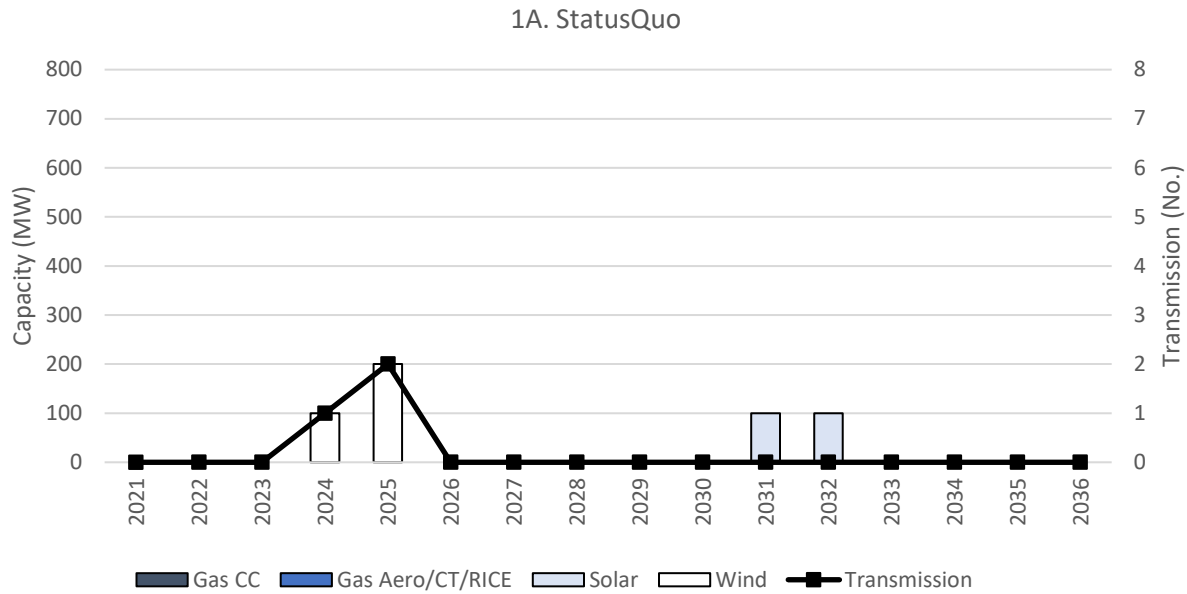
Boswell Retirement Scenario	Battery	Contract Purchase	DR	EE	Gas CC	Gas CT/RICE/Aero	Solar	Transmission	Wind
StatusQuo	0	0	0	0	0	0	200	3	300
PrefPlan	0	0	0	0	0	0	300	4	300
Early3	0	0	0	0	0	0	300	4	300
Early4	0	0	0	0	0	282	300	4	300
FastExit	0	0	0	0	593	0	200	4	300

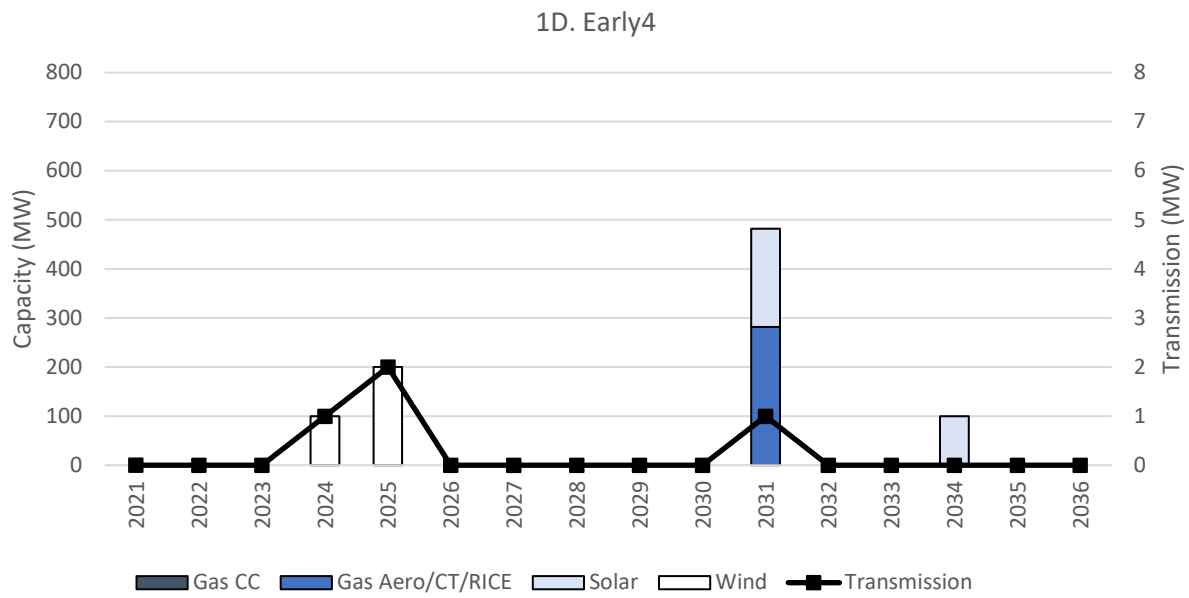
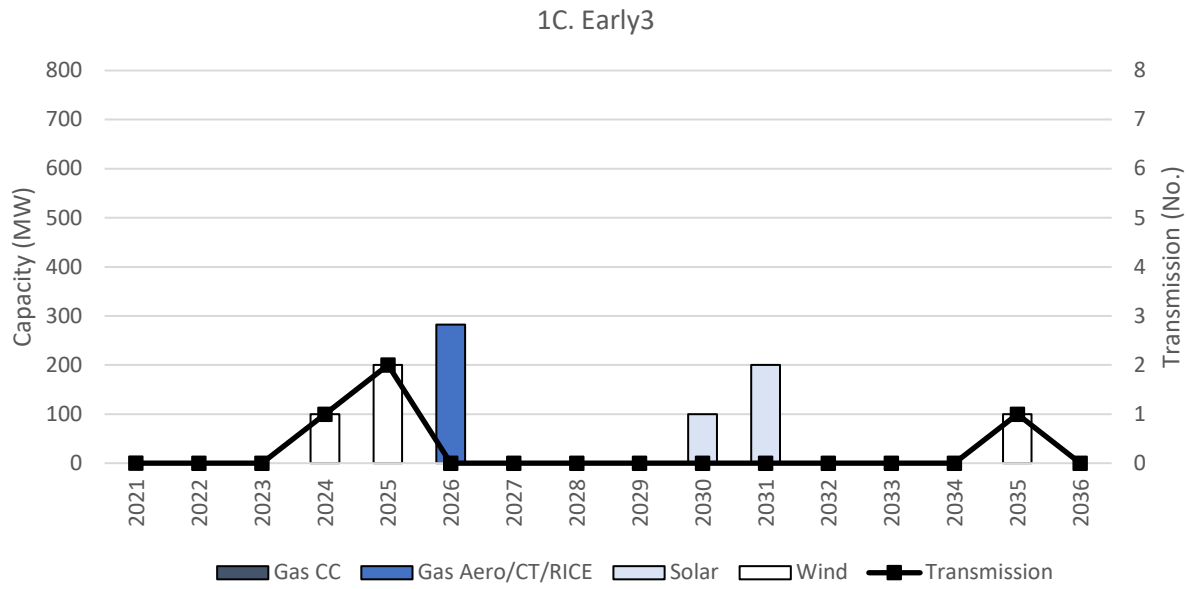
The Department observes that under these conditions:

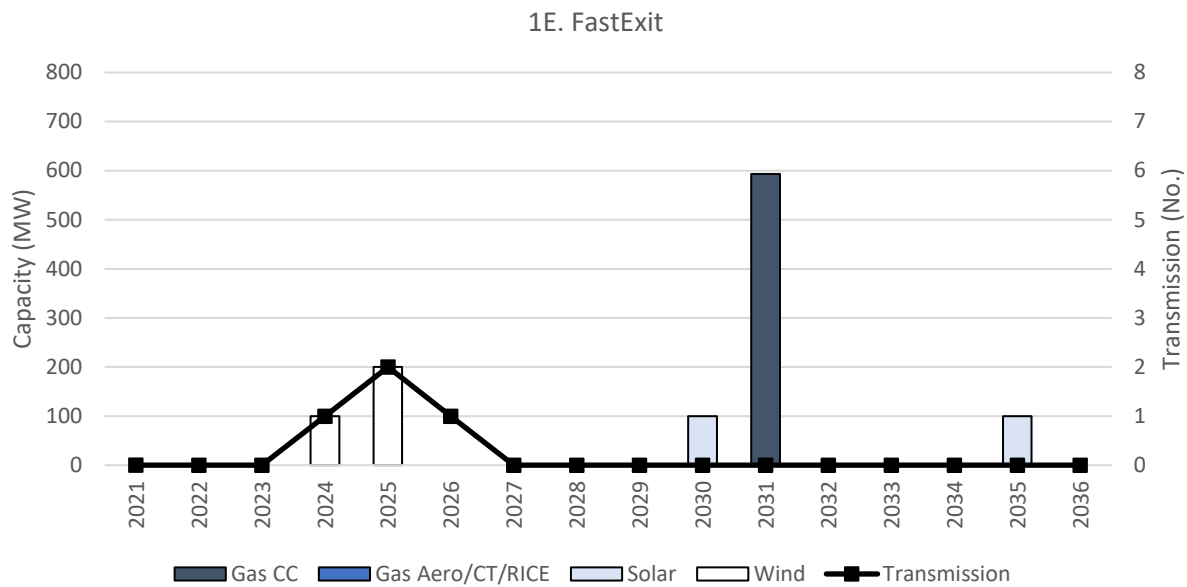
- EnCompass chose 300 MW of wind resources in each Boswell retirement scenario;
- EnCompass chose 200 to 300 MW of solar resources in each Boswell retirement scenario;
 - Solar resources chosen were all “Net Zero,” or solar resources sited at Boswell that used existing interconnection and thus were unaccompanied by a solar transmission project;
- EnCompass chose 3 to 4 transmission projects in each Boswell retirement scenario;
- EnCompass only chose gas resources in the Early4 and FastExit scenarios; and
- EnCompass never selected battery, contract purchase, demand-response, or energy efficiency resources under any Boswell retirement scenario.

To better understand the timing and nature of each of these capacity expansion plans, the Department plotted the results of each scenario on a timeline, shown below.

Dept Figures 1A to 1E. Department’s capacity and transmission expansion plans for each Boswell retirement scenario (Conditions: Mid/Mid Carbon Future, Base Contingency)







A review of the above charts demonstrates that under these conditions, each Boswell retirement scenario:

- Selected 100 MW of wind + 1 wind transmission resource in 2024;
- Selected 200 MW of wind + 2 wind transmission resources in 2025; and
- Had a tendency to add solar capacity (Boswell-sited) around 2030.

The above charts also show more easily which Boswell constraints were selected under each Boswell retirement scenario and when they were selected:

- Under PrefPlan, the Boswell constraint selection was one 2030 transmission project;
- Under Early3, the Boswell constraint selection was one 2026 gas CT unit;
- Under Early4, the Boswell constraint selection was one 2031 transmission project and one 2031 gas CT unit;
- Under FastExit, the Boswell constraint selection was one 2026 transmission project and one 2031 gas CC unit.

This means that the transmission resources added under StatusQuo and Early3 were generation interconnection lines tied to wind, whereas the transmission resources added in the other three scenarios were a combination of wind interconnection lines and Boswell constraints.

Based on the above results, the Department notes that Boswell retirement scenario does meaningfully impact gas and transmission resource selections, insofar as each Boswell retirement scenario is constrained. However, the Department did not find a meaningful relationship between Boswell

retirement scenario and solar and wind selection: each retirement scenario chose similar solar and wind resources. Again, however, these results represent just five of the Department’s runs.

2. *Carbon Futures*

As discussed in its April 29, 2022 Comments, MP examined six carbon cost futures, five of which were required by the Commission’s September 30, 2020 *Order Establishing 2020 and 2021 Estimate of Future Carbon Dioxide Regulation Costs* (Docket No. E999/DI-19-406). Under the Commission’s framework, “regulatory” costs of carbon are internalized within prices whereas “environmental” costs are simply quantifying externality costs due to emissions. In other words, regulatory carbon futures represent a future in which a theoretical carbon tax or other regulation is implemented that creates a monetary cost whereas environmental carbon futures represent a future in which no carbon tax is imposed. The following table shows the assumptions of each future, along with naming conventions used to describe the futures.

Dept Table 5. Carbon Futures and Department Nomenclature

Department Nomenclature	Regulatory Cost, i.e. "Carbon Tax" (Internal to Rates)	Externalities Cost (Not in Rates)
No/No	No	No
No/Low	No	Low
No/High	No	High
Low/Low	Low	Low
Mid/Mid	Mid	Mid
High/High	High	High

a. *Carbon Futures: Costs*

The tables below show the Department’s cost results of the five Boswell retirement scenarios under each of the carbon futures, reflecting a total of 30 runs.

The Department conditionally formatted each row to show the least cost Boswell scenario in dark green, the highest cost Boswell scenario in dark red, and running a color scale on the intermediate cost Boswell scenarios in lighter shades. Each plan was then given a cost rank of 1 to 5 (least cost to highest cost) in each row, then the columns were summed to come up with the Plan Rank Count. The final metrics examined by the Department were Plan Rank Count, Average Cost, and Median Cost.

Dept Tables 6A-6C. Department cost results for each carbon future, conditionally formatted from least cost (green) to highest cost (red) Boswell retirement scenario

6A. Dept Base NPV Rev Req + Ext Costs (\$Million)					
Carbon Future	StatusQuo	PrefPlan	Early3	Early4	FastExit
No/No	\$7,451	\$7,645	\$7,693	\$7,732	\$7,973
No/Low	\$10,889	\$10,388	\$10,429	\$10,483	\$9,969
No/High	\$14,385	\$13,241	\$13,296	\$13,335	\$12,078
Low/Low	\$10,016	\$9,750	\$9,731	\$9,813	\$9,610
Mid/Mid	\$10,084	\$10,030	\$10,048	\$10,084	\$10,038
High/High	\$10,345	\$10,364	\$10,298	\$10,408	\$10,486

6B. Dept Base Scenario Rank Per Future (1-5 rank each row)					
Carbon Future	StatusQuo	PrefPlan	Early3	Early4	FastExit
No/No	1	2	3	4	5
No/Low	5	2	3	4	1
No/High	5	2	3	4	1
Low/Low	5	3	2	4	1
Mid/Mid	5	1	3	5	2
High/High	2	3	1	4	5

6C. Dept Base Summary Cost Metrics (30 Runs total)					
	StatusQuo	PrefPlan	Early3	Early4	FastExit
Plan Rank Count	23	13	15	25	15
Average Cost	\$10,528	\$10,236	\$10,249	\$10,309	\$10,026
Median Cost	\$10,215	\$10,197	\$10,173	\$10,246	\$10,004

Generally speaking, the best performing plans were FastExit and PrefPlan, while the worst performing plans were StatusQuo and Early4. The Department notes that in the above tables:

- FastExit was the least cost Boswell scenario in three of the six carbon futures, and was second least cost in one future;
- Although PrefPlan was only least cost plan in one of the six carbon futures, it had the lowest Plan Rank Count, meaning that it was found to be among the lower cost plans most frequently;
- Both StatusQuo and Early4 were found to be highest cost in different metrics:
 - StatusQuo was the highest cost Boswell scenario in four of the six carbon futures (tied with Early4 for highest cost under Mid/Mid) and also had the highest Average Cost;

- Early4 was highest cost in only one carbon future (tied with StatusQuo under Mid/Mid), but was second highest cost in every other future, resulting in the highest Plan Rank Count and Median Cost;
- Early4 was never found to be the least cost Boswell scenario; and
- Neither PrefPlan nor Early3 were ever found to be the highest cost scenario, although both were found to be least cost once.

The following tables show MP’s results for the same 30 runs. Tables 7A to 7C can be compared to Tables 6A to 6C above.

Dept Tables 7A to 7C. MP Cost Results for each carbon future, conditionally formatted from least cost (green) to highest cost (red) Boswell retirement scenario

7A. MP NPV Rev Req + Ext Costs (\$Million)					
Carbon Future	StatusQuo	PrefPlan	Early3	Early4	FastExit
No/No	\$7,963	\$8,158	\$8,200	\$8,295	\$8,559
No/Low	\$12,268	\$11,457	\$11,391	\$11,478	\$10,785
No/High	\$16,613	\$14,876	\$14,724	\$14,753	\$13,130
Low/Low	\$10,970	\$10,636	\$10,621	\$10,677	\$10,332
Mid/Mid	\$10,796	\$10,760	\$10,763	\$10,826	\$10,761
High/High	\$11,015	\$11,035	\$11,036	\$11,113	\$11,223

7B. MP Scenario Rank Per Future (1-5 rank each row)					
Carbon Future	StatusQuo	PrefPlan	Early3	Early4	FastExit
No/No	1	2	3	4	5
No/Low	5	3	2	4	1
No/High	5	4	2	3	1
Low/Low	5	3	2	4	1
Mid/Mid	4	1	3	5	2
High/High	1	2	3	4	5

7C. MP Summary Cost Metrics (30 Runs total)					
	StatusQuo	PrefPlan	Early3	Early4	FastExit
Plan Rank Count	21	15	15	24	15
Average Cost	\$11,604	\$11,154	\$11,123	\$11,190	\$10,798
Median Cost	\$10,993	\$10,898	\$10,900	\$10,970	\$10,773

The Department and MP had very similar results. The Department notes that for both the Department and MP:

- FastExit was least cost under three carbon futures and had the lowest average and median costs of any plan; and
- StatusQuo and Early4 were both generally highest cost under the summary metrics.

The Department notes that the results showing FastExit as least cost and StatusQuo as highest cost appear to be largely related to the relative weight of futures with carbon costs (five) to futures without carbon costs (one). The Department concludes that the carbon future appears to be highly correlated with which Boswell retirement plan is determined to be least cost by EnCompass.

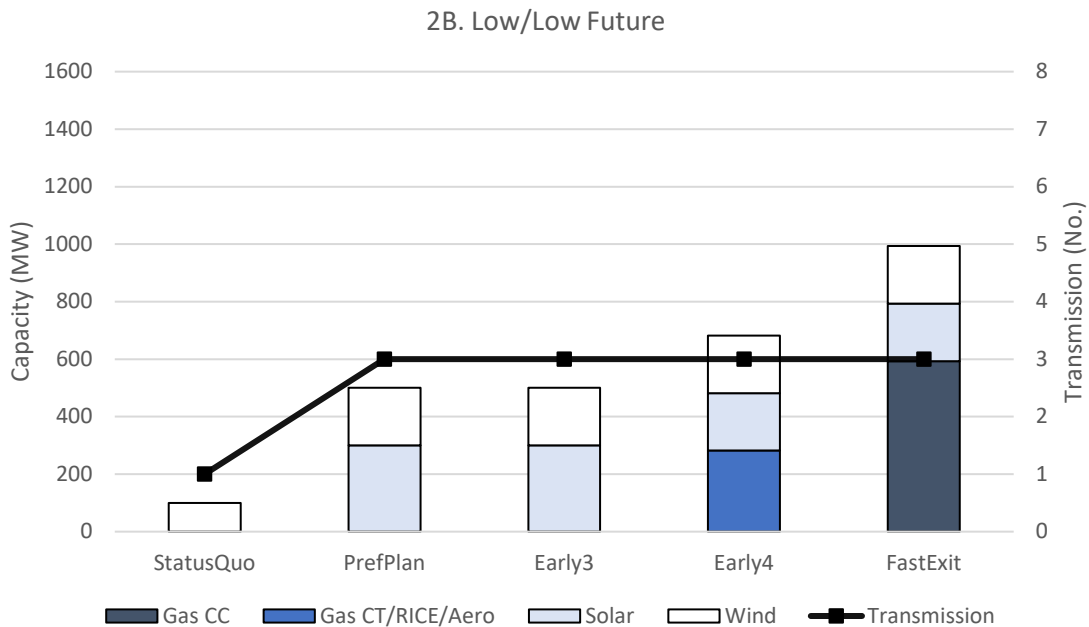
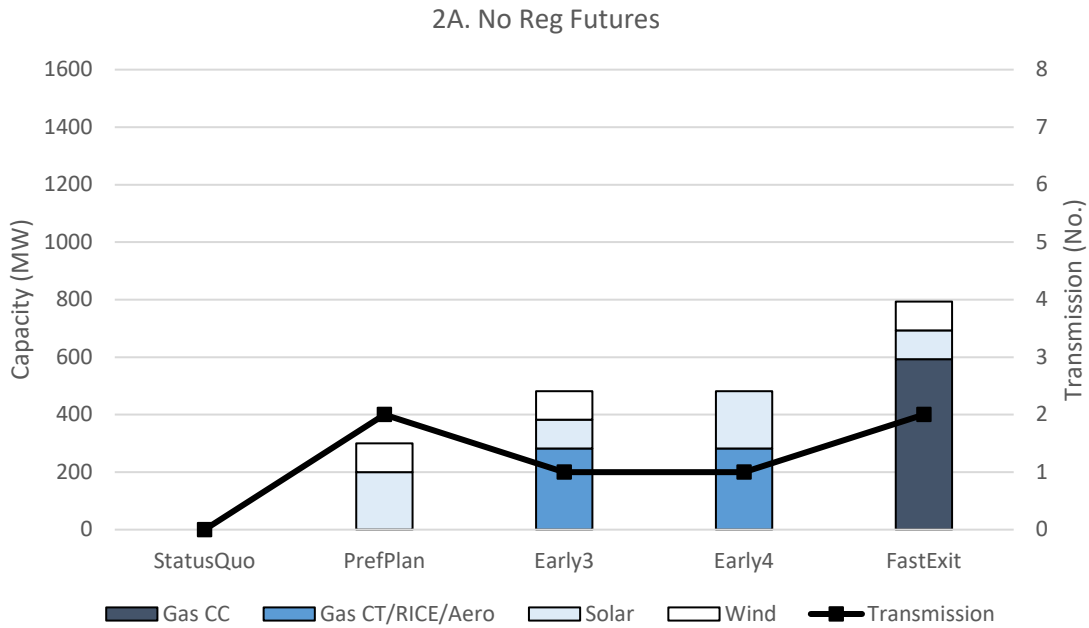
b. Carbon Futures: Expansion Plans

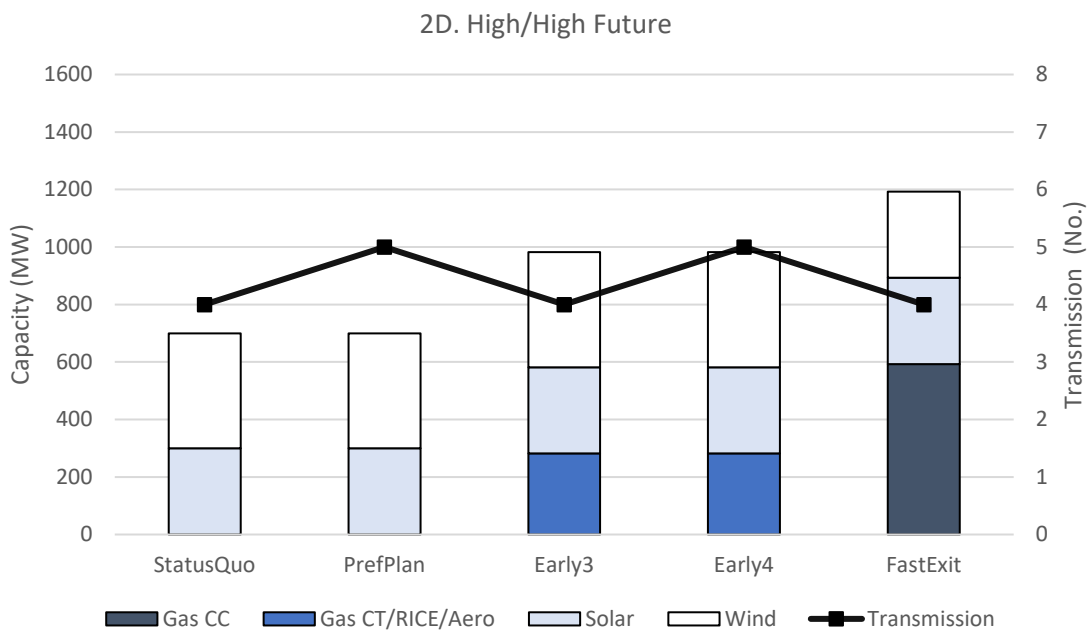
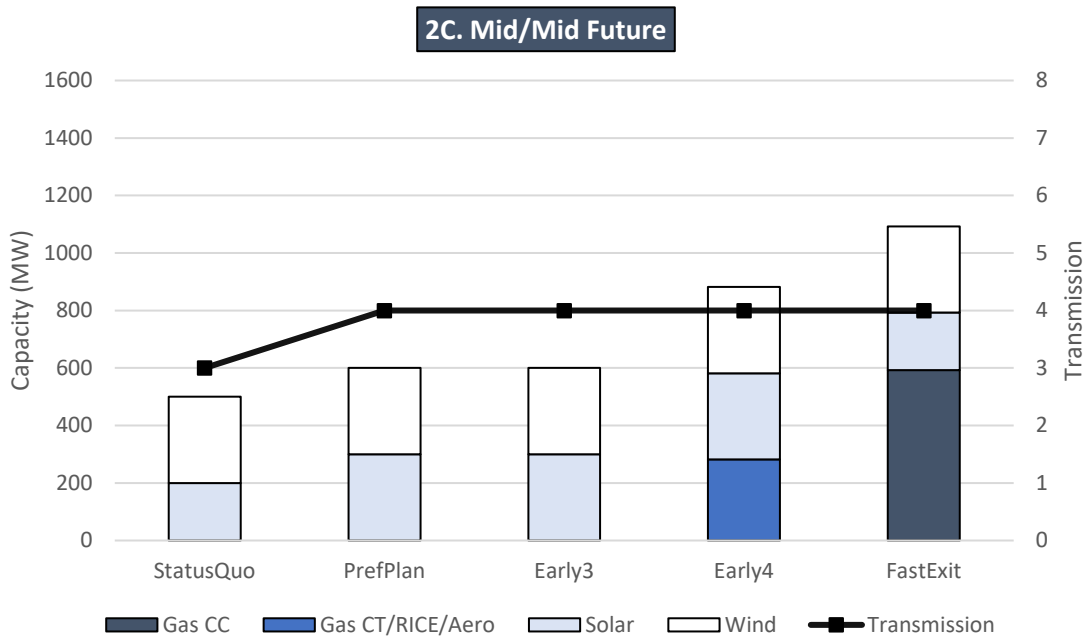
As noted in prior comments, each of the carbon futures in the “No Reg Futures” group (No/No, No/Low, and No/High) produce the same expansion plan in EnCompass. This is because regulatory costs are built into EnCompass’s expansion plan decisions and dispatch routine, but environmental costs are only added after the dispatch routine is complete.⁷ Therefore, while costs are different between the three No Reg Futures, the expansion plans are the same.

The following figures show the Department’s expansion plan results for the same 30 runs, with the No Reg Futures grouped together and the base condition (Mid/Mid Future) demarcated by shading the title field.

⁷ This is the correct way to treat external costs. However, unlike Strategist, EnCompass does not track all possible plans and thus does not necessarily report the overall least cost plan. Instead, it reports a plan within the MIP tolerance of the ideal plan. Thus, the level of externalities is unlikely to impact the expansion plan. The Department has discussed this issue with several utilities, but no best practice has been determined at this time.

Dept Figures 2A to 2D. Department’s capacity and transmission expansion resources selected for each Boswell retirement scenario under each carbon cost future (Conditions: Base Contingency)





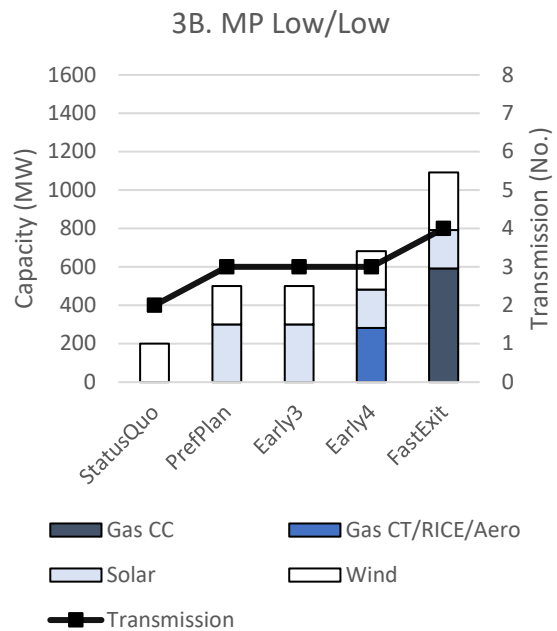
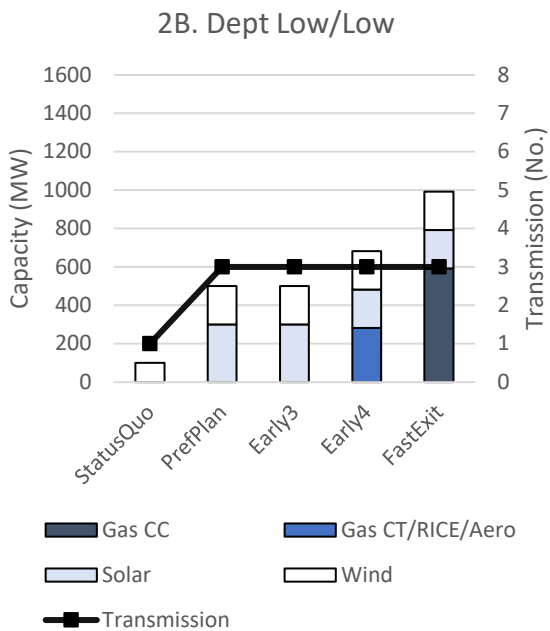
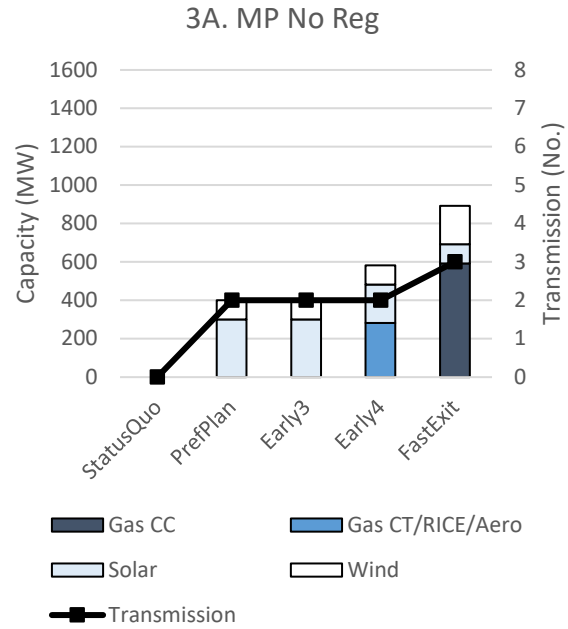
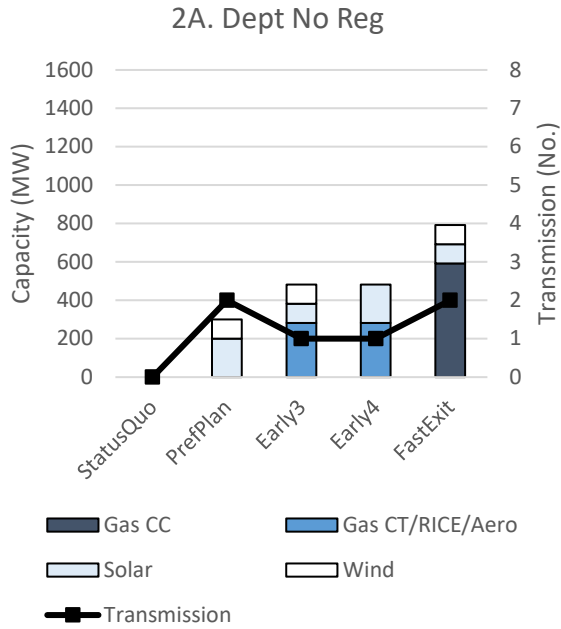
The Department’s expansion plan results showed that:

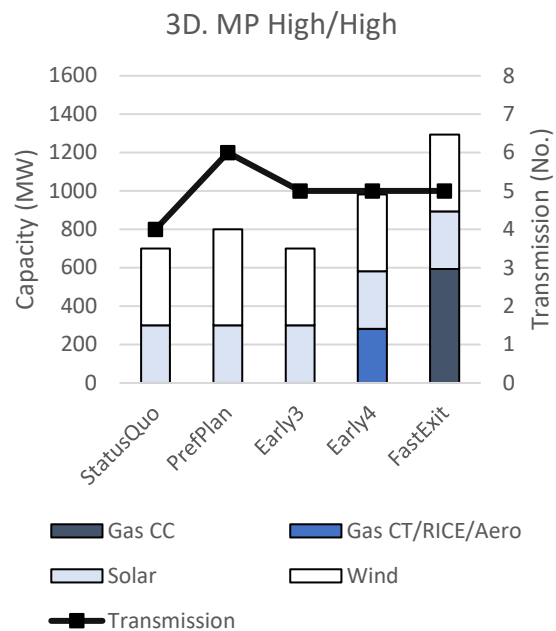
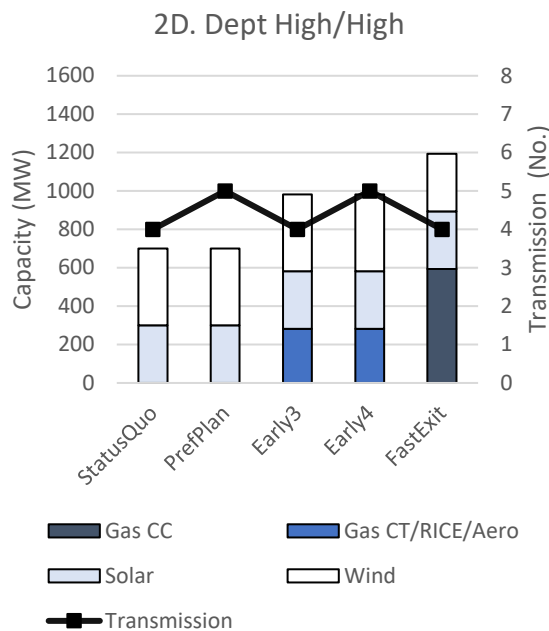
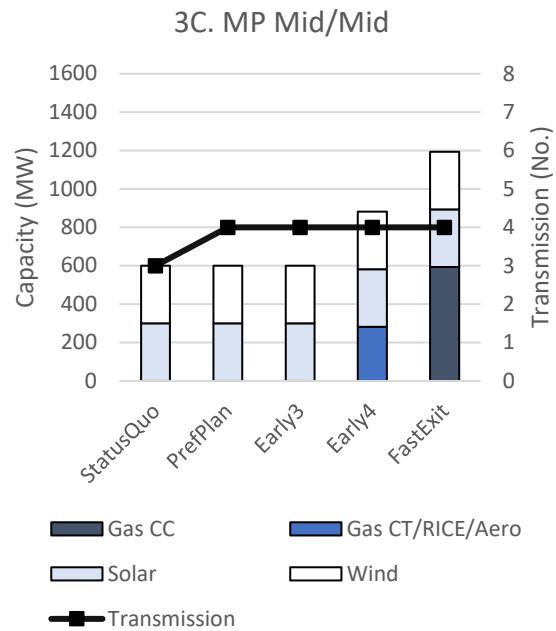
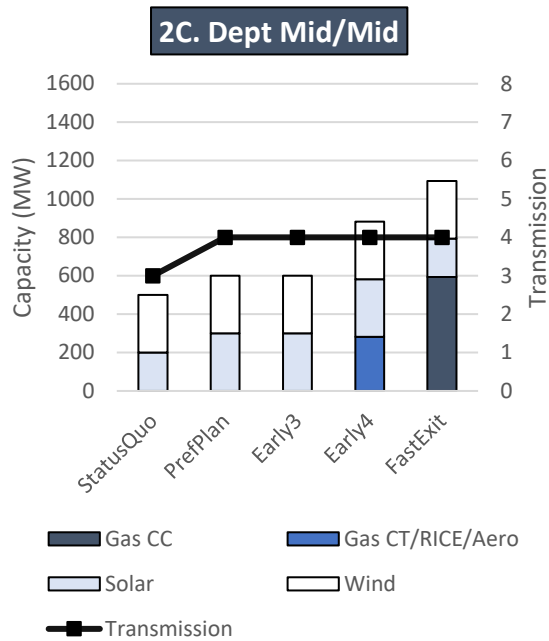
- Regardless of Boswell retirement scenario, EnCompass did not select any battery, contract purchase, demand response, or energy efficiency capacity;
- Regardless of Boswell retirement scenario, the total capacity added depended largely upon carbon future, with the least capacity in the No Reg Futures and the most in the High/High Future;

- FastExit was the only Boswell retirement scenario in which intermediate gas capacity (gas CC) was added, although it was added under each carbon future;
- Early4 was the only Boswell retirement scenario in which peaking gas capacity (gas CT/RICE/Aero) was added under every carbon future;
 - Early3 was the only other Boswell retirement scenario in which peaking gas capacity was added, although it was only added in the No Reg Futures and the High/High Future;
- All solar additions continued to be Boswell-sited and thus unaccompanied by a solar transmission project;
- Solar, transmission, and wind additions appear to be more correlated with Boswell retirement scenario at no or lower regulatory futures and less correlated with Boswell retirement scenario at mid and high regulatory futures;
 - Solar additions vary between 0 and 200 MW at No Reg, but are stable at 300 MW in High/High;
 - Transmission additions vary between 0 and 2 units at No Reg, but only between 4 and 5 units at High/High; and
 - Wind additions vary between 0 and 100 MW at No Reg, but are stable at 400 MW in High/High.

The Department then compared these expansion plan results with MP's expansion plan results from the same 30 runs. The Department discussed MP's expansion plan results previously; Figures 3A to 3D below correspond with Table 13 from the Department's April 29, 2022 Comments.

Dept Figures 2A to 2D and 3A to 3D. Department's versus MP's capacity and transmission expansion resources selected for each Boswell retirement scenario under each carbon cost future (Conditions: Base Contingency)





Under these conditions, the Department's and MP's expansion plan results were somewhat similar. The Department notes:

- The Department's and MP's expansion plans appear to be most similar under Mid/Mid and Low/Low Futures;
- MP's runs typically add more wind and accompanying wind transmission resources than the Department's runs;

- In Early3 under No Reg and High/High, the Department’s model favored gas peaking capacity (Gas CT/RICE/Aero) whereas MP’s model favored additional transmission.
 - This appears to be a Boswell constraint selection difference.

3. *Contingencies*

As it did previously, the Department ran 32 of MP’s 38 contingencies within each Boswell scenario and carbon future. A list of all contingencies and their assumptions can be in Attachment 3 to these Comments. The contingencies not run by the Department were either examined more broadly (specifically the effects of a higher forecast) or were not of interest to the Department; for further discussion of this, see pages 62-63 of the Department’s April 29, 2022 Comments.

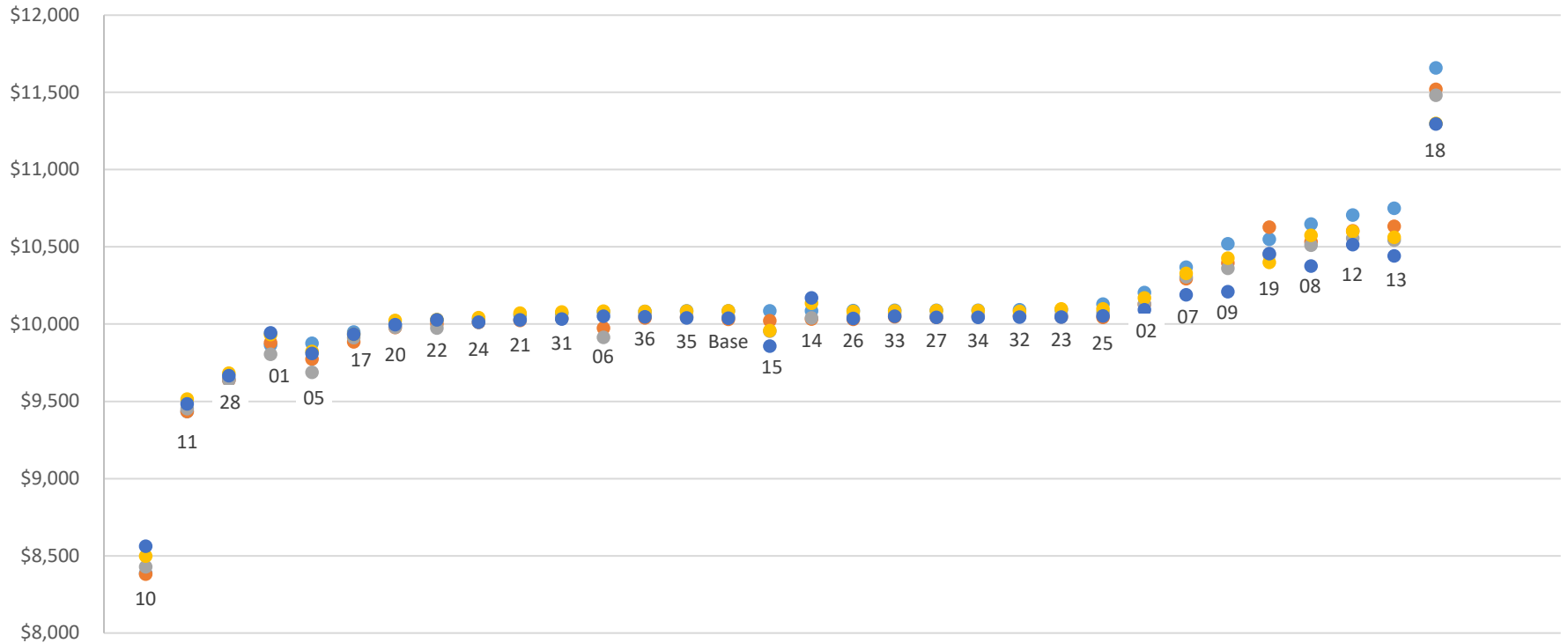
As also described in the Department’s April 29, 2022 Comments, the Department ran a new expansion plan for each contingency. By contrast, MP ran each contingency using a pre-determined (or “locked-in”) expansion plan. This means that while the Department ran 960 unique expansion plan runs and 960 corresponding production cost runs, MP ran 30 unique expansion plan runs and 1,165 production cost runs.⁸ Because of this mismatch the number of expansion plans, it may not be as useful to compare the Department’s contingency results with MP’s contingency results. Instead, the Department compares its contingency results to its own Base Contingency results.

a. *Contingencies: Costs*

determine which contingencies had the lowest and highest cost impacts, the Department plotted a range of cost results for each Boswell plan, by contingency, in the Mid/Mid Future. The below figure shows these results, representing 160 runs, arranged from least cost to highest cost.

⁸ A visual representation of the Department’s analysis structure can be seen in Attachment 4A of the Department’s April 29, 2022 Comments. A visual representation of MP’s 2-step analysis can be seen in Attachments 1A and 1B of those Comments.

Dept Figure 4. Range of costs (revenue requirement + externalities, \$Million NPV) for each Boswell retirement scenario, for each contingency (Conditions: Mid/Mid Future)



● StatusQuo ● PrefPlan ● Early3 ● Early4 ● FastExit

- | | | | | | | |
|-------------------|----------------------|------------------|--------------------|------------------|--------------------|------------|
| Base | 07: High Gas+25% | 12: WHSL Mkt+25% | 18: NoSalePurchase | 23: WindCostHi | 28: AFR 2020 Low | 35: PRM-2% |
| 01: Coal+20% | 08: Higher Gas+50% | 13: WHSL Mkt+50% | 19: MktAccess-50% | 24: SolCostLow | 31: ResTOU | 36: PRM+2% |
| 02: Coal-10% | 09: Highest Gas+100% | 14: CapCosts-30% | 20: LoINTCONCosts | 25: SolCostHigh | 32: High DG&EV | |
| 05: Lower Gas-50% | 10: WHSL Mkt-50% | 15: CapCosts+30% | 21: ITC&PTC Extend | 26: StorCostLow | 33: RenewELCC-2.5% | |
| 06: Low Gas-25% | 11: WHSL Mkt-25% | 17: NoMktSales | 22: WindCostLow | 27: StorCostHigh | 34: RenewELCC+2.5% | |

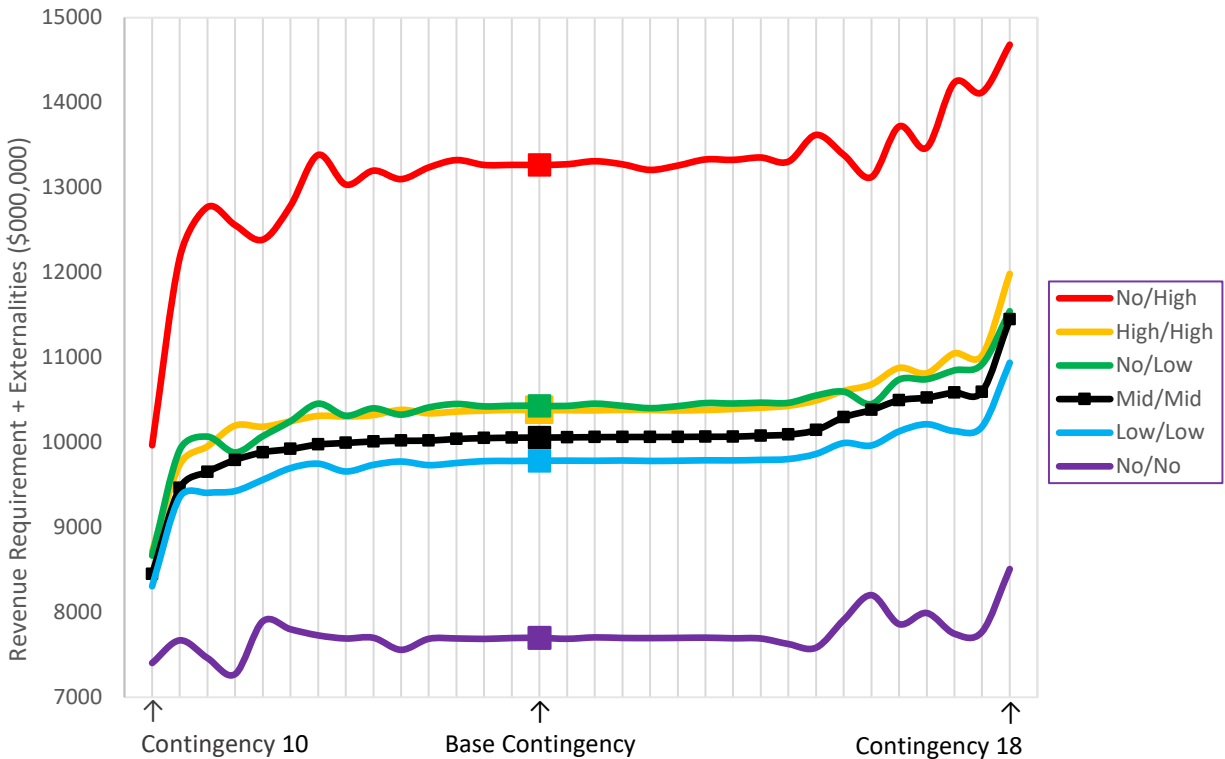
Figure 4 shows that under these conditions:

- A majority of contingency plans have NPV costs that fall between \$9,500,000,000 and \$11,000,000,000. The exceptions are:
 - Contingency 10 (MISO wholesale market prices 50% lower), which is much lower cost than the majority of runs and shows the importance of market pricing; and
 - Contingency 18 (no market sales or purchases allowed within MISO), which is much higher cost than the majority of runs and shows the importance of MISO's market in minimizing the Company's costs.
- Many runs at the high and low ends of the spectrum have to do with MISO's bulk electricity market—again, showing the importance of MISO market assumptions.
 - Lowest contingency costs are for Contingency 10 (MISO market prices -50%) and Contingency 11 (MISO market prices -25%);
 - Highest contingency costs are for Contingency 18 (no market sales or purchases);
 - Contingencies 13, 12, and 19 (the second, third, and fifth highest cost plans) all either raise MISO prices or restrict access to MISO; and
 - Contingencies 8, 9, and 7 (the fourth, sixth, and seventh highest cost plans) raise gas prices, which is directly related to MISO prices: in MP's EnCompass inputs, gas is the marginal fuel at MISO.⁹

Since the above figure only represents the cost curve for the Mid/Mid Future, the Department also plotted the other carbon future cost curves, using a total of 960 runs, to see if they behaved similarly. To create the below figure, the Department averaged the costs of the five Boswell scenarios for each contingency. For example, the large black square below represents the average costs of the five Boswell scenarios run at a Base Contingency under a Mid/Mid Future; the black Mid/Mid curve in the figure below corresponds with the data in the figure above.

⁹ This is a common assumption in capacity expansion modeling.

Dept Figure 5. Contingency cost curves for each carbon future, with Boswell retirement scenario costs averaged within contingency and carbon future



The Department notes:

- Within each carbon future, most contingency costs are similar to the costs of the Base Contingency; this is demonstrated by the fact that each line is relatively flat in the middle;
- The Mid/Mid, High/High, Low/Low, and No/Low cost curves are more closely aligned, whereas the No/No curve is much lower and the No/High curve much higher; and
- Each of the contingency cost curve tends to follow the same general trends, with market prices and access affecting plan costs most, regardless of carbon future;
 - In general, under a No/No Future, costs appear to be slightly less susceptible to market-based contingencies, as demonstrated by the “flatter” tails on each end of the curve;
 - Unlike the other curves, the lowest contingency for No/No is Contingency 05 (Lower Gas-50%).

This analysis leads the Department to the following conclusions:

- Changing bulk market prices, bulk market access, and the price of bulk market marginal fuel appears to have the greatest potential impact on costs of the examined contingencies;
- The Base Contingency is reasonably representative of the median cost of all the examined contingencies within a carbon future; and
- The No/No and No/High Futures appear to produce meaningfully different cost results from the other carbon cost futures.

b. Contingencies: Expansion Plans

The Department determined the number of times each resource was selected under each Boswell retirement scenario, carbon future, and contingency. The following table shows the resulting frequencies of selections. This table shows results from 960 runs, with each cell representing the percentage of the time a scenario was chosen out of 32 runs.

Dept Table 8. Percentage of the time each resource was selected for each Boswell retirement scenario, by carbon future

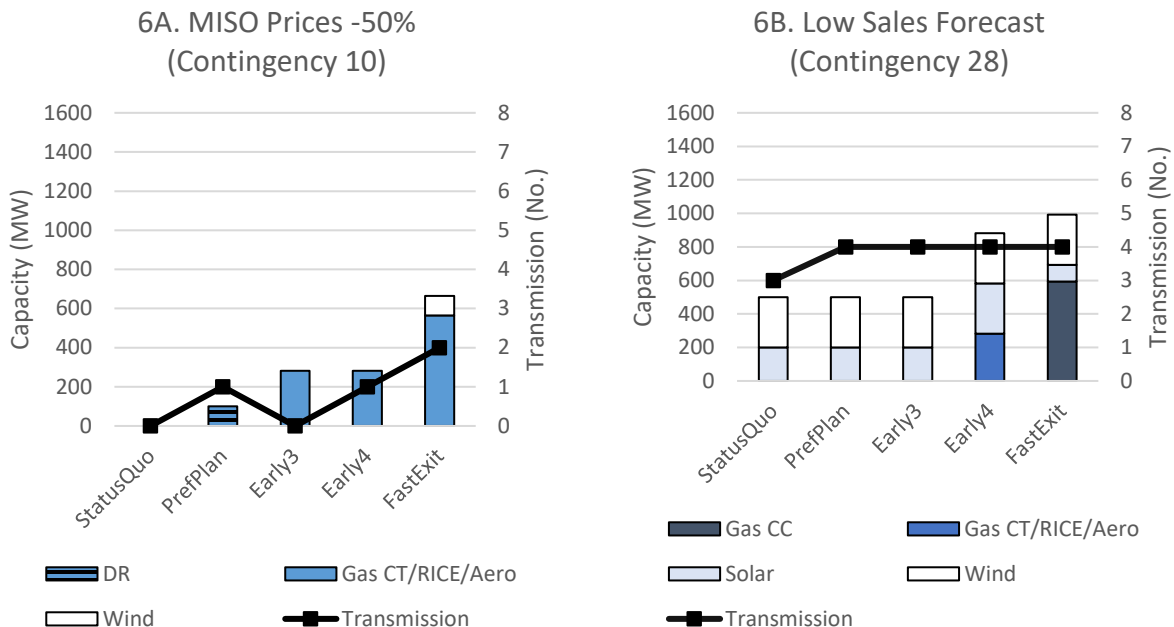
Carbon Future	Boswell Scenario	Battery	Contract Purchase	DR	EE	Gas CC	Gas CT/RICE/Aero	Solar	Transmission	Wind
No/No No/Low No/High	StatusQuo	0%	0%	0%	0%	0%	0%	6%	3%	3%
	PrePlan	0%	0%	9%	0%	0%	31%	75%	78%	47%
	Early3	0%	0%	0%	0%	0%	72%	72%	59%	56%
	Early4	0%	0%	0%	0%	19%	81%	72%	81%	22%
	FastExit	0%	0%	3%	0%	84%	34%	88%	88%	78%
Low/Low	StatusQuo	0%	0%	0%	0%	0%	0%	19%	84%	84%
	PrePlan	0%	0%	3%	0%	0%	16%	91%	94%	91%
	Early3	0%	0%	0%	0%	0%	41%	88%	88%	88%
	Early4	0%	0%	0%	0%	19%	81%	81%	91%	84%
	FastExit	0%	0%	3%	0%	84%	31%	88%	94%	91%
Mid/Mid	StatusQuo	0%	0%	0%	0%	0%	0%	94%	97%	97%
	PrePlan	0%	0%	3%	0%	0%	13%	97%	100%	97%
	Early3	0%	0%	0%	0%	0%	28%	97%	97%	97%
	Early4	0%	0%	0%	0%	25%	75%	88%	100%	97%
	FastExit	0%	0%	0%	0%	84%	31%	88%	97%	97%
High/High	StatusQuo	0%	0%	3%	0%	0%	0%	97%	97%	97%
	PrePlan	0%	0%	3%	0%	0%	19%	100%	100%	97%
	Early3	0%	0%	0%	0%	0%	75%	100%	100%	100%
	Early4	0%	0%	0%	0%	25%	75%	94%	100%	97%
	FastExit	0%	0%	0%	0%	84%	34%	97%	100%	100%

An executive summary across all futures is that:

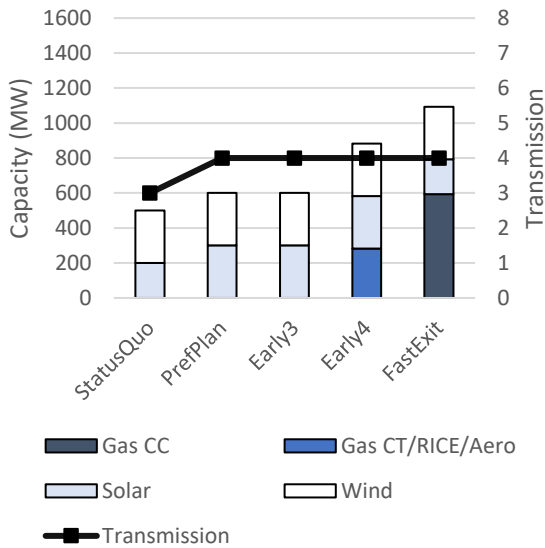
- The Department’s model chose combined cycle gas units primarily in FastExit;
- The Department’s model chose gas peaking units primarily in the Boswell Early3 and Early4 scenarios;
- The Department’s model chose solar (Boswell-sited), transmission, and wind in a majority of Boswell scenarios, with notably less frequency in the StatusQuo scenario; and
- The Department’s model never chose batteries, contract purchases, or incremental energy efficiency, and rarely chose demand response across all Boswell retirement scenarios.

The Department then looked at the expansion plan results of the contingencies that tended to have the most extreme costs. The results of 60 runs are shown below and can be compared to the Department’s Base Contingency first shown in Figure 2C and replicated below.

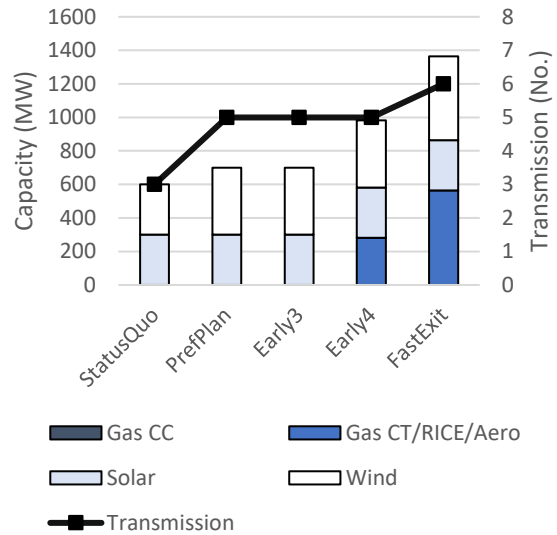
Dept Figures 2C and 6A to 6E. Department’s capacity and transmission expansion resources selected for each Boswell retirement scenario under Contingencies 10, 28, Base, 9, 13, and 18, arranged by contingency cost (Conditions: Mid/Mid Future)



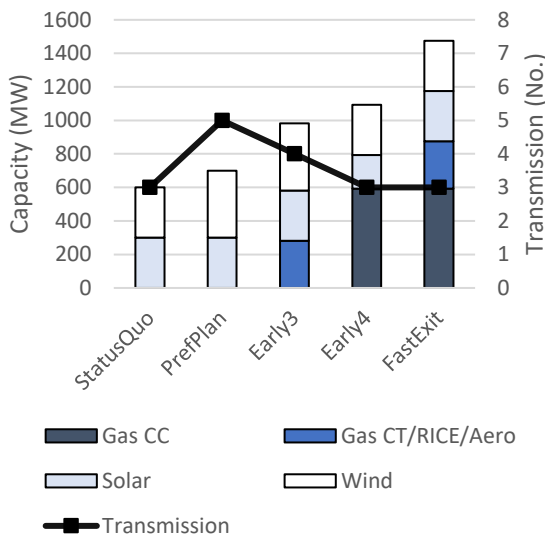
2C. Base Contingency



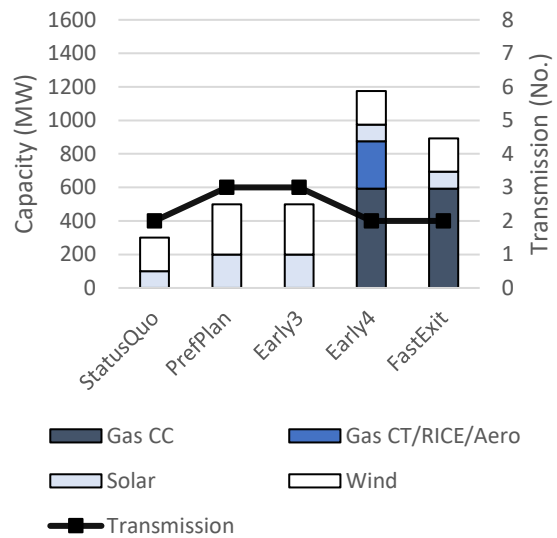
6C. Natural Gas Prices +100% (Contingency 9)



6D. MISO Prices +15% (Contingency 13)



6E. No MISO Purchases/Sales (Contingency 18)



The Department observes the following:

- Gas resources appear to be fairly responsive to contingency:
 - As MISO prices increase (13) or market access is eliminated (18) from the Base Contingency, EnCompass selects intermediate gas (gas CC) in the Early4 scenario;

- As natural gas prices increase (9) from the Base Contingency, EnCompass selects peaking gas (CT) instead of intermediate gas (CC) in FastExit;
- 100 MW of demand-response is added in PrefPlan under Contingency 10 (MISO Prices - 50%).

4. *LRTP*

As discussed in the Department's April 29, 2022 Comments, MISO is likely to pursue a LRTP transmission line that could serve as a reliability mitigation measure for certain Boswell unit retirements. This would mean that MISO would trigger the costs of the line and recover the costs per its tariff, rather than MP's IRP triggering the transmission line and the entire cost falling on MP ratepayers. From a modeling perspective, this drastically reduces the costs of the transmission Boswell constraint options, meaning that EnCompass should have a tendency to favor transmission over natural gas generation as a Boswell reliability mitigation option.

The Department therefore worked with MP to create a new dataset that appropriately reflected the reduced Boswell mitigation costs associated with the LRTP line. The Department modeled 30 runs with the LRTP change case.

a. LRTP: Costs

The below tables show the Department's cost results of the LRTP change case, which was run using the Base Contingency. Tables 9A to 9C can be compared to the Department's Tables 6A to 6C, which have been replicated here.

Dept Tables 6A to 6C. Department Cost Results, No LRTP

6A. No LRTP NPV Rev Req + Ext Costs (\$Million)					
Carbon Future	StatusQuo	PrefPlan	Early3	Early4	FastExit
No/No	\$7,451	\$7,645	\$7,693	\$7,732	\$7,973
No/Low	\$10,889	\$10,388	\$10,429	\$10,483	\$9,969
No/High	\$14,385	\$13,241	\$13,296	\$13,335	\$12,078
Low/Low	\$10,016	\$9,750	\$9,731	\$9,813	\$9,610
Mid/Mid	\$10,084	\$10,030	\$10,048	\$10,084	\$10,038
High/High	\$10,345	\$10,364	\$10,298	\$10,408	\$10,486

6B. No LRTP Scenario Rank Per Future (1-5 rank each row)					
Carbon Future	StatusQuo	PrefPlan	Early3	Early4	FastExit
No/No	1	2	3	4	5
No/Low	5	2	3	4	1
No/High	5	2	3	4	1
Low/Low	5	3	2	4	1
Mid/Mid	5	1	3	5	2
High/High	2	3	1	4	5

6C. No LRTP Summary Cost Metrics (30 Runs total)					
	StatusQuo	PrefPlan	Early3	Early4	FastExit
Plan Rank Count	23	13	15	25	15
Average Cost	\$10,528	\$10,236	\$10,249	\$10,309	\$10,026
Median Cost	\$10,215	\$10,197	\$10,173	\$10,246	\$10,004

Dept Tables 9A to 9C. Department Cost Results, with LRTP

9A. LRTP NPV Rev Req + Ext Costs (\$Million)					
Carbon Future	StatusQuo	PrefPlan	Early3	Early4	FastExit
No/No	\$7,430	\$7,610	\$7,657	\$7,628	\$7,898
No/Low	\$9,995	\$9,719	\$9,697	\$9,553	\$9,344
No/High	\$10,064	\$9,998	\$10,000	\$9,898	\$9,753
Low/Low	\$10,324	\$10,338	\$10,315	\$10,257	\$10,177
Mid/Mid	\$10,868	\$10,432	\$10,307	\$10,186	\$9,671
High/High	\$14,365	\$13,369	\$13,091	\$12,812	\$11,610

9B. LRTP Scenario Rank Per Future (1-5 rank each row)					
Carbon Future	StatusQuo	PrefPlan	Early3	Early4	FastExit
No/No	1	2	4	3	5
No/Low	5	4	3	2	1
No/High	5	3	4	2	1
Low/Low	4	5	3	2	1
Mid/Mid	5	4	3	2	1
High/High	5	4	3	2	1

9C. LRTP Summary Cost Metrics (30 Runs total)					
	StatusQuo	PrefPlan	Early3	Early4	FastExit
Plan Rank Count	25	22	20	13	10
Average Cost	\$10,508	\$10,244	\$10,178	\$10,056	\$9,742
Median Cost	\$10,194	\$10,168	\$10,154	\$10,042	\$9,712

As LRTP is added, StatusQuo and PrefPlan become higher cost and Early4 and FastExit become lower cost. The Department observes the following:

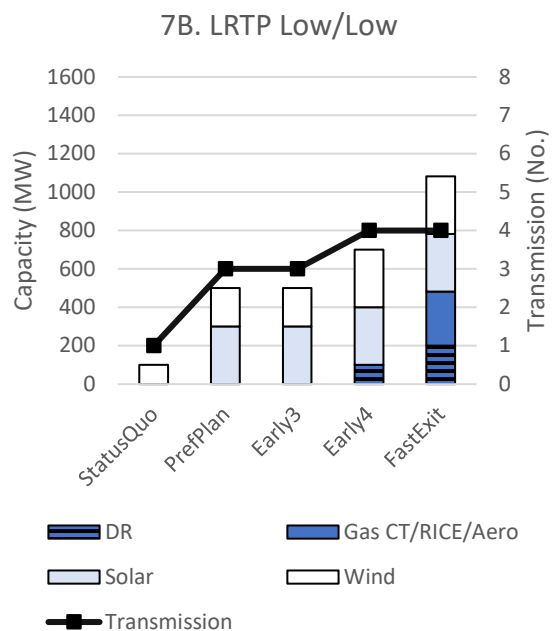
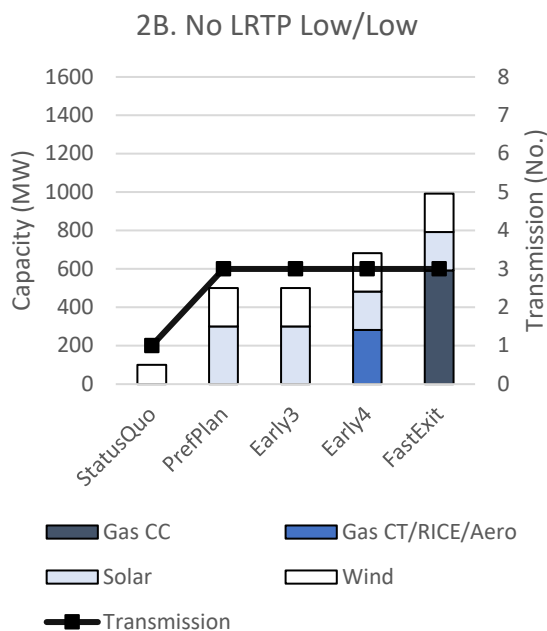
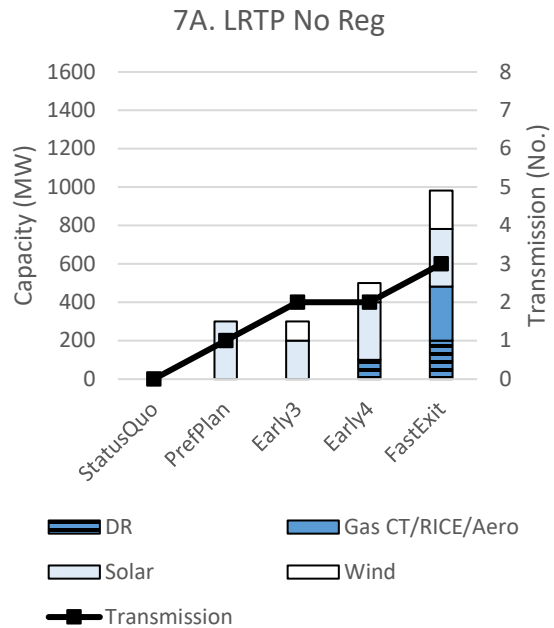
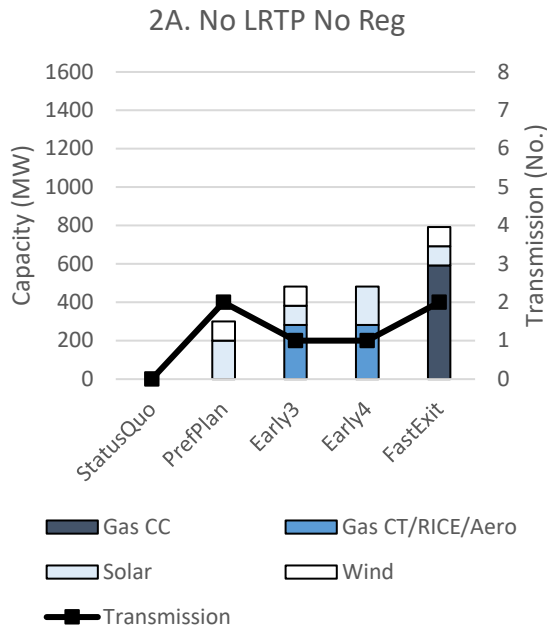
- Without LRTP, PrefPlan has the lowest Plan Rank Count, whereas with LRTP, FastExit has the lowest Plan Rank Count, meaning that the addition of LRTP shows FastExit to be least cost across all three metrics;
- Without LRTP, both StatusQuo and Early4 were shown to be highest cost under the Department's metrics, whereas with LRTP, StatusQuo was found to be highest cost under all three metrics;
- Without LRTP, PrefPlan was second least cost under two metrics, whereas with LRTP, PrefPlan was second highest cost across all three metrics;
- Without LRTP, Early4 had the highest Plan Rank Count and Median Costs, whereas with LRTP, Early4 was second least cost across all three metrics; and
- Without LRTP, Mid/Mid and High/High Futures show mixed results but generally tended to show that Early4 and FastExit were higher cost; with LRTP, both futures showed FastExit to be least cost and Early4 to be second least cost.

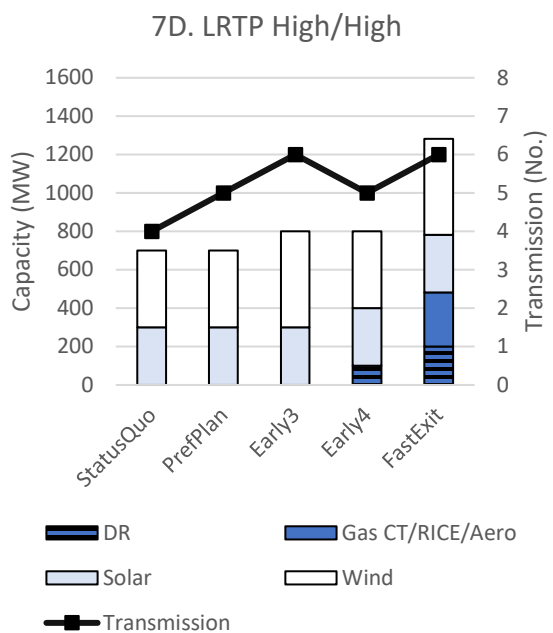
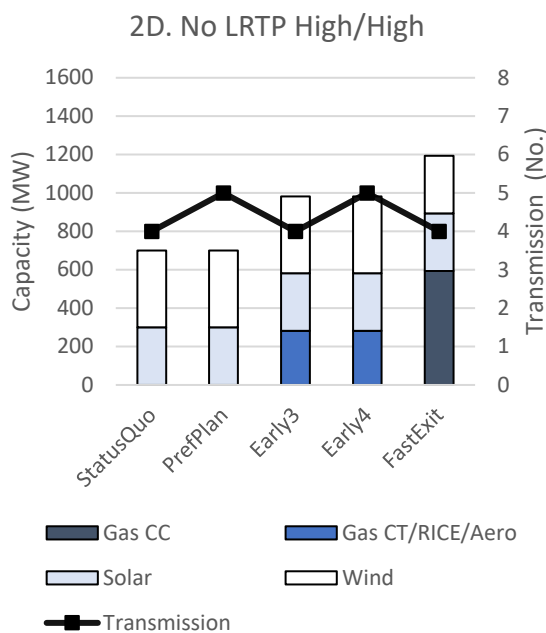
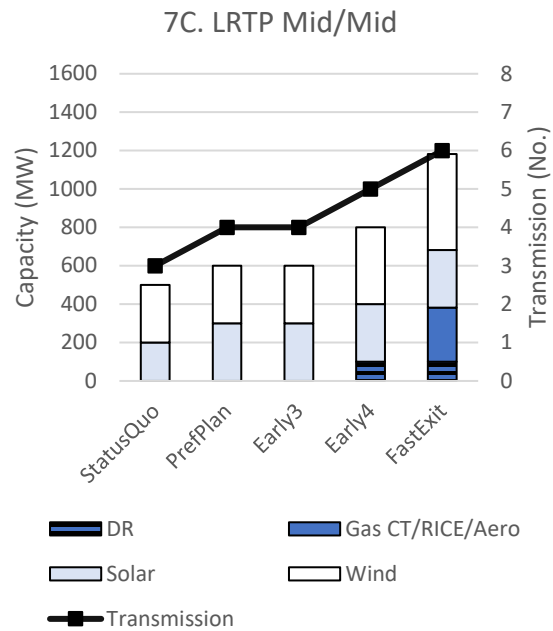
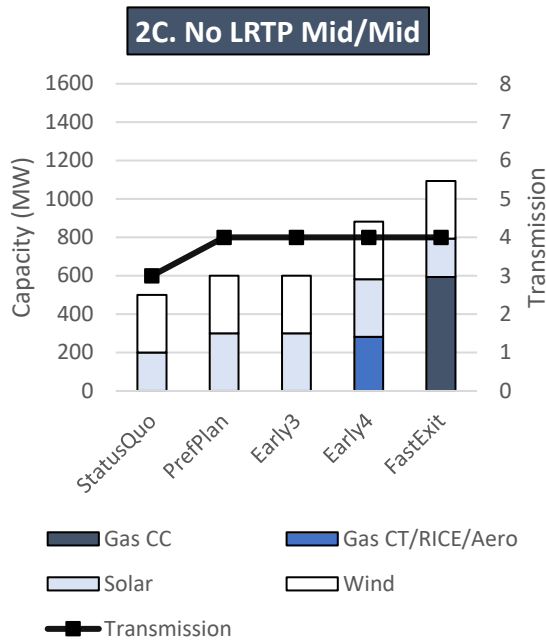
Generally speaking, the Department concludes that adding LRTP is highly correlated with plan cost, as the value of LRTP is felt more strongly in the more aggressive Boswell retirement scenarios. The Department further concludes that FastExit is the least cost plan with the addition of LRTP, followed by Early4.

b. LRTP: Expansion Plans

The Department then compared the expansion plans associated with the 30 LRTP runs with the Department's 30 non-LRTP equivalent runs, found in Figures 4A to 4D and replicated below. The following charts show the results:

Dept Figures 2A to 2D and 7A to 7D. Department's No LRTP vs LRTP change case capacity and transmission expansion resources selected for each Boswell retirement scenario under each carbon cost future (Conditions: Base Contingency)





The Department notes that there appears to be significant differences to the expansion plans when the MISO LRTP line is assumed to be built for non-IRP purposes:

- In the no-LRTP runs, intermediate gas capacity (CC) was added in the FastExit Boswell scenarios for all carbon futures; by contrast, in the LRTP runs, no intermediate gas capacity was added at all;

- In the no-LRTP runs, no demand response was added; by contrast, in the LRTP runs, demand response was added in both the Early4 and FastExit Boswell scenarios under all carbon cost futures; and
- Under the Mid/Mid and High/High Futures, the resources selected were the same.

The Department concludes that while the presence of the MISO LRTP line does impact the expansion plan of each Boswell scenario, the impact is more prevalent in the No and Low regulatory futures and less prevalent in the Mid and High regulatory futures. This observation is limited to 60 runs that use the Base Contingency.

5. *Forecast/NTEC*

As it did previously, the Department examined the effects of a higher forecast and reduced NTEC ownership; for further discussion on the reasoning behind this, see the Department’s discussion on pages 74-75 of its April 29, 2022 Comments.

The Department looked at its “Forecast/NTEC” runs from a top-down approach applied to all runs, rather than as singular contingencies within EnCompass. With the addition of the Department’s Forecast/NTEC examination, the Department quadrupled its total runs, jumping from 960 expansion plans to 3,840 expansion plans.¹⁰ As noted in the Department’s prior comments, this number of runs was unnecessary as fewer runs (e.g., run the Base Contingency only) would have been able to capture the main impacts. The following table represents the Department’s Forecast/NTEC combinations and terminology used:

Dept Table 10. Department's Forecast/NTEC Nomenclature

	NTEC 50% ownership with 2025 In-Service Date	NTEC 20% ownership with 2027 In-Service Date
Mid Sales Forecast (MP Base Contingency)	Mid50	Mid20
High Sales Forecast (MP Contingency 30)	High50	High20

¹⁰ Recall, however, that since each run was performed as both an expansion plan and production cost simulation, the Department’s total simulations jumped from 1,920 to 7,680.

In the above table, Mid50 is the forecast/NTEC condition that has been used for all of the Department's modeling until this point in these Comments.¹¹ The following sections illustrate the cost and expansion plan results from increasing the forecast and/or reducing NTEC ownership.

a. Forecast/NTEC: Costs

The following tables compare the Department's Base Contingency Mid50 cost from Tables 6A to 6C results to the Base Contingency Mid20, High50, and High20 cost results. These tables reflect data from a total of 120 runs, or 30 runs per Forecast/NTEC case.

¹¹ The Department notes that as with the preceding Mid50 runs, any Contingency 28 (Low Forecast) runs use a low forecast rather than Mid or High forecasts, as the Low Forecast dataset overwrites the Mid and High forecast datasets.

Dept Tables 6A to 6C. Mid50 Cost Results

6A. Mid50 NPV Rev Req + Ext Costs (\$Million)					
Carbon Future	StatusQuo	PrefPlan	Early3	Early4	FastExit
No/No	\$7,451	\$7,645	\$7,693	\$7,732	\$7,973
No/Low	\$10,889	\$10,388	\$10,429	\$10,483	\$9,969
No/High	\$14,385	\$13,241	\$13,296	\$13,335	\$12,078
Low/Low	\$10,016	\$9,750	\$9,731	\$9,813	\$9,610
Mid/Mid	\$10,084	\$10,030	\$10,048	\$10,084	\$10,038
High/High	\$10,345	\$10,364	\$10,298	\$10,408	\$10,486

6B. Mid50 Scenario Rank Per Future (1-5 rank each row)					
Carbon Future	StatusQuo	PrefPlan	Early3	Early4	FastExit
No/No	1	2	3	4	5
No/Low	5	2	3	4	1
No/High	5	2	3	4	1
Low/Low	5	3	2	4	1
Mid/Mid	5	1	3	5	2
High/High	2	3	1	4	5

6C. Mid50 Summary Cost Metrics (30 Runs total)					
	StatusQuo	PrefPlan	Early3	Early4	FastExit
Plan Rank Count	23	13	15	25	15
Average Cost	\$10,528	\$10,236	\$10,249	\$10,309	\$10,026
Median Cost	\$10,215	\$10,197	\$10,173	\$10,246	\$10,004

Dept Tables 11A to 11C. Mid20 Cost Results

11A. Mid20 NPV Rev Req + Ext Costs (\$Million)					
Carbon Future	StatusQuo	PrefPlan	Early3	Early4	FastExit
No/No	\$7,281	\$7,509	\$7,542	\$7,516	\$7,888
No/Low	\$10,830	\$10,415	\$10,327	\$9,898	\$9,847
No/High	\$14,465	\$13,457	\$13,278	\$12,393	\$11,943
Low/Low	\$9,902	\$9,779	\$9,729	\$9,490	\$9,543
Mid/Mid	\$10,194	\$10,100	\$10,010	\$9,893	\$9,946
High/High	\$10,476	\$10,386	\$10,292	\$10,211	\$10,402

11B. Mid20 Scenario Rank Per Future (1-5 rank each row)					
Carbon Future	StatusQuo	PrefPlan	Early3	Early4	FastExit
No/No	1	2	4	3	5
No/Low	5	4	3	2	1
No/High	5	4	3	2	1
Low/Low	5	4	3	1	2
Mid/Mid	5	4	3	1	2
High/High	5	3	2	1	4

11C. Mid20 Summary Cost Metrics (30 Runs total)					
	StatusQuo	PrefPlan	Early3	Early4	FastExit
Plan Rank Count	26	21	18	10	15
Average Cost	\$10,525	\$10,274	\$10,196	\$9,900	\$9,928
Median Cost	\$10,335	\$10,243	\$10,151	\$9,896	\$9,897

Dept Tables 12A to 12C. High50 Cost Results

12A. High50 NPV Rev Req + Ext Costs (\$Million)					
Carbon Future	StatusQuo	PrefPlan	Early3	Early4	FastExit
No/No	\$7,778	\$7,999	\$8,009	\$8,088	\$8,336
No/Low	\$11,405	\$10,978	\$11,010	\$10,949	\$10,577
No/High	\$15,108	\$14,094	\$14,174	\$13,917	\$12,958
Low/Low	\$10,502	\$10,323	\$10,350	\$10,308	\$10,119
Mid/Mid	\$10,754	\$10,657	\$10,615	\$10,685	\$10,606
High/High	\$11,022	\$10,984	\$10,914	\$11,122	\$11,113

12B. High50 Scenario Rank Per Future (1-5 rank each row)					
Carbon Future	StatusQuo	PrefPlan	Early3	Early4	FastExit
No/No	1	2	3	4	5
No/Low	5	3	4	2	1
No/High	5	3	4	2	1
Low/Low	5	3	4	2	1
Mid/Mid	5	3	2	4	1
High/High	3	2	1	5	4

12C. High50 Summary Cost Metrics (30 Runs total)					
	StatusQuo	PrefPlan	Early3	Early4	FastExit
Plan Rank Count	24	16	18	19	13
Average Cost	\$11,095	\$10,839	\$10,846	\$10,845	\$10,618
Median Cost	\$10,888	\$10,817	\$10,765	\$10,817	\$10,591

Dept Tables 13A to 13C. High20 Cost Results

13A. High20 NPV Rev Req + Ext Costs (\$Million)					
Carbon Future	StatusQuo	PrefPlan	Early3	Early4	FastExit
No/No	\$7,676	\$7,893	\$7,967	\$8,019	\$8,287
No/Low	\$11,075	\$10,810	\$10,743	\$10,809	\$10,370
No/High	\$14,573	\$13,871	\$13,705	\$13,667	\$12,608
Low/Low	\$10,398	\$10,292	\$10,184	\$10,264	\$9,994
Mid/Mid	\$10,844	\$10,733	\$10,624	\$10,689	\$10,490
High/High	\$11,116	\$10,992	\$10,951	\$11,051	\$10,971

13B. High20 Scenario Rank Per Future (1-5 rank each row)					
Carbon Future	StatusQuo	PrefPlan	Early3	Early4	FastExit
No/No	1	2	3	4	5
No/Low	5	4	2	3	1
No/High	5	4	3	2	1
Low/Low	5	4	2	3	1
Mid/Mid	5	4	2	3	1
High/High	5	3	1	4	2

13C. High20 Summary Cost Metrics (30 Runs total)					
	StatusQuo	PrefPlan	Early3	Early4	FastExit
Plan Rank Count	26	21	13	19	11
Average Cost	\$10,947	\$10,765	\$10,696	\$10,750	\$10,453
Median Cost	\$10,959	\$10,772	\$10,684	\$10,749	\$10,430

The Department notes that under these conditions, higher forecast and/or reduced NTEC ownership appear to generally correspond with more definitive results in terms of which Boswell retirement scenario is least cost and which is highest cost:

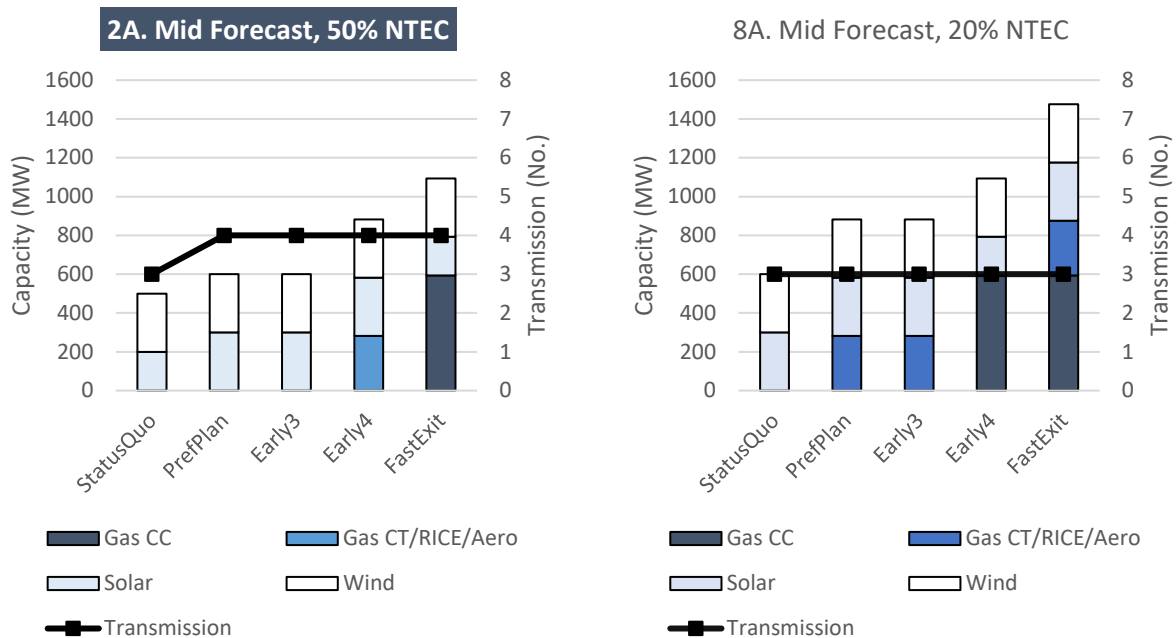
- When NTEC ownership is reduced using a Mid forecast (Mid50 to Mid20):
 - Early4 jumps from being highest cost in two metrics to least cost in three metrics;
 - FastExit becomes second least cost, but has results very close to Early4;
 - StatusQuo goes from being highest cost in only one metric to highest cost in all three metrics; and
 - PrefPlan drops from being second least cost in two metrics to second highest cost in three metrics.
- When the sales forecast is increased assuming 50% NTEC Ownership (Mid50 to High50), FastExit becomes more definitively least cost, StatusQuo becomes more definitively highest cost, and the other three plans become less distinguishable from each other:
 - FastExit goes from being least cost in two metrics to least cost in all three metrics;
 - StatusQuo goes from being highest cost in one metric to highest cost in all three metrics;
 - Between PrefPlan, Early3, and Early4, the Plan Rank Count went from having a much greater range (between 13-25) to having a much smaller range (16-19);
 - PrefPlan, Early3, and Early4 went from an average cost range of \$10.236-\$10.309 billion to having an average cost range of \$10.839-\$10.846 billion; and
 - PrefPlan and Early4 became equal in terms of median cost.
- When the sales forecast is increased and NTEC ownership is reduced (Mid50 to High20):
 - FastExit goes from being least cost in two metrics to least cost in all three metrics;
 - Early3 goes from being the middle cost plan in two metrics to the second least cost plan in all three metrics;
 - StatusQuo goes from being highest cost in one metric to highest cost in all three metrics;
 - PrefPlan drops from being second least cost in two metrics to second highest cost in all three metrics; and
 - Early4 goes from being highest cost in two metrics to middle cost across all three metrics.

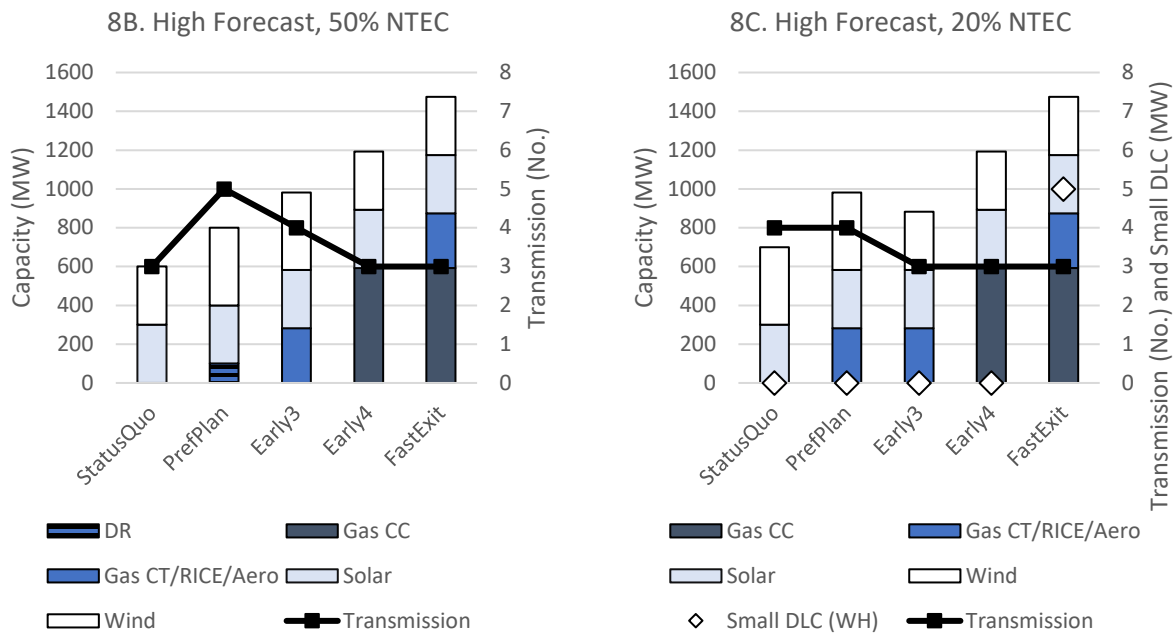
Generally speaking, the Department concludes that increasing the forecast makes FastExit more cost competitive and StatusQuo and PrefPlan less cost competitive. Decreasing NTEC ownership makes FastExit, Early4, and Early3 more cost competitive and StatusQuo and PrefPlan less cost competitive.

b. Forecast/NTEC: Expansion Plans

The Department then compared the expansion plans across Forecast/NTEC combination, shown in the figures below. Each figure shows the results of 30 runs, using the Base Contingency under a Mid/Mid Future, with Figure 2A replicated from earlier in these Comments.

Dept Figures 2A and 8A to 8C. Department capacity and transmission expansion resources selected for each Boswell retirement scenario, by Forecast/NTEC combination (Conditions: Base Contingency, Mid/Mid Future)





Based on these results, the Department notes that an increase in sales forecast or reduction in NTEC ownership appears to generally be correlated with the selection of more gas resources. This is especially logical for reduced NTEC ownership, as EnCompass simply swaps NTEC for a similar resource. The Department further notes:

- Mid20, High50, and High20 have very similar expansion plans under Early4 and FastExit:
 - In Early4, all three cases add one intermediate gas resource (Gas CC), 300 MW of wind, and 200 to 300 MW of solar; and
 - In FastExit, all three cases add one intermediate gas resource (Gas CC), one peaking gas resource (Gas CT/RICE/Aero), 300 MW of wind, and 300 MW of solar.
- Under the High Forecast cases, new resources are selected:
 - In High50, EnCompass selects 100 MW of demand-response under PrefPlan; and
 - In High20, EnCompass selects 4.5 MW of water heater direct load control under FastExit.
- Across all Boswell retirement scenarios, wind and solar selections appear to be fairly consistent, regardless of Forecast/NTEC case. Solar selections continue to be Boswell-sited.

6. *All Runs Cost Summary*

The Department modeled a total of 3,870 expansion plan runs. 30 of these runs were specific to the Department’s LRTP analysis, while the remaining 3,840 represented the five Boswell retirement scenarios, six carbon cost futures, 32 contingencies, and four Forecast/NTEC cases. With hindsight, the Department would have preferred to examine the LRTP scenarios in more detail and with analysis of Contingencies and Forecast/NTEC cases.

The following table shows the average and median cost results of all Department runs; a table showing the cost results of each run can be found in Attachment 4 to these Comments.

Dept Tables 14A to 14D. All Department Runs, Boswell Cost Summary Information (NPV, \$Million)

14A. All Runs Cost Summary (3,870 Runs)					
	StatusQuo	PrefPlan	Early3	Early4	FastExit
Average	\$10,759	\$10,533	\$10,473	\$10,437	\$10,228
Median	\$10,564	\$10,390	\$10,322	\$10,329	\$10,179

The Department found that when calculating the average and median cost values across all 3,870 runs, FastExit was least cost, StatusQuo was highest cost, and PrefPlan was second highest cost. While Early3 produced the second least cost median value, Early4 produced the second least cost average cost value. The Department did not perform a Plan Rank Count analysis on the full suite of runs.

The Department is mindful that Boswell scenario plan cost rank is highly correlated with whether or not carbon costs are counted. Since all metrics calculated by the Department weight five futures with carbon costs to one future without carbon costs, all median, cost, and plan rank results will naturally skew towards counting carbon costs. However, if the Commission were to ignore carbon costs and only consider the results of the No/No plan, StatusQuo is the least cost scenario and FastExit is the highest cost scenario. This is demonstrated in the following table, which shows average and median costs for all runs within each carbon future.

14B. All Runs Cost Summary by Carbon Future (3,870 Runs)						
		StatusQuo	PrefPlan	Early3	Early4	FastExit
No/No (645 Runs)	Average	\$7,585	\$7,786	\$7,827	\$7,857	\$8,135
	Median	\$7,514	\$7,729	\$7,775	\$7,810	\$8,065
No/Low (645 Runs)	Average	\$11,020	\$10,646	\$10,579	\$10,520	\$10,150
	Median	\$11,009	\$10,591	\$10,512	\$10,495	\$10,092
No/High (645 Runs)	Average	\$14,526	\$13,647	\$13,495	\$13,271	\$12,299
	Median	\$14,470	\$13,593	\$13,428	\$13,353	\$12,205
Low/Low (645 Runs)	Average	\$10,193	\$10,028	\$9,979	\$9,953	\$9,798
	Median	\$10,220	\$9,985	\$9,902	\$9,898	\$9,746
Mid/Mid (645 Runs)	Average	\$10,469	\$10,382	\$10,321	\$10,323	\$10,264
	Median	\$10,519	\$10,330	\$10,305	\$10,328	\$10,209
High/High (645 Runs)	Average	\$10,758	\$10,711	\$10,637	\$10,695	\$10,723
	Median	\$10,725	\$10,712	\$10,683	\$10,661	\$10,643

To show the effects of weighting plans with and without carbon costs equally, the Department also provides the following table, which only includes the results of the Department’s No/No and No/Low Futures. In other words, given the six carbon futures examined, the following table shows the most conservative approach to considering carbon costs, short of the No/No Future.

14C. All Runs Conservative Futures Cost Summary (1,290 Runs: No/No and No/Low Futures Only)					
	StatusQuo	PrefPlan	Early3	Early4	FastExit
Average	\$9,303	\$9,216	\$9,203	\$9,189	\$9,143
Median	\$8,868	\$8,894	\$8,951	\$8,915	\$8,995

The results of this table are less clear cut, as the average and median results are never in alignment across Boswell scenarios:

- When considering plan cost averages, FastExit is the least cost plan, followed by Early4, Early3, PrefPlan, and StatusQuo.
- When considering plan cost medians, StatusQuo is the least cost plan, followed by PrefPlan, Early4, Early3, and FastExit.

Finally, the Department also provides the average and median results of the three No Reg Futures. This group weights two futures with carbon costs to one future without carbon costs.

14D. All No Reg Futures Runs Summary (1,935 Runs: No/No, No/Low, No/High Futures Only)					
	StatusQuo	PrefPlan	Early3	Early4	FastExit
Average	\$11,044	\$10,693	\$10,634	\$10,550	\$10,195
Median	\$10,948	\$10,559	\$10,470	\$10,492	\$10,054

The scale of least to highest costs across Boswell scenarios are identical between the full results and the No Reg futures results. This makes sense, as recall that the No/No and No/High cost curves were significantly lower and higher than the other four cost curves, with No/Low close to the three regulatory futures curves.

Overall the Department’s modeling shows that FastExit is the least cost plan. When all six carbon cost futures are considered, it has the least average cost and the least median cost of the five Boswell scenarios.

7. *FastExit Further Analysis*

In this section, the Department provides further analysis specific to the FastExit Boswell scenario which appears to be the best overall retirement plan in the above analysis. Specifically, the Department looks at the costs, expansion plans, and emissions of FastExit under the following sets of conditions:

- Base FastExit Conditions: Mid/Mid Future, Base Contingency, No LRTP, Mid50
- Base FastExit Conditions, with varying Carbon Futures
- Base FastExit Conditions, with varying Contingencies
- Base FastExit Conditions, adding LRTP
- Base FastExit Conditions, with varying Forecast/NTEC cases

a. *FastExit: Costs*

In the following tables, the Department compiled summary cost information for all of the Department’s 774 FastExit runs.

Dept Table 15. Summary Cost Information for all 774 FastExit expansion plans modeled by the Department (\$Million NPV)

Cost Metric	Total Plan Cost (Revenue Requirement + Externalities)
Average	\$10,228
Median	\$10,179
Max	\$14,271
Min	\$7,250

The Department found that in the range of conditions examined, the FastExit Boswell scenario has an average plan cost (revenue requirement + externalities) of \$10,228,000,000 and a median plan cost of \$10,179,000,000, which are very similar, indicating the outliers that impact average more than median are not overly important.

- The maximum potential FastExit plan of \$14.271 billion NPV occurred under a No/High Future, with Contingency 18 (No MISO Sales/Purchases), No LRTP, with High Forecast and 20% Boswell ownership.
 - This was followed by the potential FastExit plan of \$14.046 billion NPV, which occurred under the same conditions but with 50% Boswell ownership.
- The minimum potential plan of \$7.250 billion NPV occurred under a No/No Future, with Contingency 05 (Natural Gas Price -50%), No LRTP, with a Mid Forecast and 20% Boswell ownership.
 - This was followed by the potential FastExit plan of \$7.356 billion NPV, which occurred under the same conditions but with 50% Boswell ownership.

The Department concludes that the max and min plans above are not representative of realistic potential max and min costs. The max cost plan contingency (18: No MISO Sales/Purchases) yielded significantly higher plan costs in Department Figure 4. Although the min cost plan contingency (05: Natural Gas Price -50%) did not have significantly lower plan costs in Figure 4, this was true of the related market contingency (10: MISO Price -50%).¹² Additionally, the Department is concerned that a low gas price contingency may not comport with trends over the planning period, given the current high gas prices in 2022.

Furthermore, the Department notes that both the No/No Future and No/High Future produced contingency cost curves significantly different from the other carbon futures, as shown in Figure 5 above. Therefore, reporting costs from those futures as the min or max costs may be

¹² Recall that natural gas is the marginal fuel in Minnesota Power's model, and so MISO market prices and natural gas prices are related.

misrepresentative, as the same expansion plan is produced under a No/Low carbon future and the No/Low future curve is better aligned with the three regulatory carbon cost curves. The cost difference between these three curves (No/No, No/Low, and No/High) is purely a matter of the cost value given to externalities after the fact.

In other words, for purposes of this FastExit cost discussion, the Department considers No Market Access Contingency (18), the Low Gas Contingencies (05 and 06), the Low MISO Prices Contingencies (10 and 11), the No/No carbon future, and the No/High carbon future to be outliers.

To account for the fact that the absolute min and max potential FastExit plans may not be as representative or realistic, the Department determined “alternative” max cost and min cost plans that removed these conditions.

Dept Table 16. FastExit Alternative Max and Min Potential Plans, after removing cost outliers (\$Million NPV)

Cost Metric	Total Plan Cost (Revenue Requirement + Externalities)
Alternative Max	\$11,635
Alternative Min	\$9,196

The alternative min and max plans occur under the following conditions:

- The alternative maximum potential FastExit plan of \$11.635 billion NPV occurred under a High/High Future, with Contingency 12 (MISO Prices +25%), No LRTP, with High Forecast and 50% Boswell ownership;
 - This was closely followed by the potential FastExit plan of \$11.624 billion NPV, which occurred under the same conditions but with Contingency 13 (MISO Prices +50%).
- The alternative minimum potential plan of \$9.196 billion NPV occurred under two sets of conditions:
 - A Low/Low Future, with Contingency 28 (Low Sales Forecast), No LRTP, with a Mid Forecast and 20% Boswell ownership; and
 - A Low/Low Future, with Contingency 28 (Low Sales Forecast), No LRTP, with a High Forecast and 20% Boswell ownership.

Overall, the more realistic range of future costs becomes much narrower.

Finally, the Department examined the cost effects of each variable (carbon future, high/low contingencies, LRTP, Forecast/NTEC) on the FastExit plan in isolation. The following tables show these cost effects, with the base condition for a given variable demarcated by a shaded column heading.

Dept Tables 17A to 17D. Department’s Average, Median, Maximum, and Minimum Plan Costs Across All FastExit Runs, Grouped by Examined Variable (NPV Rev Req + Ext Costs in \$Million)

17A. FastExit by Carbon Future (768 runs)	No/No (128 runs)	No/Low (128 runs)	No/High (128 runs)	Low/Low (128 runs)	Mid/Mid (128 runs)	High/High (128 runs)
Average	\$8,137	\$10,154	\$12,305	\$9,802	\$10,268	\$10,727
Median	\$8,069	\$10,093	\$12,226	\$9,748	\$10,248	\$10,689
Max	\$9,526	\$11,850	\$14,271	\$11,533	\$12,118	\$12,658
Min	\$7,250	\$8,398	\$9,355	\$8,229	\$8,464	\$8,752

17B. FastExit by High/Low Cost Contingencies (144 runs)	Contingency 10: MISO Price -50% (24 runs)	Contingency 28: Low Sales Forecast (24 runs)	Base Contingency (24 runs)	Contingency 9: Natural Gas Price +100% (24 runs)	Contingency 13: MISO Prices +50% (24 runs)	Contingency 18: No MISO Sales/Purchases (24 runs)
Average	\$8,756	\$9,636	\$10,257	\$10,348	\$10,667	\$11,566
Median	\$8,774	\$9,619	\$10,245	\$10,306	\$10,581	\$11,587
Max	\$10,152	\$11,699	\$12,958	\$12,280	\$13,602	\$14,271
Min	\$7,472	\$7,645	\$7,888	\$8,580	\$7,926	\$8,728

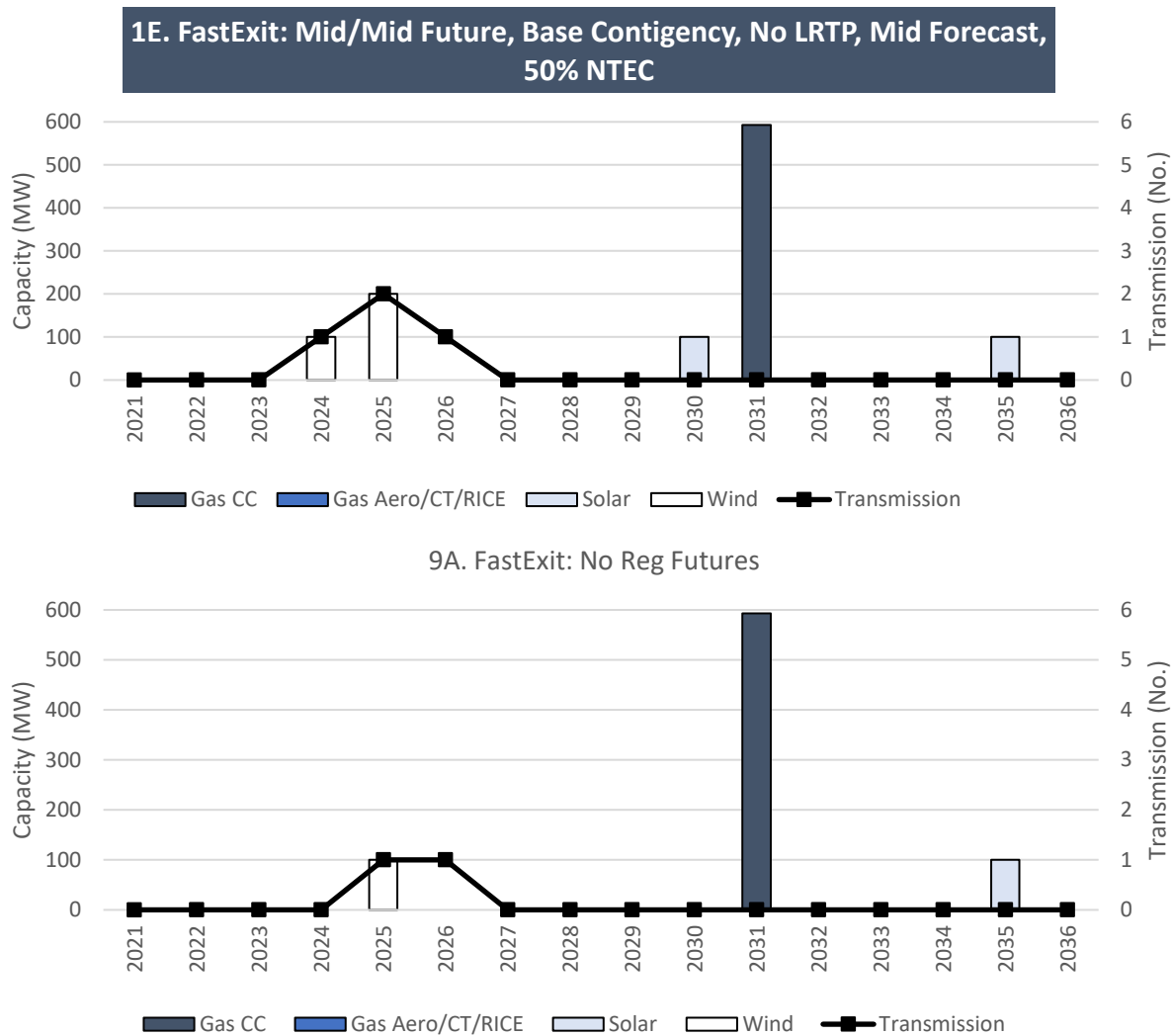
17C. FastExit by LRTP (12 runs)	No LRTP (6 runs)	LRTP (6 runs)
Average	\$10,027	\$9,742
Median	\$10,004	\$9,712
Max	\$12,078	\$11,610
Min	\$7,973	\$7,898

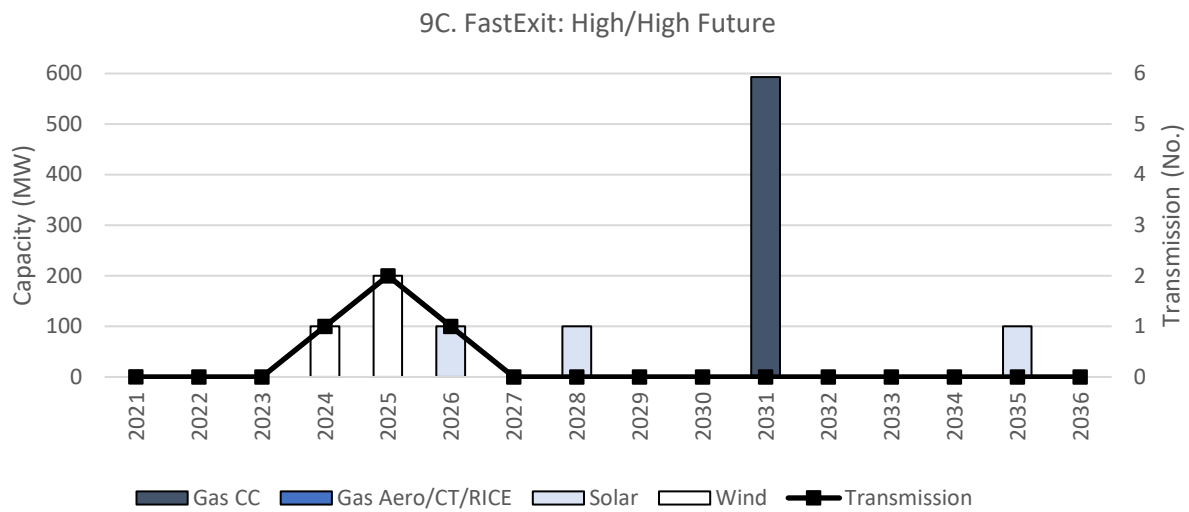
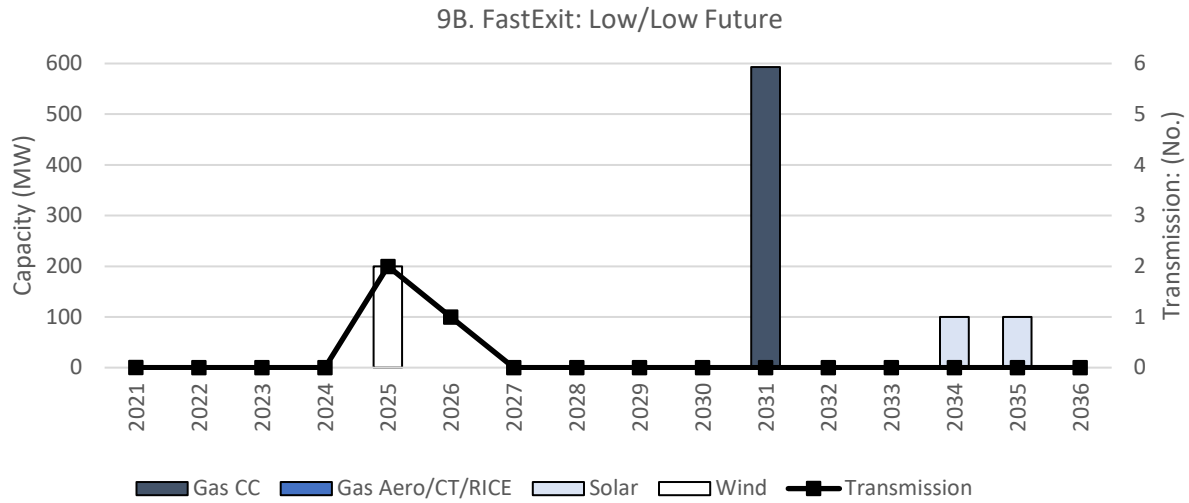
17D. FastExit by Forecast/NTEC (768 runs)	Mid50 (192 runs)	Mid20 (192 runs)	High50 (192 runs)	High20 (192 runs)
Average	\$10,013	\$9,941	\$10,539	\$10,436
Median	\$9,980	\$9,901	\$10,557	\$10,420
Max	\$13,512	\$13,515	\$14,046	\$14,271
Min	\$7,356	\$7,250	\$7,624	\$7,591

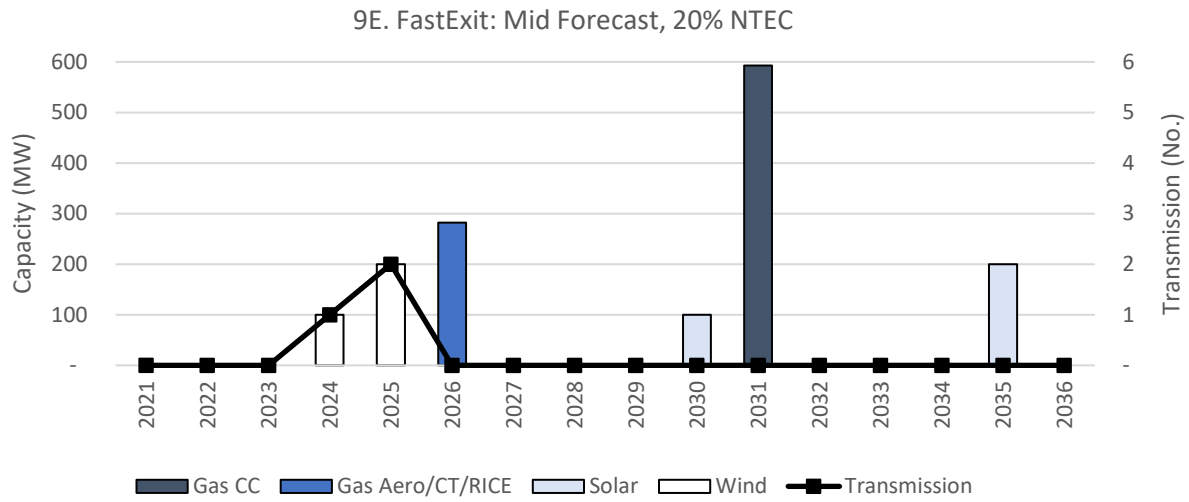
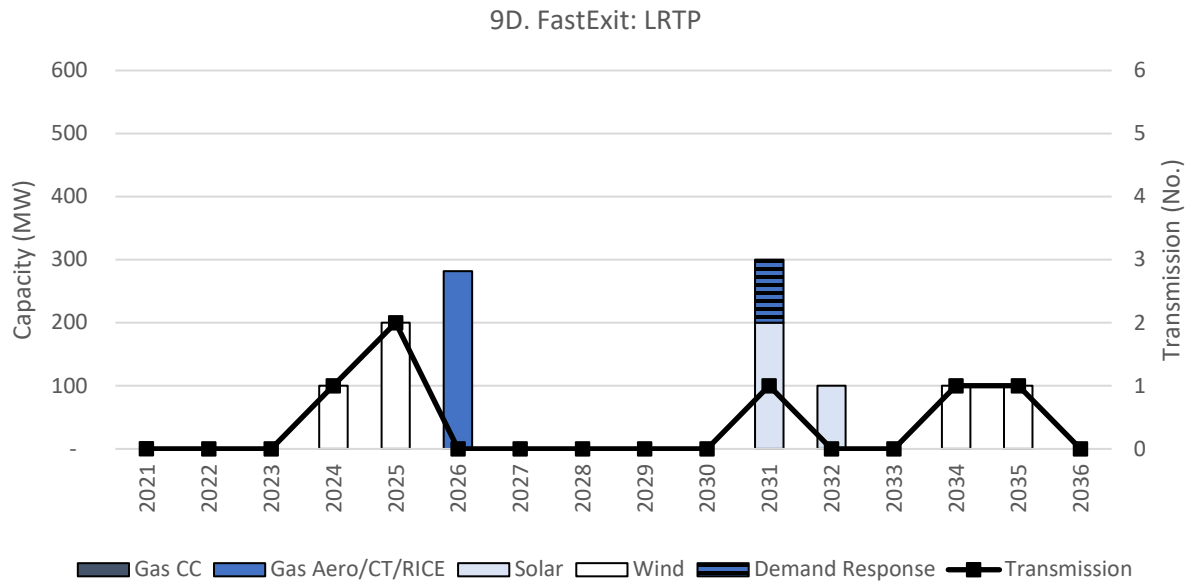
b. *FastExit: Expansion Plans*

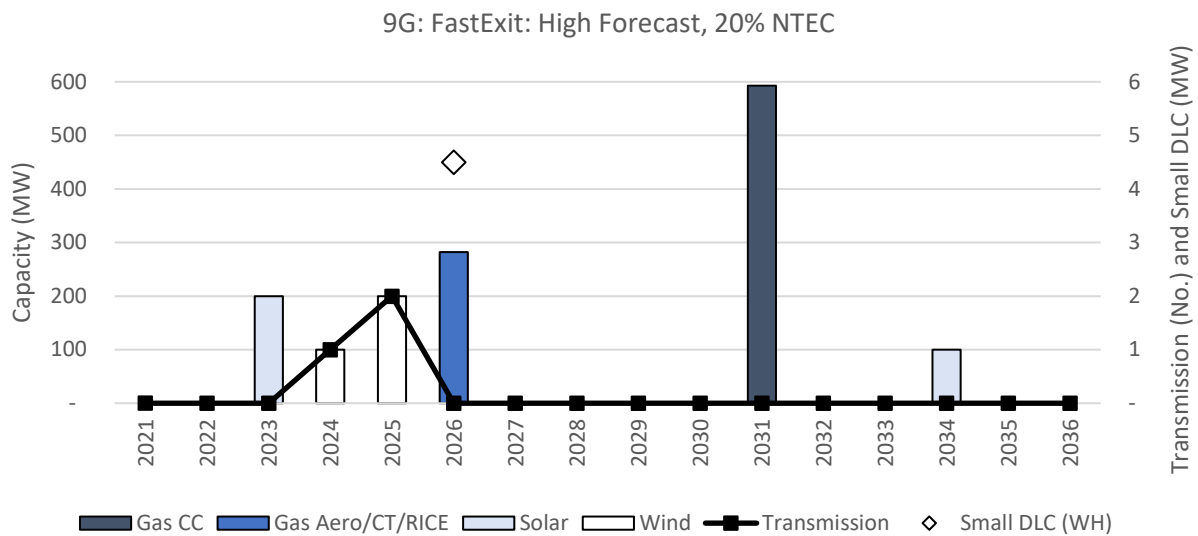
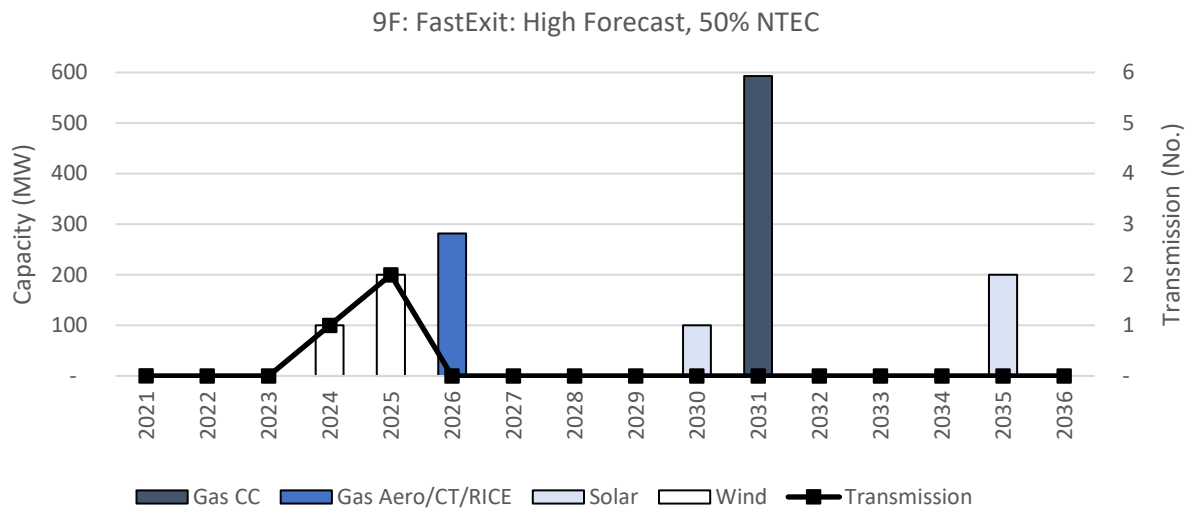
The following series of tables show the expansion plan timelines for the set of scenarios examined, with each chart showing one run. Figure 1E shows FastExit under base case conditions.

Dept Figures 1E and 9A-G.









Across these FastExit expansion plan timelines, the Department notes:

- The Department’s model fairly consistently adds wind resources and accompanying wind transmission in 2024/2025;
- All runs add Boswell-sited solar in the post-2030 timeframe;¹³

¹³ The Department confirmed that there were instances of non-Boswell sited solar added under specific contingencies, such as those with high gas prices or lower solar or interconnection costs. However, the vast majority of solar selected was sited at Boswell, both in FastExit and throughout the Boswell retirement scenarios.

- Under the High20 case, EnCompass selects a small (4.5 MW) water heater direct load control resource.

The Department further notes that post-2030 under an LRTP change case, the model made notably different selections from the other expansion plans. These include:

- A 2031 transmission project as the Boswell 4 reliability mitigation selection;
- The addition of 100 MW of demand-response in 2031;
- The addition of 300 MW of Boswell-sited solar between 2031 and 2032; and
- The addition of 200 MW of wind and accompanying wind transmission projects in 2033 and 2034.

The Department reviewed its LRTP expansion plan results under each carbon future and found similar trends.

In regards to a Boswell retirement mitigation strategy, the Department observes the following:

- Under a Mid Forecast with 50% NTEC ownership and no LRTP, regardless of carbon future, EnCompass chooses transmission in 2026 and a gas CC unit in 2031;
- Under a Mid Forecast with 50% NTEC ownership and no LRTP, EnCompass chooses a gas CT in 2026 and a gas CC in 2031;
- Under a High Forecast with 50% Boswell ownership and no LRTP, EnCompass chooses a gas CT unit in 2026 and a gas CC unit in 2031;
- Under a High Forecast with 20% Boswell ownership and no LRTP, EnCompass chooses a gas CT unit in 2026 and a gas CC unit in 2031;
- Under a Mid Forecast with 50% Boswell ownership and with LRTP, EnCompass chooses a gas CT unit in 2026 and transmission in 2031;

The Department confirmed that for all contingencies within each Forecast/NTEC combination, the above Boswell mitigation selection results are fairly representative. Further, the Department examined LRTP under different carbon futures, and found the same Boswell reliability mitigation selections as in the Mid/Mid future; these timelines are not shown above.

c. *FastExit: Emissions*

To calculate emissions in the FastExit plans, the Department began with the CO₂ tons released data from the EnCompass Resource Annual Emissions Report. The Department then calculated a net emissions adjustment due to net market activity; market sales and purchases were taken from the EnCompass Transmission Annual Report. The final CO₂ emissions figures thus show tons of CO₂

emissions due to MP generation plus tons of CO2 emissions due to net market purchases. The following figure shows the high-level results from the Department’s 774 FastExit runs.

Dept Table 18. Department’s Summary Emissions Data for All 774 FastExit Runs

Metric	Total CO2 Emissions (tons)
Average	61,591,818
Median	61,896,417
Max	73,066,279
Min	46,122,822

The Department found that in the range of conditions examined, the FastExit Boswell releases an average of 61,591,818 tons of CO2 emissions over the planning period.

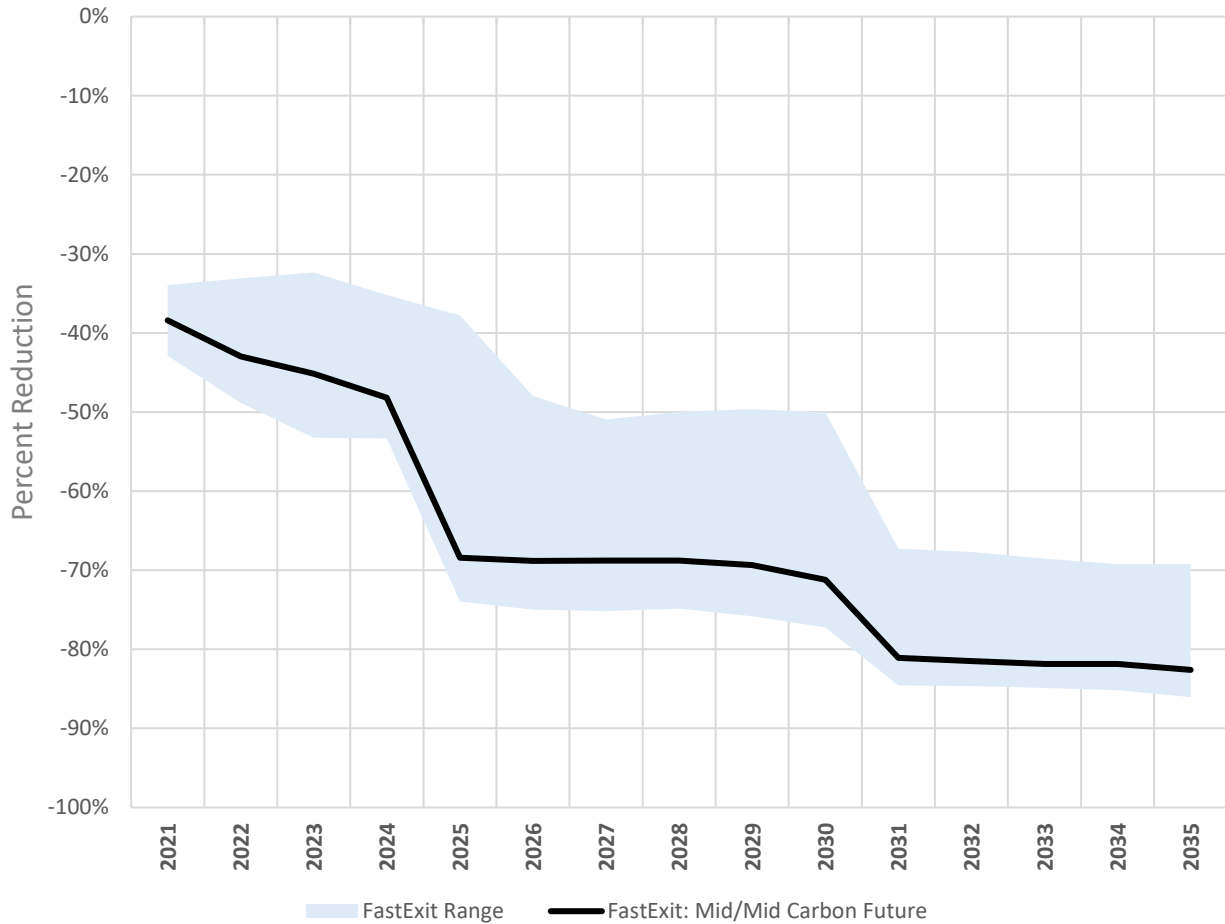
- The maximum potential FastExit emissions of 73,066,279 tons occurred under a No/Low Future, with Contingency 02 (Coal Price -10%), No LRTP, with High Forecast and 50% Boswell ownership;
- The minimum potential FastExit emissions of 46,122,822 tons occurred under a High/High carbon future, with Contingency 28 (Low Forecast), No LRTP, and 50% Boswell ownership.

These results are logical: a No/Low future with lower coal prices would dispatch emissions-intensive resources such as coal more frequently in MP’s system; a High/High future with lower load would dispatch all units less frequently, and emissions-intensive resources with the least frequency of all.

The Department then examined the potential range of annual emissions over the course of the planning period under FastExit and compared this range to MP’s 2005 emissions levels.¹⁴ The range of potential annual percent reductions in emissions is shown the in the following chart, with a black line showing the Department’s base conditions (Mid/Mid, Base Contingency, No LRTP, Mid50).

¹⁴ In response to CEO IR 024 in the instant proceeding, MP stated that its 2005 CO2 emissions were 10,178,945 metric tons.

Department Figure 10. Percent Reduction in CO2 Emissions from MP's 2005 Levels: FastExit Range of Potential Emissions with Department Base Case Conditions Demarcated



Finally, the Department compared its FastExit total CO2 emissions results under each carbon future to the other Boswell scenarios, averaging the results of its 3,870 runs. The following table shows these results; full emissions results can be found in Attachment 5 to these Comments.

Dept Table 19. Department’s Average CO2 Emissions Results (tons) for each Boswell retirement scenario, by carbon future (3,870 runs)

Carbon Future	StatusQuo	PrefPlan	Early3	Early4	FastExit
No/No	88,670,617	78,438,748	78,209,580	76,783,989	66,071,481
No/Low	88,658,883	78,435,639	78,202,648	75,597,946	66,076,258
No/High	88,663,828	78,435,809	78,205,263	75,636,115	66,076,424
Low/Low	79,423,902	71,879,861	70,928,678	68,818,824	61,236,504
Mid/Mid	67,992,244	63,684,175	61,652,357	60,482,377	56,390,086
High/High	60,455,201	58,509,651	55,158,513	55,412,177	53,700,153

The Department notes that regardless of carbon future, FastExit has the lowest average emissions of the five Boswell retirement scenarios.

8. Modeling Conclusions

The Department’s modeling results show that when carbon costs are considered, even at low levels, FastExit is the least cost plan.

The Department’s results also show that under a FastExit plan, EnCompass tends to add 200-300 MW of wind in the 2024-2025 time frame and Boswell-sited solar resources in the post-2030 time frame. Additionally, the Department’s results showed that when LRTP is added under a FastExit plan, EnCompass has a tendency to add additional demand-response and wind resources in the post-2030 time frame.

Finally, the Department’s modeling results show that Boswell retirement mitigation selection depends largely upon forecast level, NTEC ownership, and LRTP. Typically, the Department found that under base conditions (Mid Forecast, 50% NTEC, and No LRTP), EnCompass tends to select transmission in 2026; however, if the forecast, NTEC ownership level, or LRTP is changed from these conditions, EnCompass tends to select a gas CT unit in 2026. The Department also found that for 2031 selection, forecast level and NTEC ownership did not drive retirement mitigation selection, although the presence or absence of LRTP did. With LRTP, transmission was selected in 2031; without LRTP, regardless of forecast level or NTEC ownership, a gas CC tended to be selected.

As noted in its April 29, 2022 Comments, the Department is hesitant to rely on any forecasts that do not fully serve MP’s current load, as is the case with MP’s Mid forecast. Doing so would mean that MP would potentially be relying more heavily on market purchases to serve its customers. Given that the Department found market-related contingencies to be the highest cost contingencies, the Department

is even more concerned about exposing MP's ratepayers to market changes. As such, the Department is more inclined to favor the High forecast cases.

NTEC ownership is at 50 percent currently and would require Commission approval to change. While the NTEC at 20 percent scenarios were very informative for the Department here and potentially in future dockets, the Department is reluctant to assume that any changes in NTEC ownership will definitely occur. First, MP can file a petition to adjust NTEC ownership at any time, so that a timely decision can be made. Second, from the information available in this proceeding, it is not clear that a 50 percent ownership level or 20 percent ownership level (or a no ownership level) is the most likely outcome. Therefore, changes in the IRP expansion plan due to changes in NTEC ownership can be addressed in a future proceeding, are highly uncertain, and need not be addressed at this time.

LRTP is similar to NTEC in that the LRTP has MISO approval but has not been approved by the Commission; with NTEC, LRTP represents a potential future that requires a Commission decision, which will occur at a later date. Thus, it is another uncertainty to be considered in looking the Department's modeling results. However, in this case, the Department followed MISO's LRTP work closely and, at this time, considers futures where LRTP is built to be more likely than futures where LRTP is not built. This is largely due to the case MISO developed through its stakeholder participation process.

At this time, therefore, the Department concludes that the modeling results should consider current known load, market effects on plan costs, current Commission approvals, and the likelihood of an LRTP future. With these considerations, the Department's modeling results suggests that MP should:

- Acquire 200 to 300 MW of wind in the 2024 to 2025 time frame;
- Retire Boswell 3 in 2025, and;
 - Acquire 282 MW of peaking resource as a Boswell 3 retirement mitigation measure, to be in service in 2026;
- Retire Boswell 4 in 2030, and;
 - Ensure that LRTP continues to be a sufficient Boswell 4 retirement mitigation measure; if LRTP is insufficient in this regard, MP should acquire 593 MW of gas combined cycle resource, to be in service in 2031;
- Acquire 100 MW of solar sited at Boswell in the post-2030 time frame, using existing Boswell interconnection rights; and
- Potentially acquire demand-response and wind resources in the post-2030 time frame.

Modeling is a critical tool that will inform the Department's final recommendations in Reply Comments, however, it is not the only tool. The Department must also consider important policy considerations that help balance our statutory mandates to achieve low rates, promote renewable energy, protect consumers from excessive risk, and balance these concerns against broader socioeconomic considerations, including impacts to workers and host communities. The Department must also take into account the relative likelihood of certain potential outcomes, such as the likelihood of the development of new transmission resources or new gas resources, both of which could dramatically impact policy recommendations on this resource plan.

In its Reply Comments, the Department will update its final recommendations, taking into account these policy considerations, the updated modeling results, and positions raised by other parties in April 29, 2022 Comments.

Table 1. Available resources and projects for selection in Minnesota Power's model, with constraints

4 hour lithium ion	2 units permitted to be added in any year from 2023-2035; no units permitted to be added before 2023 or after 2035 Total units permitted capped at 2 from 2023-2029; Total units permitted capped at 4 from 2030 onwards
8 hour lithium ion	2 units permitted to be added in any year from 2023-2035; no units permitted to be added before 2023 or after 2035 Total units permitted capped at 2 from 2023-2029; Total units permitted capped at 4 from 2030 onwards
12 hour flow	2 units permitted to be added in any year from 2023-2035; no units permitted to be added before 2023 or after 2035 Total units permitted capped at 2 from 2023-2029; Total units permitted capped at 4 from 2030 onwards
Bridge Purchase	1 unit permitted to be added in any year from 2025-2035; no units permitted to be added before 2025 or after 2035 Total units permitted capped at 1 from 2025 onwards
Demand Response Product B	1 block permitted to be added in any year from 2022-2035; no blocks permitted to be added before 2022 or after 2035 Total blocks permitted capped at 1 from 2022 onwards
Demand Response Product D	1 block permitted to be added in any year from 2022-2035; no blocks permitted to be added before 2022 or after 2035 Total blocks permitted capped at 1 from 2022 to 2027; total blocks permitted capped at 2 from 2028 onwards
Direct Load Control: Air Conditioners	1 block permitted to be added in 2026; no blocks permitted to be added before 2026 or after 2026 Total blocks permitted capped at 1 from 2026 onwards
Direct Load Control: Water Heaters	1 block permitted to be added in 2026; no blocks permitted to be added before 2026 or after 2026 Total blocks permitted capped at 1 from 2026 onwards
Energy Efficiency High	1 block permitted to be added in 2024; no blocks permitted to be added before or after 2024 Total blocks capped at 1 from 2024 onwards
Energy Efficiency Very High	1 block permitted to be added in 2024; no blocks permitted to be added before or after 2024 Total blocks capped at 1 from 2024 onwards
Natural Gas Combined Cycle	1 units permitted to be added in any year from 2025-2035; no units permitted to be added before 2025 or after 2035 Total units permitted capped at 1 from 2025-2029; Total units permitted capped at 2 from 2030 onwards.
Natural Gas Combustion Turbine	2 units permitted to be added in any year from 2025-2035; no units permitted to be added before 2025 or after 2035 Total units permitted capped at 2 from 2025-2029; Total units permitted capped at 3 from 2030 onwards
Natural Gas Reciprocating Internal Combustion Engine	1 unit permitted to be added in any year from 2025-2035; no units permitted to be added before 2025 or after 2035 Total units permitted capped at 1 from 2025-2029; Total units permitted capped at 2 from 2030 onwards
Natural Gas Simple Cycle Aeroderivative	1 unit permitted to be added in any year from 2025-2035; no units permitted to be added before 2025 or after 2035 Total units permitted capped at 1 from 2025-2029; Total units permitted capped at 2 from 2030 onwards
Utility Solar	4 units permitted to be added in any year from 2024-2035; no units permitted to be added before 2024 or after 2035 Total units permitted capped at 10 from 2024 onwards
Utility Solar with ITC	4 units permitted to be added in 2023; no units permitted to be added before or after 2023 Total units permitted capped at 10 from 2024 onwards
Utility Solar Net Zero (sited at Boswell)	Does not appear to have constraints restricting number of units added
Utility Solar with ITC sited at Boswell	Does not appear to have constraints restricting number of units added

Wind MN-sited	<p>4 units permitted to be added in any year from 2026-2035; no units permitted to be added before 2026 or after 2035</p> <p>Total units permitted capped at 3 from 2023 to 2025; total units permitted capped at 10 from 2026 onwards</p>
Wind MN-sited with PTC	<p>2 units permitted to be added in any year from 2023-2025; no units permitted to be added before 2023 or after 2025</p> <p>Total units permitted capped at 3 from 2023 to 2025; total units permitted capped at 10 from 2026 onwards</p>
Wind ND-sited	<p>2 units permitted to be added in any year from 2026-2035; no units permitted to be added before 2026 or after 2035</p> <p>Total units permitted capped at 2 from 2026 onwards</p>

Figure 1. The PrefPlan scenario requires one of two Boswell reliability mitigation options

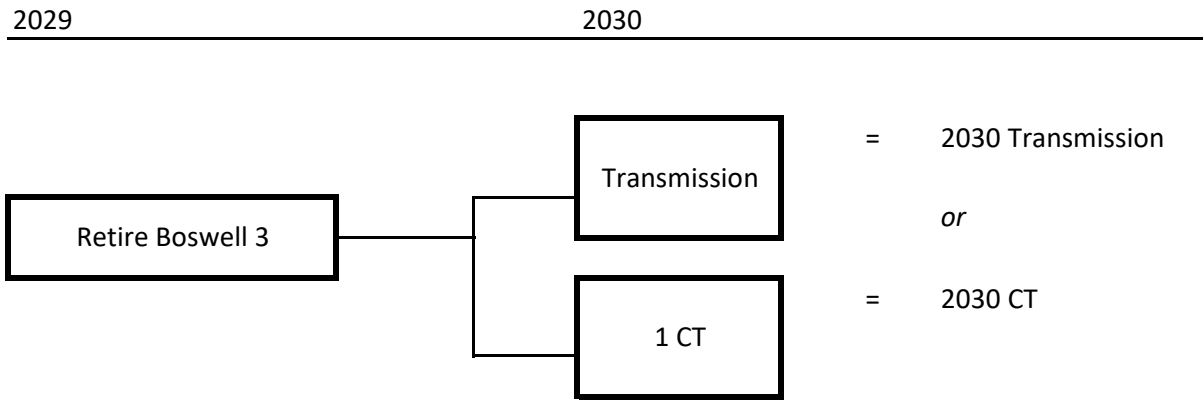


Figure 2. The Early3 scenario requires one of two Boswell reliability mitigation options

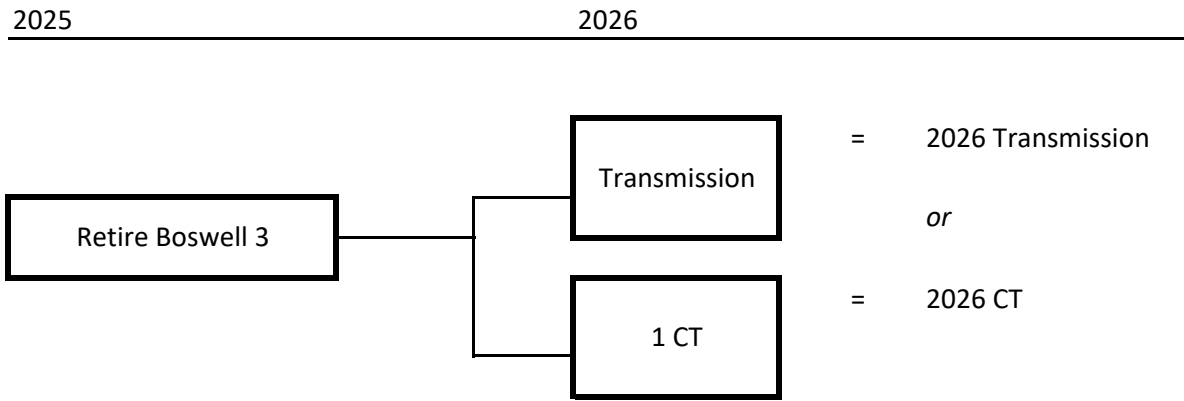


Figure 3. The Early4 scenario requires one of four Boswell reliability mitigation options

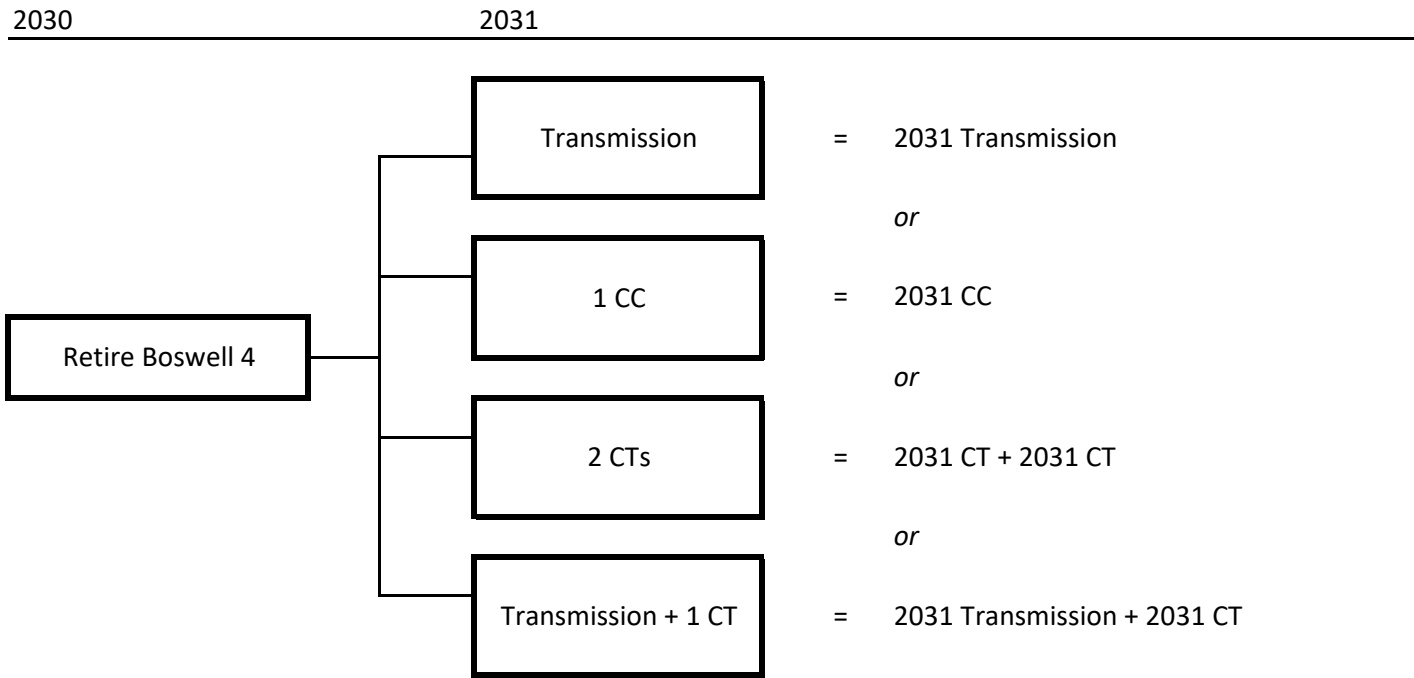


Figure 4. The FastExit scenario requires one of six Boswell reliability mitigation options

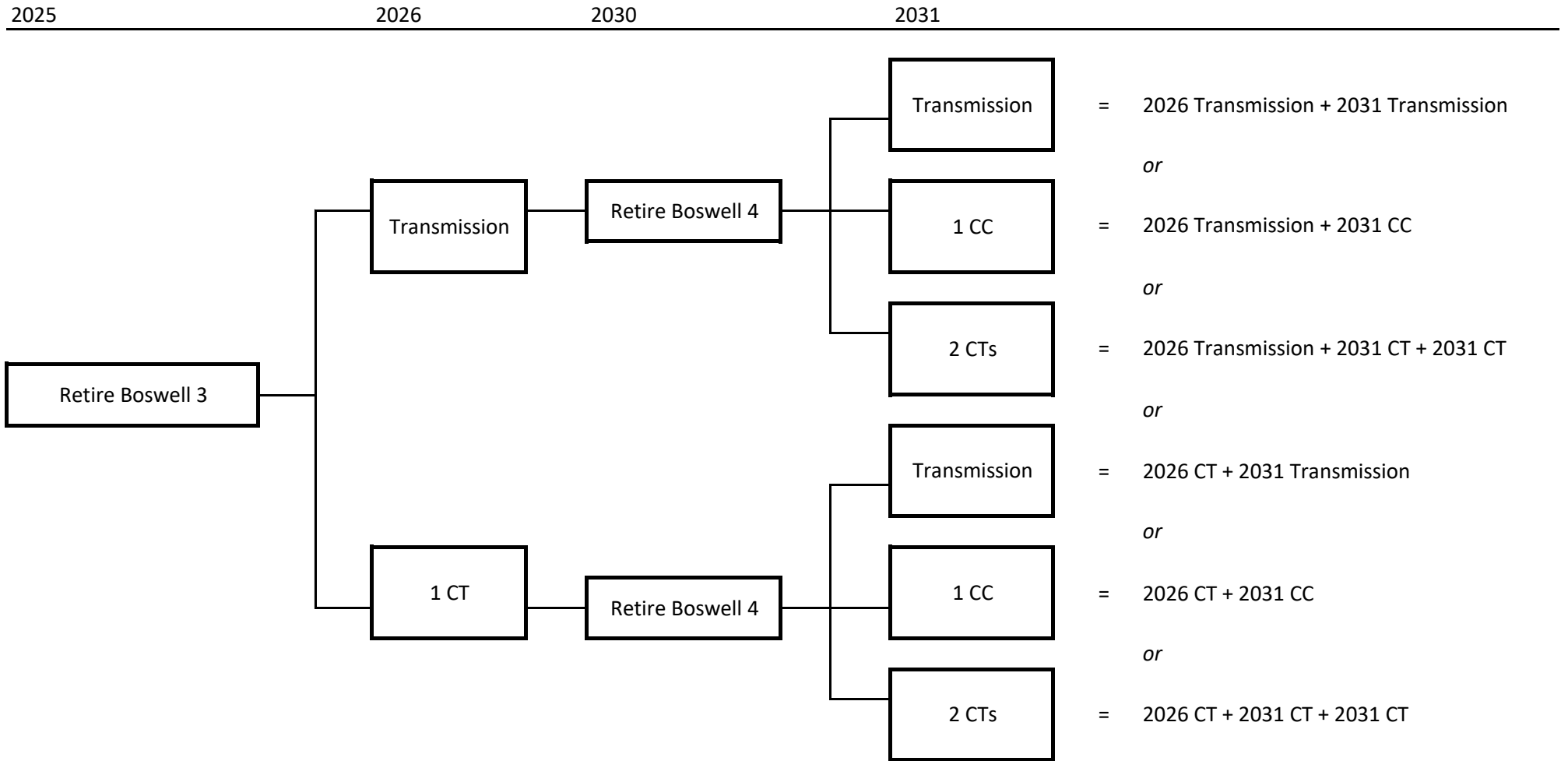


Table 1. MP's Contingency Names and Descriptions

Contingency	Description
Base	No changes
01_Coal+20%	Increases the price of coal by 20 percent.
02_Coal-10%	Decreases the price of coal by 20 percent.
05_Lower Gas-50%	Decreases the price of gas by 50 percent; appears to make changes that assumes gas to be the marginal market fuel.
06_Low Gas-25%	Decreases the price of gas by 25 percent; appears to make changes that assumes gas to be the marginal market fuel.
07_High Gas+25%	Increases the price of gas by 25 percent; appears to make changes that assumes gas to be the marginal market fuel.
08_Higher Gas+50%	Increases the price of gas by 50 percent; appears to make changes that assumes gas to be the marginal market fuel.
09_Highest Gas+100%	Increases the price of gas by 100 percent; appears to make changes that assumes gas to be the marginal market fuel.
10_WHSL Mkt-50%	Decreases prices of the wholesale electric market by 50 percent; appears to make changes that assumes gas to be the marginal market fuel.
11_WHSL Mkt-25%	Decreases prices of the wholesale electric market by 25 percent; appears to make changes that assumes gas to be the marginal market fuel.
12_WHSL Mkt+25%	Increases prices for the wholesale electric market by 25 percent; appears to make changes that assumes gas to be the marginal market fuel.
13_WHSL Mkt+50%	Increases prices for the wholesale market by 50 percent; appears to make changes that assumes gas to be the marginal market fuel.
14_CapCosts-30%	Decreases base project costs of solar, wind, and batteries by 30 percent.
15_CapCosts+30%	Increases base project costs of solar, wind, and batteries by 30 percent.
17_NoMktSales	Does not allow MP to sell economic or surplus energy into market.
18_NoSalePurchase	Removes tiered energy market, allowing only purchases of emergency energy. Also removes capability to sell economic or surplus energy into market.
19_MktAccess-50%	Reduces area interchange limits by 50 percent.
20_LoINTCONCosts	Reduces interconnection costs for wind by 30 percent and for solar by 65 percent.

21_ITC&PTC Extend	Extends 60 percent Production Tax Credit (PTC) and 26 percent Income Tax Credit (ITC) through 2035.
22_WindCostLow	Uses low technology cost curve, decreases wind capital cost by 8.4 percent in 2025.
23_WindCostHi	Uses high technology cost curve, increases wind capital cost by 5.9 percent in 2025.
24_SolCostLow	Uses low technology cost curve, decreases solar capital cost by 5.6 percent in 2025.
25_SolCostHigh	Uses high technology cost curve, increases solar capital cost by 17.4 percent in 2025.
26_StorCostLow	Uses low technology cost curve, decreases lithium ion battery capital cost by 7.8 percent in 2025.
27_StorCostHigh	Uses high technology cost curve, increases lithium ion battery capital cost by 23.2 percent in 2025.
28_AFR 2020 Low	Decreases customer demand by 5 percent from the Expected Scenario from the AFR2020.
31_ResTOU	Moves all residential customers to a hypothetical Time of Use (TOU) rate program. Modeled as reducing load during peak hours and increasing load during all other hours to keep energy sales forecast neutral.
32_High DG&EV	Increases distributed generation (DG) solar penetration rates, increases electric vehicle (EV) growth rate.
33_RenewELCC-2.5%	Decreases the ability of wind and solar to be reliable during periods of electricity shortage (ELCC) by 2.5 percent
34_RenewELCC+2.5%	Increases the ability of wind and solar to be reliable during periods of electricity shortage (ELCC) by 2.5 percent
35_PRM-2%	Decreases MISO's planning reserve margin (PRM) established in its Planning Year 2020-2021 Loss of Load Expectation Study Report by 2 percent.
36_PRM+2%	Decreases MISO's planning reserve margin (PRM) established in its Planning Year 2020-2021 Loss of Load Expectation Study Report by 2 percent.

Table 1. All Department Runs Costs (Revenue Requirement + Externalities, \$000,000), Conditionally Formatted from Low Cost (Green) to High Cost (Red) in each row

Carbon Future	Contingency	L RTP	AFR/NTEC	StatusQuo	PrefPlan	Early3	Early4	FastExit
01_No/No	00_Base	01_No LRTP	01_Mid50	7,451	7,645	7,693	7,732	7,973
01_No/No	01_Coal+20%	01_No LRTP	01_Mid50	7,708	7,851	7,883	7,942	8,089
01_No/No	02_Coal-10%	01_No LRTP	01_Mid50	7,305	7,525	7,564	7,620	7,905
01_No/No	05_Lower Gas-50%	01_No LRTP	01_Mid50	7,207	7,251	7,227	7,323	7,356
01_No/No	06_Low Gas-25%	01_No LRTP	01_Mid50	7,384	7,518	7,529	7,628	7,733
01_No/No	07_High Gas+25%	01_No LRTP	01_Mid50	7,603	7,820	7,886	7,947	8,301
01_No/No	08_Higher Gas+50%	01_No LRTP	01_Mid50	7,649	7,898	7,949	8,038	8,425
01_No/No	09_Highest Gas+100%	01_No LRTP	01_Mid50	7,830	8,096	8,152	8,244	8,690
01_No/No	10_WHSL Mkt-50%	01_No LRTP	01_Mid50	7,256	7,336	7,392	7,422	7,612
01_No/No	11_WHSL Mkt-25%	01_No LRTP	01_Mid50	7,476	7,593	7,650	7,691	7,942
01_No/No	12_WHSL Mkt+25%	01_No LRTP	01_Mid50	7,494	7,714	7,743	7,840	8,065
01_No/No	13_WHSL Mkt+50%	01_No LRTP	01_Mid50	7,465	7,708	7,722	7,810	8,035
01_No/No	14_CapCosts-30%	01_No LRTP	01_Mid50	7,449	7,591	7,604	7,679	7,811
01_No/No	15_CapCosts+30%	01_No LRTP	01_Mid50	7,450	7,640	7,688	7,777	8,089
01_No/No	17_NoMktSales	01_No LRTP	01_Mid50	7,594	7,722	7,775	7,834	8,080
01_No/No	18_NoSalePurchase	01_No LRTP	01_Mid50	8,292	8,457	8,523	8,548	8,728
01_No/No	19_MktAccess-50%	01_No LRTP	01_Mid50	7,610	7,803	7,831	7,889	8,173
01_No/No	20_LoINTCONCosts	01_No LRTP	01_Mid50	7,450	7,632	7,676	7,730	7,973
01_No/No	21_ITC&PTC Extend	01_No LRTP	01_Mid50	7,449	7,627	7,678	7,734	7,974
01_No/No	22_WindCostLow	01_No LRTP	01_Mid50	7,449	7,642	7,693	7,734	7,983
01_No/No	23_WindCostHi	01_No LRTP	01_Mid50	7,452	7,644	7,675	7,730	7,971
01_No/No	24_SolCostLow	01_No LRTP	01_Mid50	7,457	7,617	7,675	7,719	7,974
01_No/No	25_SolCostHigh	01_No LRTP	01_Mid50	7,451	7,652	7,664	7,727	7,965
01_No/No	26_StorCostLow	01_No LRTP	01_Mid50	7,449	7,640	7,694	7,733	7,970
01_No/No	27_StorCostHigh	01_No LRTP	01_Mid50	7,447	7,641	7,697	7,733	7,973
01_No/No	28_AFR 2020 Low	01_No LRTP	01_Mid50	7,261	7,384	7,418	7,514	7,733
01_No/No	31_ResTOU	01_No LRTP	01_Mid50	7,449	7,626	7,669	7,730	7,961
01_No/No	32_High DG&EV	01_No LRTP	01_Mid50	7,452	7,647	7,694	7,734	7,968
01_No/No	33_RenewELCC-2.5%	01_No LRTP	01_Mid50	7,453	7,646	7,682	7,730	7,999
01_No/No	34_RenewELCC+2.5%	01_No LRTP	01_Mid50	7,449	7,643	7,691	7,731	7,970
01_No/No	35_PRM-2%	01_No LRTP	01_Mid50	7,449	7,626	7,673	7,731	7,964
01_No/No	36_PRM+2%	01_No LRTP	01_Mid50	7,451	7,659	7,685	7,731	8,000
02_No/Low	00_Base	01_No LRTP	01_Mid50	10,889	10,388	10,429	10,483	9,969
02_No/Low	01_Coal+20%	01_No LRTP	01_Mid50	10,410	10,032	10,016	10,099	9,812
02_No/Low	02_Coal-10%	01_No LRTP	01_Mid50	11,013	10,558	10,578	10,588	10,024
02_No/Low	05_Lower Gas-50%	01_No LRTP	01_Mid50	10,335	9,936	9,790	9,775	9,574
02_No/Low	06_Low Gas-25%	01_No LRTP	01_Mid50	10,668	10,464	10,340	10,222	9,943
02_No/Low	07_High Gas+25%	01_No LRTP	01_Mid50	11,208	10,646	10,464	10,659	10,008
02_No/Low	08_Higher Gas+50%	01_No LRTP	01_Mid50	11,390	10,740	10,653	10,758	10,181
02_No/Low	09_Highest Gas+100%	01_No LRTP	01_Mid50	11,076	10,447	10,364	10,455	9,917
02_No/Low	10_WHSL Mkt-50%	01_No LRTP	01_Mid50	8,756	8,700	8,738	8,695	8,449
02_No/Low	11_WHSL Mkt-25%	01_No LRTP	01_Mid50	10,257	9,987	9,980	9,931	9,413

02_No/Low	12_WHSL Mkt+25%	01_No LRTP	01_Mid50	11,356	10,937	10,875	11,004	10,431
02_No/Low	13_WHSL Mkt+50%	01_No LRTP	01_Mid50	11,306	10,852	10,816	10,924	10,344
02_No/Low	14_CapCosts-30%	01_No LRTP	01_Mid50	10,889	10,462	10,344	10,544	10,092
02_No/Low	15_CapCosts+30%	01_No LRTP	01_Mid50	10,887	10,545	10,470	10,468	9,914
02_No/Low	17_NoMktSales	01_No LRTP	01_Mid50	10,521	10,300	10,314	10,251	9,864
02_No/Low	18_NoSalePurchase	01_No LRTP	01_Mid50	11,884	11,681	11,607	11,468	11,082
02_No/Low	19_MktAccess-50%	01_No LRTP	01_Mid50	11,090	10,854	10,781	10,727	10,249
02_No/Low	20_LoINTCONCosts	01_No LRTP	01_Mid50	10,893	10,256	10,329	10,290	9,802
02_No/Low	21_ITC&PTC Extend	01_No LRTP	01_Mid50	10,883	10,452	10,501	10,467	9,962
02_No/Low	22_WindCostLow	01_No LRTP	01_Mid50	10,889	10,386	10,426	10,401	9,905
02_No/Low	23_WindCostHi	01_No LRTP	01_Mid50	10,895	10,392	10,531	10,492	9,980
02_No/Low	24_SolCostLow	01_No LRTP	01_Mid50	10,856	10,405	10,447	10,426	9,928
02_No/Low	25_SolCostHigh	01_No LRTP	01_Mid50	10,892	10,503	10,544	10,421	9,980
02_No/Low	26_StorCostLow	01_No LRTP	01_Mid50	10,886	10,383	10,420	10,496	9,976
02_No/Low	27_StorCostHigh	01_No LRTP	01_Mid50	10,892	10,384	10,421	10,489	9,970
02_No/Low	28_AFR 2020 Low	01_No LRTP	01_Mid50	10,436	10,085	10,055	10,099	9,666
02_No/Low	31_ResTOU	01_No LRTP	01_Mid50	10,882	10,458	10,335	10,482	9,966
02_No/Low	32_High DG&EV	01_No LRTP	01_Mid50	10,887	10,361	10,422	10,491	9,974
02_No/Low	33_RenewELCC-2.5%	01_No LRTP	01_Mid50	10,884	10,590	10,453	10,489	9,901
02_No/Low	34_RenewELCC+2.5%	01_No LRTP	01_Mid50	10,885	10,358	10,312	10,495	9,967
02_No/Low	35_PRM-2%	01_No LRTP	01_Mid50	10,894	10,465	10,332	10,489	9,969
02_No/Low	36_PRM+2%	01_No LRTP	01_Mid50	10,895	10,559	10,438	10,493	9,899
03_No/High	00_Base	01_No LRTP	01_Mid50	14,385	13,241	13,296	13,335	12,078
03_No/High	01_Coal+20%	01_No LRTP	01_Mid50	13,222	12,352	12,312	12,390	11,657
03_No/High	02_Coal-10%	01_No LRTP	01_Mid50	14,778	13,689	13,738	13,649	12,246
03_No/High	05_Lower Gas-50%	01_No LRTP	01_Mid50	13,485	12,741	12,497	12,227	11,840
03_No/High	06_Low Gas-25%	01_No LRTP	01_Mid50	13,901	13,452	13,227	12,745	12,172
03_No/High	07_High Gas+25%	01_No LRTP	01_Mid50	14,859	13,586	13,159	13,453	11,869
03_No/High	08_Higher Gas+50%	01_No LRTP	01_Mid50	15,059	13,558	13,361	13,422	11,945
03_No/High	09_Highest Gas+100%	01_No LRTP	01_Mid50	14,694	13,236	13,024	13,065	11,596
03_No/High	10_WHSL Mkt-50%	01_No LRTP	01_Mid50	10,289	10,099	10,115	9,976	9,355
03_No/High	11_WHSL Mkt-25%	01_No LRTP	01_Mid50	13,019	12,386	12,348	12,175	10,953
03_No/High	12_WHSL Mkt+25%	01_No LRTP	01_Mid50	15,212	14,244	14,111	14,158	12,881
03_No/High	13_WHSL Mkt+50%	01_No LRTP	01_Mid50	15,376	14,323	14,257	14,260	12,967
03_No/High	14_CapCosts-30%	01_No LRTP	01_Mid50	14,380	13,404	13,130	13,408	12,205
03_No/High	15_CapCosts+30%	01_No LRTP	01_Mid50	14,384	13,625	13,465	13,300	12,147
03_No/High	17_NoMktSales	01_No LRTP	01_Mid50	13,494	12,984	12,975	12,751	11,720
03_No/High	18_NoSalePurchase	01_No LRTP	01_Mid50	15,472	15,028	14,949	14,449	13,512
03_No/High	19_MktAccess-50%	01_No LRTP	01_Mid50	14,603	14,032	13,859	13,680	12,425
03_No/High	20_LoINTCONCosts	01_No LRTP	01_Mid50	14,383	12,993	13,106	12,945	11,750
03_No/High	21_ITC&PTC Extend	01_No LRTP	01_Mid50	14,389	13,396	13,470	13,304	12,059
03_No/High	22_WindCostLow	01_No LRTP	01_Mid50	14,387	13,229	13,278	13,178	11,926
03_No/High	23_WindCostHi	01_No LRTP	01_Mid50	14,386	13,254	13,546	13,354	12,089
03_No/High	24_SolCostLow	01_No LRTP	01_Mid50	14,307	13,302	13,358	13,228	11,992
03_No/High	25_SolCostHigh	01_No LRTP	01_Mid50	14,378	13,482	13,580	13,219	12,110

03_No/High	26_StorCostLow	01_No LRTP	01_Mid50	14,377	13,244	13,291	13,342	12,080
03_No/High	27_StorCostHigh	01_No LRTP	01_Mid50	14,388	13,251	13,295	13,348	12,089
03_No/High	28_AFR 2020 Low	01_No LRTP	01_Mid50	13,666	12,909	12,809	12,773	11,699
03_No/High	31_ResTOU	01_No LRTP	01_Mid50	14,373	13,413	13,119	13,352	12,073
03_No/High	32_High DG&EV	01_No LRTP	01_Mid50	14,378	13,188	13,298	13,352	12,079
03_No/High	33_RenewELCC-2.5%	01_No LRTP	01_Mid50	14,376	13,658	13,358	13,352	11,911
03_No/High	34_RenewELCC+2.5%	01_No LRTP	01_Mid50	14,373	13,183	13,067	13,343	12,074
03_No/High	35_PRM-2%	01_No LRTP	01_Mid50	14,390	13,403	13,138	13,355	12,085
03_No/High	36_PRM+2%	01_No LRTP	01_Mid50	14,381	13,593	13,325	13,353	11,898
04_Low/Low	00_Base	01_No LRTP	01_Mid50	10,016	9,750	9,731	9,813	9,610
04_Low/Low	01_Coal+20%	01_No LRTP	01_Mid50	9,613	9,537	9,542	9,599	9,508
04_Low/Low	02_Coal-10%	01_No LRTP	01_Mid50	10,214	9,805	9,796	9,860	9,648
04_Low/Low	05_Lower Gas-50%	01_No LRTP	01_Mid50	9,733	9,444	9,335	9,376	9,249
04_Low/Low	06_Low Gas-25%	01_No LRTP	01_Mid50	9,914	9,834	9,761	9,759	9,608
04_Low/Low	07_High Gas+25%	01_No LRTP	01_Mid50	10,239	10,018	9,939	10,017	9,750
04_Low/Low	08_Higher Gas+50%	01_No LRTP	01_Mid50	10,466	10,249	10,152	10,242	9,962
04_Low/Low	09_Highest Gas+100%	01_No LRTP	01_Mid50	10,212	9,985	9,902	9,978	9,746
04_Low/Low	10_WHSL Mkt-50%	01_No LRTP	01_Mid50	8,255	8,311	8,316	8,343	8,310
04_Low/Low	11_WHSL Mkt-25%	01_No LRTP	01_Mid50	9,492	9,334	9,409	9,405	9,146
04_Low/Low	12_WHSL Mkt+25%	01_No LRTP	01_Mid50	10,372	10,185	10,221	10,222	9,930
04_Low/Low	13_WHSL Mkt+50%	01_No LRTP	01_Mid50	10,302	10,202	10,142	10,110	9,911
04_Low/Low	14_CapCosts-30%	01_No LRTP	01_Mid50	10,015	9,747	9,717	9,853	9,689
04_Low/Low	15_CapCosts+30%	01_No LRTP	01_Mid50	10,019	9,775	9,714	9,773	9,467
04_Low/Low	17_NoMktSales	01_No LRTP	01_Mid50	9,865	9,656	9,699	9,716	9,551
04_Low/Low	18_NoSalePurchase	01_No LRTP	01_Mid50	11,055	11,005	10,980	10,975	10,676
04_Low/Low	19_MktAccess-50%	01_No LRTP	01_Mid50	10,266	10,111	10,178	10,162	9,934
04_Low/Low	20_LoINTCONCosts	01_No LRTP	01_Mid50	9,793	9,642	9,626	9,704	9,526
04_Low/Low	21_ITC&PTC Extend	01_No LRTP	01_Mid50	9,970	9,728	9,707	9,785	9,598
04_Low/Low	22_WindCostLow	01_No LRTP	01_Mid50	9,920	9,740	9,664	9,796	9,561
04_Low/Low	23_WindCostHi	01_No LRTP	01_Mid50	10,021	9,755	9,733	9,817	9,617
04_Low/Low	24_SolCostLow	01_No LRTP	01_Mid50	9,922	9,710	9,694	9,762	9,576
04_Low/Low	25_SolCostHigh	01_No LRTP	01_Mid50	10,018	9,726	9,797	9,824	9,606
04_Low/Low	26_StorCostLow	01_No LRTP	01_Mid50	10,024	9,747	9,722	9,806	9,609
04_Low/Low	27_StorCostHigh	01_No LRTP	01_Mid50	10,018	9,756	9,733	9,811	9,619
04_Low/Low	28_AFR 2020 Low	01_No LRTP	01_Mid50	9,605	9,365	9,364	9,435	9,265
04_Low/Low	31_ResTOU	01_No LRTP	01_Mid50	10,016	9,749	9,728	9,808	9,601
04_Low/Low	32_High DG&EV	01_No LRTP	01_Mid50	10,017	9,748	9,740	9,807	9,610
04_Low/Low	33_RenewELCC-2.5%	01_No LRTP	01_Mid50	10,026	9,748	9,793	9,812	9,568
04_Low/Low	34_RenewELCC+2.5%	01_No LRTP	01_Mid50	10,018	9,743	9,731	9,808	9,609
04_Low/Low	35_PRM-2%	01_No LRTP	01_Mid50	10,022	9,756	9,733	9,809	9,609
04_Low/Low	36_PRM+2%	01_No LRTP	01_Mid50	10,013	9,749	9,774	9,812	9,571
05_Mid/Mid	00_Base	01_No LRTP	01_Mid50	10,084	10,030	10,048	10,084	10,038
05_Mid/Mid	01_Coal+20%	01_No LRTP	01_Mid50	9,863	9,878	9,804	9,931	9,942
05_Mid/Mid	02_Coal-10%	01_No LRTP	01_Mid50	10,203	10,127	10,131	10,169	10,092
05_Mid/Mid	05_Lower Gas-50%	01_No LRTP	01_Mid50	9,876	9,773	9,688	9,822	9,809

05_Mid/Mid	06_Low Gas-25%	01_No LRTP	01_Mid50	10,078	9,974	9,914	10,083	10,050
05_Mid/Mid	07_High Gas+25%	01_No LRTP	01_Mid50	10,367	10,293	10,305	10,328	10,189
05_Mid/Mid	08_Higher Gas+50%	01_No LRTP	01_Mid50	10,646	10,532	10,511	10,574	10,375
05_Mid/Mid	09_Highest Gas+100%	01_No LRTP	01_Mid50	10,520	10,395	10,360	10,425	10,209
05_Mid/Mid	10_WHSL Mkt-50%	01_No LRTP	01_Mid50	8,386	8,380	8,427	8,497	8,560
05_Mid/Mid	11_WHSL Mkt-25%	01_No LRTP	01_Mid50	9,433	9,434	9,452	9,514	9,482
05_Mid/Mid	12_WHSL Mkt+25%	01_No LRTP	01_Mid50	10,706	10,603	10,555	10,599	10,514
05_Mid/Mid	13_WHSL Mkt+50%	01_No LRTP	01_Mid50	10,749	10,633	10,543	10,561	10,441
05_Mid/Mid	14_CapCosts-30%	01_No LRTP	01_Mid50	10,086	10,032	10,039	10,134	10,169
05_Mid/Mid	15_CapCosts+30%	01_No LRTP	01_Mid50	10,085	10,020	9,953	9,958	9,857
05_Mid/Mid	17_NoMktSales	01_No LRTP	01_Mid50	9,948	9,883	9,912	9,933	9,933
05_Mid/Mid	18_NoSalePurchase	01_No LRTP	01_Mid50	11,658	11,520	11,481	11,297	11,295
05_Mid/Mid	19_MktAccess-50%	01_No LRTP	01_Mid50	10,548	10,627	10,448	10,399	10,456
05_Mid/Mid	20_LoINTCONCosts	01_No LRTP	01_Mid50	9,995	9,976	9,979	10,023	9,995
05_Mid/Mid	21_ITC&PTC Extend	01_No LRTP	01_Mid50	10,058	10,023	10,027	10,070	10,026
05_Mid/Mid	22_WindCostLow	01_No LRTP	01_Mid50	10,026	10,001	9,973	10,028	10,026
05_Mid/Mid	23_WindCostHi	01_No LRTP	01_Mid50	10,092	10,047	10,058	10,098	10,044
05_Mid/Mid	24_SolCostLow	01_No LRTP	01_Mid50	10,030	10,010	10,012	10,042	10,012
05_Mid/Mid	25_SolCostHigh	01_No LRTP	01_Mid50	10,129	10,043	10,074	10,098	10,052
05_Mid/Mid	26_StorCostLow	01_No LRTP	01_Mid50	10,086	10,030	10,047	10,081	10,035
05_Mid/Mid	27_StorCostHigh	01_No LRTP	01_Mid50	10,089	10,043	10,056	10,087	10,043
05_Mid/Mid	28_AFR 2020 Low	01_No LRTP	01_Mid50	9,643	9,635	9,635	9,682	9,664
05_Mid/Mid	31_ResTOU	01_No LRTP	01_Mid50	10,068	10,035	10,040	10,077	10,032
05_Mid/Mid	32_High DG&EV	01_No LRTP	01_Mid50	10,091	10,054	10,052	10,081	10,045
05_Mid/Mid	33_RenewELCC-2.5%	01_No LRTP	01_Mid50	10,089	10,046	10,067	10,084	10,050
05_Mid/Mid	34_RenewELCC+2.5%	01_No LRTP	01_Mid50	10,089	10,049	10,054	10,086	10,044
05_Mid/Mid	35_PRM-2%	01_No LRTP	01_Mid50	10,084	10,042	10,048	10,083	10,039
05_Mid/Mid	36_PRM+2%	01_No LRTP	01_Mid50	10,082	10,039	10,061	10,082	10,047
06_High/High	00_Base	01_No LRTP	01_Mid50	10,345	10,370	10,296	10,402	10,491
06_High/High	01_Coal+20%	01_No LRTP	01_Mid50	10,130	10,152	10,101	10,195	10,344
06_High/High	02_Coal-10%	01_No LRTP	01_Mid50	10,456	10,477	10,459	10,511	10,564
06_High/High	05_Lower Gas-50%	01_No LRTP	01_Mid50	10,200	10,127	10,077	10,284	10,305
06_High/High	06_Low Gas-25%	01_No LRTP	01_Mid50	10,358	10,326	10,274	10,474	10,486
06_High/High	07_High Gas+25%	01_No LRTP	01_Mid50	10,580	10,594	10,580	10,661	10,624
06_High/High	08_Higher Gas+50%	01_No LRTP	01_Mid50	10,782	10,819	10,827	10,856	10,786
06_High/High	09_Highest Gas+100%	01_No LRTP	01_Mid50	10,725	10,712	10,687	10,698	10,593
06_High/High	10_WHSL Mkt-50%	01_No LRTP	01_Mid50	8,647	8,644	8,694	8,748	8,847
06_High/High	11_WHSL Mkt-25%	01_No LRTP	01_Mid50	9,668	9,698	9,719	9,768	9,848
06_High/High	12_WHSL Mkt+25%	01_No LRTP	01_Mid50	11,038	11,034	10,944	11,055	11,045
06_High/High	13_WHSL Mkt+50%	01_No LRTP	01_Mid50	11,134	11,070	10,982	11,058	11,002
06_High/High	14_CapCosts-30%	01_No LRTP	01_Mid50	10,348	10,370	10,383	10,449	10,606
06_High/High	15_CapCosts+30%	01_No LRTP	01_Mid50	10,350	10,306	10,235	10,356	10,313
06_High/High	17_NoMktSales	01_No LRTP	01_Mid50	10,208	10,240	10,162	10,269	10,362
06_High/High	18_NoSalePurchase	01_No LRTP	01_Mid50	12,096	12,080	11,986	11,914	11,847
06_High/High	19_MktAccess-50%	01_No LRTP	01_Mid50	10,960	10,872	10,786	10,914	10,856

06_High/High	20_LoINTCONCosts	01_No LRTP	01_Mid50	10,246	10,310	10,211	10,330	10,426
06_High/High	21_ITC&PTC Extend	01_No LRTP	01_Mid50	10,331	10,373	10,280	10,374	10,457
06_High/High	22_WindCostLow	01_No LRTP	01_Mid50	10,269	10,290	10,249	10,346	10,455
06_High/High	23_WindCostHi	01_No LRTP	01_Mid50	10,358	10,388	10,313	10,416	10,492
06_High/High	24_SolCostLow	01_No LRTP	01_Mid50	10,297	10,332	10,254	10,369	10,461
06_High/High	25_SolCostHigh	01_No LRTP	01_Mid50	10,359	10,357	10,367	10,487	10,474
06_High/High	26_StorCostLow	01_No LRTP	01_Mid50	10,344	10,377	10,301	10,409	10,482
06_High/High	27_StorCostHigh	01_No LRTP	01_Mid50	10,347	10,371	10,300	10,415	10,487
06_High/High	28_AFR 2020 Low	01_No LRTP	01_Mid50	9,888	9,920	9,918	9,969	10,071
06_High/High	31_ResTOU	01_No LRTP	01_Mid50	10,343	10,356	10,299	10,398	10,477
06_High/High	32_High DG&EV	01_No LRTP	01_Mid50	10,355	10,358	10,297	10,382	10,489
06_High/High	33_RenewELCC-2.5%	01_No LRTP	01_Mid50	10,354	10,340	10,315	10,408	10,494
06_High/High	34_RenewELCC+2.5%	01_No LRTP	01_Mid50	10,349	10,377	10,300	10,410	10,474
06_High/High	35_PRM-2%	01_No LRTP	01_Mid50	10,340	10,372	10,296	10,402	10,485
06_High/High	36_PRM+2%	01_No LRTP	01_Mid50	10,351	10,339	10,293	10,410	10,489
01_No/No	00_Base	01_No LRTP	02_Mid20	7,281	7,509	7,542	7,516	7,888
01_No/No	01_Coal+20%	01_No LRTP	02_Mid20	7,588	7,729	7,761	7,694	7,982
01_No/No	02_Coal-10%	01_No LRTP	02_Mid20	7,126	7,379	7,434	7,407	7,798
01_No/No	05_Lower Gas-50%	01_No LRTP	02_Mid20	7,163	7,202	7,177	7,237	7,250
01_No/No	06_Low Gas-25%	01_No LRTP	02_Mid20	7,267	7,414	7,426	7,488	7,604
01_No/No	07_High Gas+25%	01_No LRTP	02_Mid20	7,406	7,682	7,744	7,635	8,184
01_No/No	08_Higher Gas+50%	01_No LRTP	02_Mid20	7,457	7,741	7,801	7,703	8,330
01_No/No	09_Highest Gas+100%	01_No LRTP	02_Mid20	7,620	7,935	7,991	7,862	8,580
01_No/No	10_WHSL Mkt-50%	01_No LRTP	02_Mid20	7,056	7,177	7,199	7,108	7,472
01_No/No	11_WHSL Mkt-25%	01_No LRTP	02_Mid20	7,288	7,449	7,482	7,428	7,800
01_No/No	12_WHSL Mkt+25%	01_No LRTP	02_Mid20	7,362	7,602	7,638	7,623	7,957
01_No/No	13_WHSL Mkt+50%	01_No LRTP	02_Mid20	7,361	7,604	7,653	7,673	7,926
01_No/No	14_CapCosts-30%	01_No LRTP	02_Mid20	7,281	7,455	7,476	7,496	7,670
01_No/No	15_CapCosts+30%	01_No LRTP	02_Mid20	7,283	7,559	7,613	7,509	8,038
01_No/No	17_NoMktSales	01_No LRTP	02_Mid20	7,410	7,586	7,623	7,595	7,950
01_No/No	18_NoSalePurchase	01_No LRTP	02_Mid20	8,512	8,672	8,743	8,673	8,863
01_No/No	19_MktAccess-50%	01_No LRTP	02_Mid20	7,514	7,754	7,791	7,776	8,058
01_No/No	20_LoINTCONCosts	01_No LRTP	02_Mid20	7,287	7,504	7,539	7,482	7,858
01_No/No	21_ITC&PTC Extend	01_No LRTP	02_Mid20	7,289	7,509	7,548	7,501	7,865
01_No/No	22_WindCostLow	01_No LRTP	02_Mid20	7,280	7,510	7,565	7,488	7,869
01_No/No	23_WindCostHi	01_No LRTP	02_Mid20	7,286	7,523	7,560	7,519	7,866
01_No/No	24_SolCostLow	01_No LRTP	02_Mid20	7,290	7,515	7,549	7,474	7,858
01_No/No	25_SolCostHigh	01_No LRTP	02_Mid20	7,282	7,506	7,541	7,488	7,866
01_No/No	26_StorCostLow	01_No LRTP	02_Mid20	7,281	7,508	7,550	7,516	7,883
01_No/No	27_StorCostHigh	01_No LRTP	02_Mid20	7,285	7,509	7,544	7,516	7,887
01_No/No	28_AFR 2020 Low	01_No LRTP	02_Mid20	7,076	7,283	7,310	7,228	7,645
01_No/No	31_ResTOU	01_No LRTP	02_Mid20	7,275	7,508	7,544	7,477	7,860
01_No/No	32_High DG&EV	01_No LRTP	02_Mid20	7,282	7,510	7,546	7,490	7,878
01_No/No	33_RenewELCC-2.5%	01_No LRTP	02_Mid20	7,281	7,514	7,546	7,526	7,865
01_No/No	34_RenewELCC+2.5%	01_No LRTP	02_Mid20	7,281	7,515	7,547	7,477	7,890

01_No/No	35_PRM-2%	01_No LRTP	02_Mid20	7,282	7,505	7,547	7,484	7,882
01_No/No	36_PRM+2%	01_No LRTP	02_Mid20	7,286	7,509	7,558	7,522	7,880
02_No/Low	00_Base	01_No LRTP	02_Mid20	10,830	10,415	10,327	9,898	9,847
02_No/Low	01_Coal+20%	01_No LRTP	02_Mid20	10,351	10,184	10,076	9,803	9,746
02_No/Low	02_Coal-10%	01_No LRTP	02_Mid20	10,872	10,526	10,341	10,023	9,926
02_No/Low	05_Lower Gas-50%	01_No LRTP	02_Mid20	10,669	10,174	9,988	9,584	9,571
02_No/Low	06_Low Gas-25%	01_No LRTP	02_Mid20	10,840	10,549	10,386	10,315	9,897
02_No/Low	07_High Gas+25%	01_No LRTP	02_Mid20	11,009	10,538	10,365	10,135	9,981
02_No/Low	08_Higher Gas+50%	01_No LRTP	02_Mid20	11,144	10,607	10,512	10,222	10,054
02_No/Low	09_Highest Gas+100%	01_No LRTP	02_Mid20	10,857	10,304	10,216	9,942	9,766
02_No/Low	10_WHSL Mkt-50%	01_No LRTP	02_Mid20	8,721	8,679	8,666	8,475	8,398
02_No/Low	11_WHSL Mkt-25%	01_No LRTP	02_Mid20	10,193	9,935	9,868	9,557	9,503
02_No/Low	12_WHSL Mkt+25%	01_No LRTP	02_Mid20	11,296	10,871	10,767	10,327	10,248
02_No/Low	13_WHSL Mkt+50%	01_No LRTP	02_Mid20	11,099	10,838	10,603	10,774	10,191
02_No/Low	14_CapCosts-30%	01_No LRTP	02_Mid20	10,827	10,463	10,393	9,993	10,095
02_No/Low	15_CapCosts+30%	01_No LRTP	02_Mid20	10,835	10,366	10,265	10,065	9,728
02_No/Low	17_NoMktSales	01_No LRTP	02_Mid20	10,490	10,293	10,227	9,870	9,818
02_No/Low	18_NoSalePurchase	01_No LRTP	02_Mid20	12,132	11,839	11,806	11,628	11,140
02_No/Low	19_MktAccess-50%	01_No LRTP	02_Mid20	11,176	10,738	10,682	10,451	10,202
02_No/Low	20_LoINTCONCosts	01_No LRTP	02_Mid20	10,685	10,279	10,206	9,849	9,743
02_No/Low	21_ITC&PTC Extend	01_No LRTP	02_Mid20	10,795	10,392	10,293	9,891	9,891
02_No/Low	22_WindCostLow	01_No LRTP	02_Mid20	10,832	10,398	10,223	9,953	9,844
02_No/Low	23_WindCostHi	01_No LRTP	02_Mid20	10,836	10,389	10,311	9,986	9,908
02_No/Low	24_SolCostLow	01_No LRTP	02_Mid20	10,751	10,327	10,243	9,943	9,865
02_No/Low	25_SolCostHigh	01_No LRTP	02_Mid20	10,830	10,434	10,340	10,052	9,857
02_No/Low	26_StorCostLow	01_No LRTP	02_Mid20	10,830	10,412	10,323	9,913	9,846
02_No/Low	27_StorCostHigh	01_No LRTP	02_Mid20	10,828	10,407	10,324	9,904	9,850
02_No/Low	28_AFR 2020 Low	01_No LRTP	02_Mid20	10,385	10,114	10,027	9,645	9,548
02_No/Low	31_ResTOU	01_No LRTP	02_Mid20	10,821	10,404	10,320	9,976	9,899
02_No/Low	32_High DG&EV	01_No LRTP	02_Mid20	10,828	10,409	10,323	9,991	9,849
02_No/Low	33_RenewELCC-2.5%	01_No LRTP	02_Mid20	10,838	10,418	10,330	9,914	9,904
02_No/Low	34_RenewELCC+2.5%	01_No LRTP	02_Mid20	10,826	10,413	10,329	9,984	9,842
02_No/Low	35_PRM-2%	01_No LRTP	02_Mid20	10,828	10,409	10,325	9,987	9,845
02_No/Low	36_PRM+2%	01_No LRTP	02_Mid20	10,830	10,417	10,231	9,995	9,843
03_No/High	00_Base	01_No LRTP	02_Mid20	14,465	13,457	13,278	12,393	11,943
03_No/High	01_Coal+20%	01_No LRTP	02_Mid20	13,236	12,830	12,585	12,048	11,672
03_No/High	02_Coal-10%	01_No LRTP	02_Mid20	14,686	13,826	13,428	12,728	12,199
03_No/High	05_Lower Gas-50%	01_No LRTP	02_Mid20	14,203	13,285	12,956	11,929	11,981
03_No/High	06_Low Gas-25%	01_No LRTP	02_Mid20	14,409	13,765	13,458	13,090	12,255
03_No/High	07_High Gas+25%	01_No LRTP	02_Mid20	14,672	13,521	13,124	12,705	11,910
03_No/High	08_Higher Gas+50%	01_No LRTP	02_Mid20	14,755	13,473	13,245	12,682	11,821
03_No/High	09_Highest Gas+100%	01_No LRTP	02_Mid20	14,462	13,109	12,889	12,431	11,422
03_No/High	10_WHSL Mkt-50%	01_No LRTP	02_Mid20	10,407	10,216	10,196	9,879	9,430
03_No/High	11_WHSL Mkt-25%	01_No LRTP	02_Mid20	13,101	12,471	12,336	11,711	11,244
03_No/High	12_WHSL Mkt+25%	01_No LRTP	02_Mid20	15,258	14,257	14,047	13,080	12,655

03_No/High	13_WHSL Mkt+50%	01_No LRTP	02_Mid20	15,097	14,428	13,946	14,127	12,795
03_No/High	14_CapCosts-30%	01_No LRTP	02_Mid20	14,459	13,522	13,357	12,577	12,298
03_No/High	15_CapCosts+30%	01_No LRTP	02_Mid20	14,473	13,424	13,225	12,757	11,940
03_No/High	17_NoMktSales	01_No LRTP	02_Mid20	13,630	13,150	13,003	12,229	11,815
03_No/High	18_NoSalePurchase	01_No LRTP	02_Mid20	15,828	15,145	15,050	14,736	13,515
03_No/High	19_MktAccess-50%	01_No LRTP	02_Mid20	14,865	13,895	13,739	13,263	12,493
03_No/High	20_LoINTCONCosts	01_No LRTP	02_Mid20	14,150	13,204	13,034	12,313	11,772
03_No/High	21_ITC&PTC Extend	01_No LRTP	02_Mid20	14,391	13,433	13,222	12,387	12,056
03_No/High	22_WindCostLow	01_No LRTP	02_Mid20	14,470	13,454	13,055	12,519	11,963
03_No/High	23_WindCostHi	01_No LRTP	02_Mid20	14,461	13,408	13,259	12,551	12,088
03_No/High	24_SolCostLow	01_No LRTP	02_Mid20	14,273	13,300	13,107	12,521	12,006
03_No/High	25_SolCostHigh	01_No LRTP	02_Mid20	14,453	13,514	13,326	12,621	11,997
03_No/High	26_StorCostLow	01_No LRTP	02_Mid20	14,450	13,458	13,287	12,389	11,932
03_No/High	27_StorCostHigh	01_No LRTP	02_Mid20	14,461	13,463	13,274	12,401	11,951
03_No/High	28_AFR 2020 Low	01_No LRTP	02_Mid20	13,776	13,099	12,910	12,171	11,595
03_No/High	31_ResTOU	01_No LRTP	02_Mid20	14,450	13,466	13,274	12,568	12,088
03_No/High	32_High DG&EV	01_No LRTP	02_Mid20	14,459	13,472	13,275	12,580	11,964
03_No/High	33_RenewELCC-2.5%	01_No LRTP	02_Mid20	14,464	13,480	13,287	12,404	12,083
03_No/High	34_RenewELCC+2.5%	01_No LRTP	02_Mid20	14,468	13,474	13,284	12,591	11,935
03_No/High	35_PRM-2%	01_No LRTP	02_Mid20	14,464	13,462	13,286	12,609	11,947
03_No/High	36_PRM+2%	01_No LRTP	02_Mid20	14,470	13,490	13,076	12,556	11,966
04_Low/Low	00_Base	01_No LRTP	02_Mid20	9,902	9,779	9,729	9,490	9,543
04_Low/Low	01_Coal+20%	01_No LRTP	02_Mid20	9,703	9,591	9,507	9,400	9,409
04_Low/Low	02_Coal-10%	01_No LRTP	02_Mid20	10,035	9,810	9,756	9,569	9,571
04_Low/Low	05_Lower Gas-50%	01_No LRTP	02_Mid20	9,883	9,528	9,367	9,221	9,214
04_Low/Low	06_Low Gas-25%	01_No LRTP	02_Mid20	9,931	9,742	9,692	9,801	9,481
04_Low/Low	07_High Gas+25%	01_No LRTP	02_Mid20	10,110	9,962	9,921	9,678	9,739
04_Low/Low	08_Higher Gas+50%	01_No LRTP	02_Mid20	10,271	10,056	10,020	9,823	9,846
04_Low/Low	09_Highest Gas+100%	01_No LRTP	02_Mid20	9,994	9,796	9,759	9,542	9,602
04_Low/Low	10_WHSL Mkt-50%	01_No LRTP	02_Mid20	8,235	8,291	8,275	8,139	8,229
04_Low/Low	11_WHSL Mkt-25%	01_No LRTP	02_Mid20	9,485	9,328	9,278	9,073	9,177
04_Low/Low	12_WHSL Mkt+25%	01_No LRTP	02_Mid20	10,373	10,230	10,156	9,898	9,871
04_Low/Low	13_WHSL Mkt+50%	01_No LRTP	02_Mid20	10,327	10,182	10,099	9,953	9,830
04_Low/Low	14_CapCosts-30%	01_No LRTP	02_Mid20	9,903	9,675	9,789	9,486	9,675
04_Low/Low	15_CapCosts+30%	01_No LRTP	02_Mid20	9,899	9,733	9,660	9,491	9,358
04_Low/Low	17_NoMktSales	01_No LRTP	02_Mid20	9,786	9,708	9,654	9,423	9,485
04_Low/Low	18_NoSalePurchase	01_No LRTP	02_Mid20	11,467	11,422	11,163	11,079	10,707
04_Low/Low	19_MktAccess-50%	01_No LRTP	02_Mid20	10,378	10,145	10,104	9,929	9,842
04_Low/Low	20_LoINTCONCosts	01_No LRTP	02_Mid20	9,782	9,676	9,618	9,452	9,450
04_Low/Low	21_ITC&PTC Extend	01_No LRTP	02_Mid20	9,860	9,755	9,694	9,479	9,527
04_Low/Low	22_WindCostLow	01_No LRTP	02_Mid20	9,892	9,767	9,651	9,452	9,487
04_Low/Low	23_WindCostHi	01_No LRTP	02_Mid20	9,900	9,787	9,732	9,498	9,540
04_Low/Low	24_SolCostLow	01_No LRTP	02_Mid20	9,901	9,735	9,669	9,493	9,507
04_Low/Low	25_SolCostHigh	01_No LRTP	02_Mid20	9,916	9,798	9,735	9,508	9,496
04_Low/Low	26_StorCostLow	01_No LRTP	02_Mid20	9,898	9,773	9,722	9,497	9,541

04_Low/Low	27_StorCostHigh	01_No LRTP	02_Mid20	9,901	9,783	9,724	9,493	9,544
04_Low/Low	28_AFR 2020 Low	01_No LRTP	02_Mid20	9,582	9,397	9,357	9,147	9,196
04_Low/Low	31_ResTOU	01_No LRTP	02_Mid20	9,896	9,775	9,720	9,474	9,488
04_Low/Low	32_High DG&EV	01_No LRTP	02_Mid20	9,902	9,774	9,724	9,493	9,489
04_Low/Low	33_RenewELCC-2.5%	01_No LRTP	02_Mid20	9,906	9,778	9,726	9,506	9,542
04_Low/Low	34_RenewELCC+2.5%	01_No LRTP	02_Mid20	9,896	9,778	9,726	9,468	9,492
04_Low/Low	35_PRM-2%	01_No LRTP	02_Mid20	9,903	9,784	9,724	9,479	9,486
04_Low/Low	36_PRM+2%	01_No LRTP	02_Mid20	9,904	9,785	9,728	9,501	9,543
05_Mid/Mid	00_Base	01_No LRTP	02_Mid20	10,194	10,100	10,010	9,893	9,946
05_Mid/Mid	01_Coal+20%	01_No LRTP	02_Mid20	9,972	9,878	9,794	9,745	9,837
05_Mid/Mid	02_Coal-10%	01_No LRTP	02_Mid20	10,290	10,194	10,115	9,944	10,004
05_Mid/Mid	05_Lower Gas-50%	01_No LRTP	02_Mid20	10,109	9,849	9,777	9,736	9,723
05_Mid/Mid	06_Low Gas-25%	01_No LRTP	02_Mid20	10,266	10,057	9,946	9,940	9,964
05_Mid/Mid	07_High Gas+25%	01_No LRTP	02_Mid20	10,390	10,311	10,282	10,057	10,205
05_Mid/Mid	08_Higher Gas+50%	01_No LRTP	02_Mid20	10,579	10,490	10,452	10,228	10,322
05_Mid/Mid	09_Highest Gas+100%	01_No LRTP	02_Mid20	10,326	10,268	10,231	9,993	10,096
05_Mid/Mid	10_WHSL Mkt-50%	01_No LRTP	02_Mid20	8,448	8,435	8,390	8,283	8,464
05_Mid/Mid	11_WHSL Mkt-25%	01_No LRTP	02_Mid20	9,477	9,445	9,396	9,298	9,471
05_Mid/Mid	12_WHSL Mkt+25%	01_No LRTP	02_Mid20	10,831	10,705	10,589	10,470	10,440
05_Mid/Mid	13_WHSL Mkt+50%	01_No LRTP	02_Mid20	10,843	10,733	10,623	10,362	10,392
05_Mid/Mid	14_CapCosts-30%	01_No LRTP	02_Mid20	10,183	10,085	10,080	9,869	10,124
05_Mid/Mid	15_CapCosts+30%	01_No LRTP	02_Mid20	10,182	10,052	9,952	9,872	9,756
05_Mid/Mid	17_NoMktSales	01_No LRTP	02_Mid20	10,077	9,944	9,872	9,777	9,836
05_Mid/Mid	18_NoSalePurchase	01_No LRTP	02_Mid20	12,001	11,821	11,649	11,171	11,362
05_Mid/Mid	19_MktAccess-50%	01_No LRTP	02_Mid20	10,752	10,701	10,630	10,441	10,366
05_Mid/Mid	20_LoINTCONCosts	01_No LRTP	02_Mid20	10,084	10,042	9,937	9,794	9,895
05_Mid/Mid	21_ITC&PTC Extend	01_No LRTP	02_Mid20	10,169	10,090	9,997	9,881	9,936
05_Mid/Mid	22_WindCostLow	01_No LRTP	02_Mid20	10,127	10,058	9,968	9,797	9,931
05_Mid/Mid	23_WindCostHi	01_No LRTP	02_Mid20	10,196	10,116	10,020	9,928	9,951
05_Mid/Mid	24_SolCostLow	01_No LRTP	02_Mid20	10,152	10,077	9,985	9,823	9,914
05_Mid/Mid	25_SolCostHigh	01_No LRTP	02_Mid20	10,206	10,123	10,043	9,917	9,956
05_Mid/Mid	26_StorCostLow	01_No LRTP	02_Mid20	10,192	10,103	10,012	9,896	9,943
05_Mid/Mid	27_StorCostHigh	01_No LRTP	02_Mid20	10,186	10,109	10,011	9,892	9,946
05_Mid/Mid	28_AFR 2020 Low	01_No LRTP	02_Mid20	9,749	9,688	9,603	9,481	9,574
05_Mid/Mid	31_ResTOU	01_No LRTP	02_Mid20	10,179	10,088	10,008	9,864	9,938
05_Mid/Mid	32_High DG&EV	01_No LRTP	02_Mid20	10,204	10,105	10,022	9,887	9,949
05_Mid/Mid	33_RenewELCC-2.5%	01_No LRTP	02_Mid20	10,191	10,103	10,022	9,865	9,942
05_Mid/Mid	34_RenewELCC+2.5%	01_No LRTP	02_Mid20	10,188	10,112	10,019	9,843	9,943
05_Mid/Mid	35_PRM-2%	01_No LRTP	02_Mid20	10,192	10,100	10,017	9,912	9,943
05_Mid/Mid	36_PRM+2%	01_No LRTP	02_Mid20	10,186	10,104	10,026	9,899	9,940
06_High/High	00_Base	01_No LRTP	02_Mid20	10,476	10,386	10,292	10,211	10,402
06_High/High	01_Coal+20%	01_No LRTP	02_Mid20	10,215	10,141	10,064	10,054	10,243
06_High/High	02_Coal-10%	01_No LRTP	02_Mid20	10,573	10,508	10,404	10,311	10,468
06_High/High	05_Lower Gas-50%	01_No LRTP	02_Mid20	10,382	10,232	10,091	10,104	10,178
06_High/High	06_Low Gas-25%	01_No LRTP	02_Mid20	10,527	10,384	10,280	10,323	10,390

06_High/High	07_High Gas+25%	01_No LRTP	02_Mid20	10,672	10,584	10,582	10,433	10,643
06_High/High	08_Higher Gas+50%	01_No LRTP	02_Mid20	10,790	10,752	10,756	10,574	10,826
06_High/High	09_Highest Gas+100%	01_No LRTP	02_Mid20	10,618	10,535	10,563	10,336	10,464
06_High/High	10_WHSL Mkt-50%	01_No LRTP	02_Mid20	8,701	8,640	8,581	8,540	8,752
06_High/High	11_WHSL Mkt-25%	01_No LRTP	02_Mid20	9,745	9,663	9,601	9,536	9,758
06_High/High	12_WHSL Mkt+25%	01_No LRTP	02_Mid20	11,168	11,063	10,963	10,883	10,937
06_High/High	13_WHSL Mkt+50%	01_No LRTP	02_Mid20	11,314	11,163	11,070	10,864	10,936
06_High/High	14_CapCosts-30%	01_No LRTP	02_Mid20	10,461	10,383	10,330	10,220	10,566
06_High/High	15_CapCosts+30%	01_No LRTP	02_Mid20	10,471	10,347	10,233	10,178	10,207
06_High/High	17_NoMktSales	01_No LRTP	02_Mid20	10,263	10,265	10,182	10,111	10,256
06_High/High	18_NoSalePurchase	01_No LRTP	02_Mid20	12,460	12,256	12,191	11,717	11,964
06_High/High	19_MktAccess-50%	01_No LRTP	02_Mid20	11,219	11,113	11,028	10,936	10,902
06_High/High	20_LoINTCONCosts	01_No LRTP	02_Mid20	10,377	10,279	10,222	10,135	10,334
06_High/High	21_ITC&PTC Extend	01_No LRTP	02_Mid20	10,455	10,374	10,265	10,185	10,367
06_High/High	22_WindCostLow	01_No LRTP	02_Mid20	10,375	10,322	10,232	10,176	10,344
06_High/High	23_WindCostHi	01_No LRTP	02_Mid20	10,458	10,415	10,310	10,232	10,402
06_High/High	24_SolCostLow	01_No LRTP	02_Mid20	10,418	10,327	10,261	10,235	10,353
06_High/High	25_SolCostHigh	01_No LRTP	02_Mid20	10,431	10,398	10,269	10,270	10,406
06_High/High	26_StorCostLow	01_No LRTP	02_Mid20	10,458	10,389	10,299	10,218	10,390
06_High/High	27_StorCostHigh	01_No LRTP	02_Mid20	10,474	10,390	10,297	10,218	10,389
06_High/High	28_AFR 2020 Low	01_No LRTP	02_Mid20	9,978	9,926	9,839	9,775	9,977
06_High/High	31_ResTOU	01_No LRTP	02_Mid20	10,461	10,391	10,294	10,229	10,379
06_High/High	32_High DG&EV	01_No LRTP	02_Mid20	10,472	10,386	10,295	10,229	10,390
06_High/High	33_RenewELCC-2.5%	01_No LRTP	02_Mid20	10,478	10,393	10,305	10,253	10,397
06_High/High	34_RenewELCC+2.5%	01_No LRTP	02_Mid20	10,476	10,389	10,288	10,204	10,387
06_High/High	35_PRM-2%	01_No LRTP	02_Mid20	10,471	10,393	10,302	10,230	10,403
06_High/High	36_PRM+2%	01_No LRTP	02_Mid20	10,473	10,390	10,307	10,221	10,398
01_No/No	00_Base	01_No LRTP	03_High50	7,778	7,999	8,009	8,088	8,336
01_No/No	01_Coal+20%	01_No LRTP	03_High50	8,048	8,206	8,225	8,319	8,466
01_No/No	02_Coal-10%	01_No LRTP	03_High50	7,630	7,858	7,915	7,954	8,263
01_No/No	05_Lower Gas-50%	01_No LRTP	03_High50	7,507	7,550	7,519	7,603	7,624
01_No/No	06_Low Gas-25%	01_No LRTP	03_High50	7,710	7,840	7,859	7,943	8,036
01_No/No	07_High Gas+25%	01_No LRTP	03_High50	7,949	8,223	8,243	8,295	8,689
01_No/No	08_Higher Gas+50%	01_No LRTP	03_High50	7,999	8,278	8,331	8,383	8,857
01_No/No	09_Highest Gas+100%	01_No LRTP	03_High50	8,193	8,471	8,575	8,610	9,104
01_No/No	10_WHSL Mkt-50%	01_No LRTP	03_High50	7,526	7,647	7,668	7,715	7,929
01_No/No	11_WHSL Mkt-25%	01_No LRTP	03_High50	7,772	7,945	7,968	8,029	8,292
01_No/No	12_WHSL Mkt+25%	01_No LRTP	03_High50	7,835	8,058	8,094	8,174	8,400
01_No/No	13_WHSL Mkt+50%	01_No LRTP	03_High50	7,827	8,058	8,091	8,157	8,395
01_No/No	14_CapCosts-30%	01_No LRTP	03_High50	7,774	7,936	7,959	8,003	8,165
01_No/No	15_CapCosts+30%	01_No LRTP	03_High50	7,774	7,999	8,088	8,119	8,509
01_No/No	17_NoMktSales	01_No LRTP	03_High50	7,894	8,100	8,114	8,168	8,423
01_No/No	18_NoSalePurchase	01_No LRTP	03_High50	8,980	9,088	9,159	9,135	9,307
01_No/No	19_MktAccess-50%	01_No LRTP	03_High50	7,981	8,207	8,232	8,286	8,531
01_No/No	20_LoINTCONCosts	01_No LRTP	03_High50	7,761	7,985	8,007	8,062	8,327

01_No/No	21_ITC&PTC Extend	01_No LRTP	03_High50	7,778	8,000	8,035	8,075	8,342
01_No/No	22_WindCostLow	01_No LRTP	03_High50	7,775	7,983	8,049	8,103	8,345
01_No/No	23_WindCostHi	01_No LRTP	03_High50	7,787	7,985	8,036	8,075	8,342
01_No/No	24_SolCostLow	01_No LRTP	03_High50	7,790	7,974	8,031	8,054	8,333
01_No/No	25_SolCostHigh	01_No LRTP	03_High50	7,777	7,971	8,003	8,122	8,321
01_No/No	26_StorCostLow	01_No LRTP	03_High50	7,774	7,999	8,011	8,090	8,333
01_No/No	27_StorCostHigh	01_No LRTP	03_High50	7,771	7,999	8,016	8,090	8,339
01_No/No	28_AFR 2020 Low	01_No LRTP	03_High50	7,260	7,384	7,418	7,514	7,733
01_No/No	31_ResTOU	01_No LRTP	03_High50	7,449	7,626	7,669	7,730	7,962
01_No/No	32_High DG&EV	01_No LRTP	03_High50	7,452	7,647	7,694	7,734	7,968
01_No/No	33_RenewELCC-2.5%	01_No LRTP	03_High50	7,780	8,001	8,012	8,086	8,333
01_No/No	34_RenewELCC+2.5%	01_No LRTP	03_High50	7,772	7,982	8,011	8,082	8,333
01_No/No	35_PRM-2%	01_No LRTP	03_High50	7,748	7,991	8,010	8,064	8,340
01_No/No	36_PRM+2%	01_No LRTP	03_High50	7,789	8,001	8,025	8,096	8,351
02_No/Low	00_Base	01_No LRTP	03_High50	11,405	10,978	11,010	10,949	10,577
02_No/Low	01_Coal+20%	01_No LRTP	03_High50	10,981	10,784	10,691	10,679	10,375
02_No/Low	02_Coal-10%	01_No LRTP	03_High50	11,583	11,151	10,961	11,072	10,619
02_No/Low	05_Lower Gas-50%	01_No LRTP	03_High50	11,036	10,591	10,418	10,389	10,105
02_No/Low	06_Low Gas-25%	01_No LRTP	03_High50	11,290	10,983	10,902	10,740	10,498
02_No/Low	07_High Gas+25%	01_No LRTP	03_High50	11,682	11,132	11,121	11,141	10,714
02_No/Low	08_Higher Gas+50%	01_No LRTP	03_High50	11,861	11,410	11,297	11,326	10,779
02_No/Low	09_Highest Gas+100%	01_No LRTP	03_High50	11,449	10,964	10,918	10,968	10,465
02_No/Low	10_WHSL Mkt-50%	01_No LRTP	03_High50	9,374	9,308	9,308	9,262	8,991
02_No/Low	11_WHSL Mkt-25%	01_No LRTP	03_High50	10,899	10,518	10,458	10,412	10,103
02_No/Low	12_WHSL Mkt+25%	01_No LRTP	03_High50	11,884	11,551	11,453	11,512	11,011
02_No/Low	13_WHSL Mkt+50%	01_No LRTP	03_High50	11,810	11,508	11,422	11,440	10,831
02_No/Low	14_CapCosts-30%	01_No LRTP	03_High50	11,410	10,979	11,061	11,033	10,536
02_No/Low	15_CapCosts+30%	01_No LRTP	03_High50	11,407	11,016	10,843	10,958	10,318
02_No/Low	17_NoMktSales	01_No LRTP	03_High50	11,220	10,830	10,793	10,770	10,426
02_No/Low	18_NoSalePurchase	01_No LRTP	03_High50	12,904	12,415	12,330	12,166	11,641
02_No/Low	19_MktAccess-50%	01_No LRTP	03_High50	11,700	11,405	11,229	11,309	10,876
02_No/Low	20_LoINTCONCosts	01_No LRTP	03_High50	11,387	10,841	10,788	10,768	10,403
02_No/Low	21_ITC&PTC Extend	01_No LRTP	03_High50	11,484	10,962	10,883	10,955	10,560
02_No/Low	22_WindCostLow	01_No LRTP	03_High50	11,396	11,076	10,816	10,783	10,505
02_No/Low	23_WindCostHi	01_No LRTP	03_High50	11,496	11,085	10,920	10,991	10,581
02_No/Low	24_SolCostLow	01_No LRTP	03_High50	11,326	11,043	10,837	10,930	10,519
02_No/Low	25_SolCostHigh	01_No LRTP	03_High50	11,405	11,099	11,018	11,086	10,591
02_No/Low	26_StorCostLow	01_No LRTP	03_High50	11,405	10,987	11,006	10,963	10,580
02_No/Low	27_StorCostHigh	01_No LRTP	03_High50	11,405	10,979	11,006	10,957	10,572
02_No/Low	28_AFR 2020 Low	01_No LRTP	03_High50	10,436	10,085	10,055	10,099	9,667
02_No/Low	31_ResTOU	01_No LRTP	03_High50	10,882	10,458	10,335	10,482	9,966
02_No/Low	32_High DG&EV	01_No LRTP	03_High50	10,887	10,361	10,422	10,491	9,973
02_No/Low	33_RenewELCC-2.5%	01_No LRTP	03_High50	11,402	10,979	11,008	10,957	10,577
02_No/Low	34_RenewELCC+2.5%	01_No LRTP	03_High50	11,402	11,091	11,012	10,963	10,574
02_No/Low	35_PRM-2%	01_No LRTP	03_High50	11,553	11,074	11,022	10,997	10,523

02_No/Low	36_PRM+2%	01_No LRTP	03_High50	11,500	10,973	10,987	10,869	10,495
03_No/High	00_Base	01_No LRTP	03_High50	15,108	14,094	14,174	13,917	12,958
03_No/High	01_Coal+20%	01_No LRTP	03_High50	14,037	13,522	13,326	13,130	12,443
03_No/High	02_Coal-10%	01_No LRTP	03_High50	15,615	14,570	14,161	14,284	13,107
03_No/High	05_Lower Gas-50%	01_No LRTP	03_High50	14,596	13,768	13,472	13,172	12,651
03_No/High	06_Low Gas-25%	01_No LRTP	03_High50	14,839	14,184	14,045	13,471	13,002
03_No/High	07_High Gas+25%	01_No LRTP	03_High50	15,462	14,158	14,147	14,077	12,864
03_No/High	08_Higher Gas+50%	01_No LRTP	03_High50	15,664	14,546	14,294	14,234	12,733
03_No/High	09_Highest Gas+100%	01_No LRTP	03_High50	15,083	13,905	13,705	13,745	12,280
03_No/High	10_WHSL Mkt-50%	01_No LRTP	03_High50	11,247	11,016	10,996	10,839	10,152
03_No/High	11_WHSL Mkt-25%	01_No LRTP	03_High50	14,001	13,127	13,010	12,818	11,926
03_No/High	12_WHSL Mkt+25%	01_No LRTP	03_High50	15,927	15,135	14,940	14,842	13,717
03_No/High	13_WHSL Mkt+50%	01_No LRTP	03_High50	16,044	15,312	15,123	14,960	13,602
03_No/High	14_CapCosts-30%	01_No LRTP	03_High50	15,101	14,079	14,180	14,047	12,665
03_No/High	15_CapCosts+30%	01_No LRTP	03_High50	15,115	14,233	13,870	13,962	12,605
03_No/High	17_NoMktSales	01_No LRTP	03_High50	14,593	13,665	13,604	13,461	12,512
03_No/High	18_NoSalePurchase	01_No LRTP	03_High50	16,828	15,885	15,780	15,276	14,046
03_No/High	19_MktAccess-50%	01_No LRTP	03_High50	15,461	14,744	14,365	14,469	13,349
03_No/High	20_LoINTCONCosts	01_No LRTP	03_High50	15,078	13,833	13,705	13,576	12,618
03_No/High	21_ITC&PTC Extend	01_No LRTP	03_High50	15,274	14,052	13,893	13,948	12,898
03_No/High	22_WindCostLow	01_No LRTP	03_High50	15,090	14,331	13,728	13,579	12,797
03_No/High	23_WindCostHi	01_No LRTP	03_High50	15,262	14,339	13,962	14,020	12,931
03_No/High	24_SolCostLow	01_No LRTP	03_High50	14,927	14,236	13,778	13,910	12,828
03_No/High	25_SolCostHigh	01_No LRTP	03_High50	15,107	14,368	14,200	14,093	13,000
03_No/High	26_StorCostLow	01_No LRTP	03_High50	15,094	14,076	14,175	13,926	12,952
03_No/High	27_StorCostHigh	01_No LRTP	03_High50	15,108	14,084	14,165	13,933	12,930
03_No/High	28_AFR 2020 Low	01_No LRTP	03_High50	13,666	12,909	12,809	12,773	11,698
03_No/High	31_ResTOU	01_No LRTP	03_High50	14,374	13,413	13,119	13,352	12,074
03_No/High	32_High DG&EV	01_No LRTP	03_High50	14,376	13,188	13,298	13,352	12,079
03_No/High	33_RenewELCC-2.5%	01_No LRTP	03_High50	15,108	14,079	14,169	13,935	12,962
03_No/High	34_RenewELCC+2.5%	01_No LRTP	03_High50	15,108	14,352	14,170	13,955	12,963
03_No/High	35_PRM-2%	01_No LRTP	03_High50	15,417	14,277	14,198	14,049	12,825
03_No/High	36_PRM+2%	01_No LRTP	03_High50	15,269	14,090	14,103	13,758	12,772
04_Low/Low	00_Base	01_No LRTP	03_High50	10,502	10,323	10,350	10,308	10,119
04_Low/Low	01_Coal+20%	01_No LRTP	03_High50	10,220	10,165	10,102	10,145	10,027
04_Low/Low	02_Coal-10%	01_No LRTP	03_High50	10,602	10,445	10,397	10,332	10,163
04_Low/Low	05_Lower Gas-50%	01_No LRTP	03_High50	10,260	9,946	9,863	9,910	9,693
04_Low/Low	06_Low Gas-25%	01_No LRTP	03_High50	10,527	10,331	10,153	10,245	10,066
04_Low/Low	07_High Gas+25%	01_No LRTP	03_High50	10,837	10,537	10,554	10,561	10,416
04_Low/Low	08_Higher Gas+50%	01_No LRTP	03_High50	11,055	10,750	10,756	10,789	10,550
04_Low/Low	09_Highest Gas+100%	01_No LRTP	03_High50	10,796	10,511	10,509	10,528	10,292
04_Low/Low	10_WHSL Mkt-50%	01_No LRTP	03_High50	8,812	8,871	8,850	8,875	8,796
04_Low/Low	11_WHSL Mkt-25%	01_No LRTP	03_High50	10,005	9,933	9,897	9,846	9,796
04_Low/Low	12_WHSL Mkt+25%	01_No LRTP	03_High50	10,985	10,866	10,716	10,809	10,499
04_Low/Low	13_WHSL Mkt+50%	01_No LRTP	03_High50	10,942	10,821	10,747	10,727	10,408

04_Low/Low	14_CapCosts-30%	01_No LRTP	03_High50	10,507	10,300	10,268	10,351	10,206
04_Low/Low	15_CapCosts+30%	01_No LRTP	03_High50	10,505	10,353	10,284	10,253	9,931
04_Low/Low	17_NoMktSales	01_No LRTP	03_High50	10,300	10,309	10,128	10,156	10,101
04_Low/Low	18_NoSalePurchase	01_No LRTP	03_High50	11,795	11,713	11,639	11,542	11,322
04_Low/Low	19_MktAccess-50%	01_No LRTP	03_High50	10,967	10,753	10,742	10,715	10,486
04_Low/Low	20_LoINTCONCosts	01_No LRTP	03_High50	10,399	10,276	10,234	10,263	10,077
04_Low/Low	21_ITC&PTC Extend	01_No LRTP	03_High50	10,385	10,371	10,313	10,281	10,106
04_Low/Low	22_WindCostLow	01_No LRTP	03_High50	10,435	10,308	10,268	10,271	10,103
04_Low/Low	23_WindCostHi	01_No LRTP	03_High50	10,602	10,388	10,348	10,291	10,164
04_Low/Low	24_SolCostLow	01_No LRTP	03_High50	10,524	10,229	10,287	10,259	10,086
04_Low/Low	25_SolCostHigh	01_No LRTP	03_High50	10,525	10,344	10,294	10,318	10,120
04_Low/Low	26_StorCostLow	01_No LRTP	03_High50	10,511	10,323	10,349	10,304	10,116
04_Low/Low	27_StorCostHigh	01_No LRTP	03_High50	10,507	10,324	10,343	10,306	10,123
04_Low/Low	28_AFR 2020 Low	01_No LRTP	03_High50	9,605	9,365	9,364	9,435	9,265
04_Low/Low	31_ResTOU	01_No LRTP	03_High50	10,017	9,749	9,728	9,808	9,600
04_Low/Low	32_High DG&EV	01_No LRTP	03_High50	10,016	9,748	9,740	9,807	9,610
04_Low/Low	33_RenewELCC-2.5%	01_No LRTP	03_High50	10,516	10,399	10,349	10,296	10,115
04_Low/Low	34_RenewELCC+2.5%	01_No LRTP	03_High50	10,506	10,393	10,271	10,305	10,119
04_Low/Low	35_PRM-2%	01_No LRTP	03_High50	10,521	10,392	10,346	10,304	10,112
04_Low/Low	36_PRM+2%	01_No LRTP	03_High50	10,409	10,320	10,338	10,286	10,107
05_Mid/Mid	00_Base	01_No LRTP	03_High50	10,754	10,657	10,615	10,685	10,606
05_Mid/Mid	01_Coal+20%	01_No LRTP	03_High50	10,519	10,455	10,405	10,533	10,502
05_Mid/Mid	02_Coal-10%	01_No LRTP	03_High50	10,861	10,749	10,751	10,779	10,670
05_Mid/Mid	05_Lower Gas-50%	01_No LRTP	03_High50	10,553	10,330	10,256	10,412	10,287
05_Mid/Mid	06_Low Gas-25%	01_No LRTP	03_High50	10,739	10,589	10,504	10,629	10,555
05_Mid/Mid	07_High Gas+25%	01_No LRTP	03_High50	11,016	10,866	10,946	10,967	10,901
05_Mid/Mid	08_Higher Gas+50%	01_No LRTP	03_High50	11,295	11,110	11,192	11,192	10,971
05_Mid/Mid	09_Highest Gas+100%	01_No LRTP	03_High50	11,171	11,018	11,074	11,039	10,815
05_Mid/Mid	10_WHSL Mkt-50%	01_No LRTP	03_High50	8,941	8,965	8,937	9,031	9,082
05_Mid/Mid	11_WHSL Mkt-25%	01_No LRTP	03_High50	10,026	10,004	9,993	10,075	10,025
05_Mid/Mid	12_WHSL Mkt+25%	01_No LRTP	03_High50	11,376	11,308	11,232	11,250	11,104
05_Mid/Mid	13_WHSL Mkt+50%	01_No LRTP	03_High50	11,420	11,334	11,236	11,261	11,056
05_Mid/Mid	14_CapCosts-30%	01_No LRTP	03_High50	10,757	10,636	10,637	10,743	10,757
05_Mid/Mid	15_CapCosts+30%	01_No LRTP	03_High50	10,764	10,637	10,552	10,580	10,424
05_Mid/Mid	17_NoMktSales	01_No LRTP	03_High50	10,556	10,532	10,487	10,572	10,496
05_Mid/Mid	18_NoSalePurchase	01_No LRTP	03_High50	12,385	12,273	12,205	12,072	11,986
05_Mid/Mid	19_MktAccess-50%	01_No LRTP	03_High50	11,333	11,217	11,168	11,107	11,035
05_Mid/Mid	20_LoINTCONCosts	01_No LRTP	03_High50	10,639	10,598	10,542	10,612	10,564
05_Mid/Mid	21_ITC&PTC Extend	01_No LRTP	03_High50	10,737	10,675	10,596	10,674	10,594
05_Mid/Mid	22_WindCostLow	01_No LRTP	03_High50	10,646	10,620	10,563	10,659	10,586
05_Mid/Mid	23_WindCostHi	01_No LRTP	03_High50	10,774	10,695	10,647	10,708	10,612
05_Mid/Mid	24_SolCostLow	01_No LRTP	03_High50	10,723	10,584	10,608	10,661	10,580
05_Mid/Mid	25_SolCostHigh	01_No LRTP	03_High50	10,783	10,691	10,634	10,705	10,631
05_Mid/Mid	26_StorCostLow	01_No LRTP	03_High50	10,767	10,661	10,613	10,695	10,611
05_Mid/Mid	27_StorCostHigh	01_No LRTP	03_High50	10,755	10,672	10,604	10,689	10,612

05_Mid/Mid	28_AFR 2020 Low	01_No LRTP	03_High50	9,643	9,635	9,635	9,682	9,664
05_Mid/Mid	31_ResTOU	01_No LRTP	03_High50	10,067	10,035	10,040	10,077	10,032
05_Mid/Mid	32_High DG&EV	01_No LRTP	03_High50	10,091	10,054	10,052	10,081	10,045
05_Mid/Mid	33_RenewELCC-2.5%	01_No LRTP	03_High50	10,761	10,685	10,608	10,688	10,612
05_Mid/Mid	34_RenewELCC+2.5%	01_No LRTP	03_High50	10,758	10,684	10,624	10,686	10,613
05_Mid/Mid	35_PRM-2%	01_No LRTP	03_High50	10,757	10,685	10,621	10,684	10,615
05_Mid/Mid	36_PRM+2%	01_No LRTP	03_High50	10,709	10,711	10,598	10,672	10,588
06_High/High	00_Base	01_No LRTP	03_High50	11,022	10,984	10,914	11,122	11,113
06_High/High	01_Coal+20%	01_No LRTP	03_High50	10,786	10,777	10,714	10,964	10,943
06_High/High	02_Coal-10%	01_No LRTP	03_High50	11,113	11,117	11,047	11,196	11,178
06_High/High	05_Lower Gas-50%	01_No LRTP	03_High50	10,885	10,770	10,683	10,849	10,817
06_High/High	06_Low Gas-25%	01_No LRTP	03_High50	11,056	10,986	10,908	11,105	11,079
06_High/High	07_High Gas+25%	01_No LRTP	03_High50	11,251	11,288	11,203	11,316	11,323
06_High/High	08_Higher Gas+50%	01_No LRTP	03_High50	11,501	11,505	11,523	11,529	11,434
06_High/High	09_Highest Gas+100%	01_No LRTP	03_High50	11,387	11,384	11,331	11,370	11,236
06_High/High	10_WHSL Mkt-50%	01_No LRTP	03_High50	9,246	9,253	9,231	9,318	9,416
06_High/High	11_WHSL Mkt-25%	01_No LRTP	03_High50	10,328	10,305	10,267	10,380	10,446
06_High/High	12_WHSL Mkt+25%	01_No LRTP	03_High50	11,757	11,700	11,648	11,673	11,635
06_High/High	13_WHSL Mkt+50%	01_No LRTP	03_High50	11,879	11,772	11,702	11,714	11,624
06_High/High	14_CapCosts-30%	01_No LRTP	03_High50	11,018	11,046	11,010	11,086	11,231
06_High/High	15_CapCosts+30%	01_No LRTP	03_High50	11,018	10,946	10,857	11,006	10,925
06_High/High	17_NoMktSales	01_No LRTP	03_High50	10,864	10,860	10,809	10,989	10,975
06_High/High	18_NoSalePurchase	01_No LRTP	03_High50	13,036	12,949	12,796	12,762	12,634
06_High/High	19_MktAccess-50%	01_No LRTP	03_High50	11,700	11,627	11,586	11,658	11,595
06_High/High	20_LoINTCONCosts	01_No LRTP	03_High50	10,921	10,952	10,842	10,953	11,034
06_High/High	21_ITC&PTC Extend	01_No LRTP	03_High50	10,993	10,973	10,912	11,091	11,087
06_High/High	22_WindCostLow	01_No LRTP	03_High50	10,974	10,956	10,886	11,080	11,059
06_High/High	23_WindCostHi	01_No LRTP	03_High50	11,074	11,041	10,977	11,143	11,117
06_High/High	24_SolCostLow	01_No LRTP	03_High50	11,021	10,995	10,912	11,085	11,061
06_High/High	25_SolCostHigh	01_No LRTP	03_High50	10,967	10,964	10,911	11,074	11,083
06_High/High	26_StorCostLow	01_No LRTP	03_High50	11,016	10,978	10,920	11,122	11,101
06_High/High	27_StorCostHigh	01_No LRTP	03_High50	11,015	10,990	10,924	11,121	11,110
06_High/High	28_AFR 2020 Low	01_No LRTP	03_High50	9,888	9,920	9,918	9,969	10,071
06_High/High	31_ResTOU	01_No LRTP	03_High50	10,343	10,356	10,299	10,398	10,477
06_High/High	32_High DG&EV	01_No LRTP	03_High50	10,355	10,358	10,297	10,382	10,488
06_High/High	33_RenewELCC-2.5%	01_No LRTP	03_High50	11,025	10,997	10,936	11,126	11,108
06_High/High	34_RenewELCC+2.5%	01_No LRTP	03_High50	11,017	11,028	10,911	11,122	11,096
06_High/High	35_PRM-2%	01_No LRTP	03_High50	11,006	11,027	10,920	11,124	11,105
06_High/High	36_PRM+2%	01_No LRTP	03_High50	10,974	10,966	10,881	11,090	11,073
01_No/No	00_Base	01_No LRTP	04_High20	7,676	7,893	7,967	8,019	8,287
01_No/No	01_Coal+20%	01_No LRTP	04_High20	7,948	8,108	8,163	8,189	8,395
01_No/No	02_Coal-10%	01_No LRTP	04_High20	7,510	7,769	7,837	7,897	8,195
01_No/No	05_Lower Gas-50%	01_No LRTP	04_High20	7,507	7,536	7,507	7,578	7,591
01_No/No	06_Low Gas-25%	01_No LRTP	04_High20	7,660	7,826	7,815	7,866	7,984
01_No/No	07_High Gas+25%	01_No LRTP	04_High20	7,798	8,065	8,145	8,176	8,566

01_No/No	08_Higher Gas+50%	01_No LRTP	04_High20	7,856	8,123	8,214	8,246	8,733
01_No/No	09_Highest Gas+100%	01_No LRTP	04_High20	8,021	8,315	8,420	8,437	8,998
01_No/No	10_WHSL Mkt-50%	01_No LRTP	04_High20	7,385	7,514	7,554	7,625	7,839
01_No/No	11_WHSL Mkt-25%	01_No LRTP	04_High20	7,660	7,853	7,860	7,989	8,176
01_No/No	12_WHSL Mkt+25%	01_No LRTP	04_High20	7,768	8,006	8,066	8,088	8,358
01_No/No	13_WHSL Mkt+50%	01_No LRTP	04_High20	7,766	8,010	8,088	8,071	8,366
01_No/No	14_CapCosts-30%	01_No LRTP	04_High20	7,675	7,838	7,906	7,887	8,073
01_No/No	15_CapCosts+30%	01_No LRTP	04_High20	7,677	7,949	8,021	8,059	8,439
01_No/No	17_NoMktSales	01_No LRTP	04_High20	7,794	8,000	8,025	8,126	8,353
01_No/No	18_NoSalePurchase	01_No LRTP	04_High20	9,153	9,381	9,432	9,300	9,526
01_No/No	19_MktAccess-50%	01_No LRTP	04_High20	7,978	8,232	8,223	8,286	8,543
01_No/No	20_LoINTCONCosts	01_No LRTP	04_High20	7,635	7,849	7,920	7,965	8,238
01_No/No	21_ITC&PTC Extend	01_No LRTP	04_High20	7,677	7,887	7,966	8,015	8,254
01_No/No	22_WindCostLow	01_No LRTP	04_High20	7,668	7,885	7,949	8,010	8,276
01_No/No	23_WindCostHi	01_No LRTP	04_High20	7,686	7,905	7,967	8,029	8,267
01_No/No	24_SolCostLow	01_No LRTP	04_High20	7,683	7,891	7,950	8,030	8,251
01_No/No	25_SolCostHigh	01_No LRTP	04_High20	7,680	7,896	7,939	8,007	8,247
01_No/No	26_StorCostLow	01_No LRTP	04_High20	7,672	7,890	7,978	8,026	8,280
01_No/No	27_StorCostHigh	01_No LRTP	04_High20	7,681	7,903	7,971	8,021	8,258
01_No/No	28_AFR 2020 Low	01_No LRTP	04_High20	7,076	7,283	7,310	7,388	7,645
01_No/No	31_ResTOU	01_No LRTP	04_High20	7,275	7,508	7,544	7,640	7,860
01_No/No	32_High DG&EV	01_No LRTP	04_High20	7,282	7,510	7,546	7,640	7,878
01_No/No	33_RenewELCC-2.5%	01_No LRTP	04_High20	7,703	7,937	7,955	8,038	8,282
01_No/No	34_RenewELCC+2.5%	01_No LRTP	04_High20	7,657	7,898	7,950	7,983	8,259
01_No/No	35_PRM-2%	01_No LRTP	04_High20	7,658	7,867	7,958	7,989	8,258
01_No/No	36_PRM+2%	01_No LRTP	04_High20	7,710	7,931	7,959	8,044	8,284
02_No/Low	00_Base	01_No LRTP	04_High20	11,075	10,810	10,743	10,809	10,370
02_No/Low	01_Coal+20%	01_No LRTP	04_High20	10,915	10,691	10,544	10,595	10,259
02_No/Low	02_Coal-10%	01_No LRTP	04_High20	11,388	10,898	10,846	10,908	10,445
02_No/Low	05_Lower Gas-50%	01_No LRTP	04_High20	10,948	10,622	10,426	10,406	10,061
02_No/Low	06_Low Gas-25%	01_No LRTP	04_High20	11,163	10,808	10,788	10,838	10,425
02_No/Low	07_High Gas+25%	01_No LRTP	04_High20	11,340	10,951	10,904	10,893	10,520
02_No/Low	08_Higher Gas+50%	01_No LRTP	04_High20	11,474	11,088	10,984	11,037	10,681
02_No/Low	09_Highest Gas+100%	01_No LRTP	04_High20	11,183	10,804	10,675	10,751	10,321
02_No/Low	10_WHSL Mkt-50%	01_No LRTP	04_High20	9,375	9,321	9,218	9,295	8,927
02_No/Low	11_WHSL Mkt-25%	01_No LRTP	04_High20	10,740	10,334	10,383	10,267	10,014
02_No/Low	12_WHSL Mkt+25%	01_No LRTP	04_High20	11,620	11,346	11,196	11,284	10,716
02_No/Low	13_WHSL Mkt+50%	01_No LRTP	04_High20	11,601	11,342	11,180	11,262	10,721
02_No/Low	14_CapCosts-30%	01_No LRTP	04_High20	11,075	10,840	10,909	10,788	10,618
02_No/Low	15_CapCosts+30%	01_No LRTP	04_High20	11,078	10,760	10,633	10,699	10,249
02_No/Low	17_NoMktSales	01_No LRTP	04_High20	11,063	10,646	10,759	10,764	10,292
02_No/Low	18_NoSalePurchase	01_No LRTP	04_High20	12,792	12,676	12,425	12,336	11,850
02_No/Low	19_MktAccess-50%	01_No LRTP	04_High20	11,594	11,254	11,357	11,148	10,814
02_No/Low	20_LoINTCONCosts	01_No LRTP	04_High20	11,048	10,767	10,721	10,783	10,327
02_No/Low	21_ITC&PTC Extend	01_No LRTP	04_High20	11,123	10,845	10,662	10,862	10,343

02_No/Low	22_WindCostLow	01_No LRTP	04_High20	11,072	10,800	10,818	10,808	10,305
02_No/Low	23_WindCostHi	01_No LRTP	04_High20	11,162	10,796	10,847	10,832	10,434
02_No/Low	24_SolCostLow	01_No LRTP	04_High20	11,012	10,769	10,772	10,768	10,373
02_No/Low	25_SolCostHigh	01_No LRTP	04_High20	11,071	10,841	10,880	10,824	10,449
02_No/Low	26_StorCostLow	01_No LRTP	04_High20	11,075	10,801	10,748	10,814	10,354
02_No/Low	27_StorCostHigh	01_No LRTP	04_High20	11,071	10,775	10,747	10,809	10,428
02_No/Low	28_AFR 2020 Low	01_No LRTP	04_High20	10,384	10,114	10,027	9,921	9,548
02_No/Low	31_ResTOU	01_No LRTP	04_High20	10,821	10,404	10,320	10,491	9,899
02_No/Low	32_High DG&EV	01_No LRTP	04_High20	10,826	10,409	10,323	10,495	9,850
02_No/Low	33_RenewELCC-2.5%	01_No LRTP	04_High20	11,044	10,774	10,847	10,804	10,368
02_No/Low	34_RenewELCC+2.5%	01_No LRTP	04_High20	11,282	10,807	10,762	10,925	10,364
02_No/Low	35_PRM-2%	01_No LRTP	04_High20	11,181	10,903	10,680	10,916	10,312
02_No/Low	36_PRM+2%	01_No LRTP	04_High20	11,025	10,764	10,828	10,787	10,359
03_No/High	00_Base	01_No LRTP	04_High20	14,573	13,871	13,705	13,667	12,608
03_No/High	01_Coal+20%	01_No LRTP	04_High20	14,021	13,449	13,137	13,121	12,295
03_No/High	02_Coal-10%	01_No LRTP	04_High20	15,350	14,180	14,043	13,964	12,860
03_No/High	05_Lower Gas-50%	01_No LRTP	04_High20	14,305	13,712	13,368	13,126	12,477
03_No/High	06_Low Gas-25%	01_No LRTP	04_High20	14,663	13,860	13,729	13,773	12,942
03_No/High	07_High Gas+25%	01_No LRTP	04_High20	14,949	13,966	13,816	13,708	12,624
03_No/High	08_Higher Gas+50%	01_No LRTP	04_High20	15,022	14,057	13,781	13,800	12,650
03_No/High	09_Highest Gas+100%	01_No LRTP	04_High20	14,711	13,738	13,387	13,482	12,118
03_No/High	10_WHSL Mkt-50%	01_No LRTP	04_High20	11,397	11,195	10,963	11,011	10,146
03_No/High	11_WHSL Mkt-25%	01_No LRTP	04_High20	13,822	12,868	12,996	12,588	11,897
03_No/High	12_WHSL Mkt+25%	01_No LRTP	04_High20	15,509	14,813	14,477	14,494	13,206
03_No/High	13_WHSL Mkt+50%	01_No LRTP	04_High20	15,703	15,059	14,669	14,716	13,424
03_No/High	14_CapCosts-30%	01_No LRTP	04_High20	14,558	13,891	13,990	13,647	12,946
03_No/High	15_CapCosts+30%	01_No LRTP	04_High20	14,586	13,841	13,526	13,588	12,574
03_No/High	17_NoMktSales	01_No LRTP	04_High20	14,407	13,423	13,679	13,441	12,367
03_No/High	18_NoSalePurchase	01_No LRTP	04_High20	16,512	16,106	15,595	15,424	14,271
03_No/High	19_MktAccess-50%	01_No LRTP	04_High20	15,235	14,452	14,749	14,105	13,219
03_No/High	20_LoINTCONCosts	01_No LRTP	04_High20	14,544	13,870	13,707	13,684	12,577
03_No/High	21_ITC&PTC Extend	01_No LRTP	04_High20	14,677	13,970	13,528	13,770	12,569
03_No/High	22_WindCostLow	01_No LRTP	04_High20	14,574	13,892	13,888	13,676	12,490
03_No/High	23_WindCostHi	01_No LRTP	04_High20	14,720	13,857	13,924	13,692	12,760
03_No/High	24_SolCostLow	01_No LRTP	04_High20	14,419	13,806	13,804	13,578	12,658
03_No/High	25_SolCostHigh	01_No LRTP	04_High20	14,550	13,952	13,988	13,708	12,809
03_No/High	26_StorCostLow	01_No LRTP	04_High20	14,562	13,875	13,701	13,659	12,572
03_No/High	27_StorCostHigh	01_No LRTP	04_High20	14,566	13,819	13,710	13,666	12,760
03_No/High	28_AFR 2020 Low	01_No LRTP	04_High20	13,776	13,099	12,910	12,570	11,596
03_No/High	31_ResTOU	01_No LRTP	04_High20	14,450	13,466	13,274	13,402	12,089
03_No/High	32_High DG&EV	01_No LRTP	04_High20	14,460	13,472	13,275	13,407	11,964
03_No/High	33_RenewELCC-2.5%	01_No LRTP	04_High20	14,458	13,769	13,915	13,634	12,620
03_No/High	34_RenewELCC+2.5%	01_No LRTP	04_High20	15,002	13,901	13,759	13,914	12,638
03_No/High	35_PRM-2%	01_No LRTP	04_High20	14,807	14,099	13,596	13,911	12,516
03_No/High	36_PRM+2%	01_No LRTP	04_High20	14,452	13,760	13,880	13,601	12,584

04_Low/Low	00_Base	01_No LRTP	04_High20	10,398	10,292	10,184	10,264	9,994
04_Low/Low	01_Coal+20%	01_No LRTP	04_High20	10,312	10,187	10,056	10,132	9,911
04_Low/Low	02_Coal-10%	01_No LRTP	04_High20	10,443	10,283	10,282	10,328	10,023
04_Low/Low	05_Lower Gas-50%	01_No LRTP	04_High20	10,273	10,018	9,865	9,908	9,739
04_Low/Low	06_Low Gas-25%	01_No LRTP	04_High20	10,457	10,251	10,101	10,205	9,999
04_Low/Low	07_High Gas+25%	01_No LRTP	04_High20	10,620	10,460	10,382	10,437	10,247
04_Low/Low	08_Higher Gas+50%	01_No LRTP	04_High20	10,764	10,620	10,558	10,598	10,456
04_Low/Low	09_Highest Gas+100%	01_No LRTP	04_High20	10,498	10,366	10,288	10,327	10,164
04_Low/Low	10_WHSL Mkt-50%	01_No LRTP	04_High20	8,804	8,835	8,760	8,881	8,699
04_Low/Low	11_WHSL Mkt-25%	01_No LRTP	04_High20	9,858	9,770	9,806	9,757	9,679
04_Low/Low	12_WHSL Mkt+25%	01_No LRTP	04_High20	10,879	10,749	10,614	10,701	10,374
04_Low/Low	13_WHSL Mkt+50%	01_No LRTP	04_High20	10,853	10,739	10,590	10,627	10,293
04_Low/Low	14_CapCosts-30%	01_No LRTP	04_High20	10,403	10,337	10,249	10,315	10,180
04_Low/Low	15_CapCosts+30%	01_No LRTP	04_High20	10,395	10,233	10,114	10,136	9,814
04_Low/Low	17_NoMktSales	01_No LRTP	04_High20	10,226	10,141	10,199	10,119	10,013
04_Low/Low	18_NoSalePurchase	01_No LRTP	04_High20	12,255	12,070	12,025	11,720	11,533
04_Low/Low	19_MktAccess-50%	01_No LRTP	04_High20	10,879	10,764	10,683	10,653	10,416
04_Low/Low	20_LoINTCONCosts	01_No LRTP	04_High20	10,371	10,245	10,138	10,221	9,956
04_Low/Low	21_ITC&PTC Extend	01_No LRTP	04_High20	10,463	10,257	10,182	10,240	10,006
04_Low/Low	22_WindCostLow	01_No LRTP	04_High20	10,402	10,273	10,157	10,253	9,982
04_Low/Low	23_WindCostHi	01_No LRTP	04_High20	10,405	10,287	10,187	10,271	9,994
04_Low/Low	24_SolCostLow	01_No LRTP	04_High20	10,338	10,236	10,183	10,213	10,032
04_Low/Low	25_SolCostHigh	01_No LRTP	04_High20	10,432	10,307	10,205	10,275	10,061
04_Low/Low	26_StorCostLow	01_No LRTP	04_High20	10,398	10,282	10,178	10,264	9,995
04_Low/Low	27_StorCostHigh	01_No LRTP	04_High20	10,399	10,292	10,179	10,263	10,002
04_Low/Low	28_AFR 2020 Low	01_No LRTP	04_High20	9,581	9,397	9,357	9,392	9,196
04_Low/Low	31_ResTOU	01_No LRTP	04_High20	9,897	9,775	9,720	9,768	9,487
04_Low/Low	32_High DG&EV	01_No LRTP	04_High20	9,902	9,774	9,724	9,775	9,489
04_Low/Low	33_RenewELCC-2.5%	01_No LRTP	04_High20	10,393	10,252	10,231	10,247	10,054
04_Low/Low	34_RenewELCC+2.5%	01_No LRTP	04_High20	10,505	10,278	10,170	10,261	9,986
04_Low/Low	35_PRM-2%	01_No LRTP	04_High20	10,503	10,282	10,193	10,259	9,993
04_Low/Low	36_PRM+2%	01_No LRTP	04_High20	10,382	10,248	10,193	10,251	10,050
05_Mid/Mid	00_Base	01_No LRTP	04_High20	10,844	10,733	10,624	10,689	10,490
05_Mid/Mid	01_Coal+20%	01_No LRTP	04_High20	10,695	10,559	10,405	10,544	10,393
05_Mid/Mid	02_Coal-10%	01_No LRTP	04_High20	10,944	10,809	10,699	10,775	10,547
05_Mid/Mid	05_Lower Gas-50%	01_No LRTP	04_High20	10,739	10,444	10,320	10,425	10,313
05_Mid/Mid	06_Low Gas-25%	01_No LRTP	04_High20	10,928	10,700	10,496	10,671	10,466
05_Mid/Mid	07_High Gas+25%	01_No LRTP	04_High20	11,040	10,955	10,885	10,924	10,752
05_Mid/Mid	08_Higher Gas+50%	01_No LRTP	04_High20	11,231	11,155	11,086	11,085	10,941
05_Mid/Mid	09_Highest Gas+100%	01_No LRTP	04_High20	10,987	10,932	10,843	10,850	10,715
05_Mid/Mid	10_WHSL Mkt-50%	01_No LRTP	04_High20	8,964	8,960	8,878	9,038	8,994
05_Mid/Mid	11_WHSL Mkt-25%	01_No LRTP	04_High20	10,116	10,078	9,985	10,067	10,023
05_Mid/Mid	12_WHSL Mkt+25%	01_No LRTP	04_High20	11,476	11,354	11,170	11,240	10,988
05_Mid/Mid	13_WHSL Mkt+50%	01_No LRTP	04_High20	11,513	11,345	11,206	11,225	10,959
05_Mid/Mid	14_CapCosts-30%	01_No LRTP	04_High20	10,839	10,767	10,660	10,822	10,670

05_Mid/Mid	15_CapCosts+30%	01_No LRTP	04_High20	10,833	10,679	10,546	10,578	10,335
05_Mid/Mid	17_NoMktSales	01_No LRTP	04_High20	10,715	10,611	10,471	10,550	10,379
05_Mid/Mid	18_NoSalePurchase	01_No LRTP	04_High20	12,774	12,730	12,541	12,486	12,118
05_Mid/Mid	19_MktAccess-50%	01_No LRTP	04_High20	11,605	11,442	11,319	11,233	11,075
05_Mid/Mid	20_LoINTCONCosts	01_No LRTP	04_High20	10,756	10,617	10,542	10,635	10,433
05_Mid/Mid	21_ITC&PTC Extend	01_No LRTP	04_High20	10,818	10,715	10,606	10,669	10,510
05_Mid/Mid	22_WindCostLow	01_No LRTP	04_High20	10,736	10,670	10,517	10,650	10,455
05_Mid/Mid	23_WindCostHi	01_No LRTP	04_High20	10,891	10,768	10,627	10,702	10,492
05_Mid/Mid	24_SolCostLow	01_No LRTP	04_High20	10,843	10,714	10,607	10,652	10,509
05_Mid/Mid	25_SolCostHigh	01_No LRTP	04_High20	10,865	10,702	10,614	10,683	10,517
05_Mid/Mid	26_StorCostLow	01_No LRTP	04_High20	10,846	10,732	10,616	10,697	10,484
05_Mid/Mid	27_StorCostHigh	01_No LRTP	04_High20	10,841	10,743	10,622	10,698	10,488
05_Mid/Mid	28_AFR 2020 Low	01_No LRTP	04_High20	9,748	9,688	9,603	9,673	9,573
05_Mid/Mid	31_ResTOU	01_No LRTP	04_High20	10,179	10,088	10,008	10,059	9,938
05_Mid/Mid	32_High DG&EV	01_No LRTP	04_High20	10,203	10,105	10,022	10,062	9,949
05_Mid/Mid	33_RenewELCC-2.5%	01_No LRTP	04_High20	10,840	10,729	10,617	10,665	10,500
05_Mid/Mid	34_RenewELCC+2.5%	01_No LRTP	04_High20	10,839	10,737	10,612	10,699	10,507
05_Mid/Mid	35_PRM-2%	01_No LRTP	04_High20	10,838	10,731	10,609	10,694	10,503
05_Mid/Mid	36_PRM+2%	01_No LRTP	04_High20	10,811	10,682	10,608	10,667	10,510
06_High/High	00_Base	01_No LRTP	04_High20	11,116	10,992	10,951	11,051	10,971
06_High/High	01_Coal+20%	01_No LRTP	04_High20	10,932	10,793	10,684	10,895	10,823
06_High/High	02_Coal-10%	01_No LRTP	04_High20	11,210	11,148	11,024	11,141	11,041
06_High/High	05_Lower Gas-50%	01_No LRTP	04_High20	11,112	10,921	10,791	10,882	10,735
06_High/High	06_Low Gas-25%	01_No LRTP	04_High20	11,235	11,051	10,888	11,095	10,962
06_High/High	07_High Gas+25%	01_No LRTP	04_High20	11,301	11,293	11,210	11,268	11,198
06_High/High	08_Higher Gas+50%	01_No LRTP	04_High20	11,474	11,503	11,447	11,472	11,424
06_High/High	09_Highest Gas+100%	01_No LRTP	04_High20	11,312	11,206	11,240	11,247	11,177
06_High/High	10_WHSL Mkt-50%	01_No LRTP	04_High20	9,319	9,258	9,150	9,291	9,295
06_High/High	11_WHSL Mkt-25%	01_No LRTP	04_High20	10,399	10,311	10,190	10,459	10,428
06_High/High	12_WHSL Mkt+25%	01_No LRTP	04_High20	11,905	11,732	11,646	11,669	11,555
06_High/High	13_WHSL Mkt+50%	01_No LRTP	04_High20	12,083	11,886	11,764	11,745	11,564
06_High/High	14_CapCosts-30%	01_No LRTP	04_High20	11,105	11,066	10,967	11,167	11,142
06_High/High	15_CapCosts+30%	01_No LRTP	04_High20	11,113	11,012	10,891	10,938	10,782
06_High/High	17_NoMktSales	01_No LRTP	04_High20	11,071	11,005	10,776	10,980	10,861
06_High/High	18_NoSalePurchase	01_No LRTP	04_High20	13,371	13,279	13,142	12,806	12,658
06_High/High	19_MktAccess-50%	01_No LRTP	04_High20	11,963	11,940	11,691	11,687	11,574
06_High/High	20_LoINTCONCosts	01_No LRTP	04_High20	11,008	10,917	10,861	10,946	10,919
06_High/High	21_ITC&PTC Extend	01_No LRTP	04_High20	11,102	11,056	10,927	11,039	11,006
06_High/High	22_WindCostLow	01_No LRTP	04_High20	11,074	11,007	10,874	11,046	10,946
06_High/High	23_WindCostHi	01_No LRTP	04_High20	11,192	11,043	10,971	11,064	10,978
06_High/High	24_SolCostLow	01_No LRTP	04_High20	11,144	11,047	10,885	11,049	10,975
06_High/High	25_SolCostHigh	01_No LRTP	04_High20	11,112	11,008	10,926	11,049	10,973
06_High/High	26_StorCostLow	01_No LRTP	04_High20	11,103	10,996	10,951	11,058	10,959
06_High/High	27_StorCostHigh	01_No LRTP	04_High20	11,108	11,008	10,963	11,049	10,957
06_High/High	28_AFR 2020 Low	01_No LRTP	04_High20	9,978	9,926	9,839	10,016	9,977

06_High/High	31_ResTOU	01_No LRTP	04_High20	10,461	10,391	10,294	10,441	10,379
06_High/High	32_High DG&EV	01_No LRTP	04_High20	10,468	10,386	10,295	10,443	10,390
06_High/High	33_RenewELCC-2.5%	01_No LRTP	04_High20	11,113	11,068	10,928	11,064	10,948
06_High/High	34_RenewELCC+2.5%	01_No LRTP	04_High20	11,104	11,048	10,915	11,051	11,001
06_High/High	35_PRM-2%	01_No LRTP	04_High20	11,098	11,023	10,921	11,048	11,011
06_High/High	36_PRM+2%	01_No LRTP	04_High20	11,110	11,009	10,938	11,062	10,953
01_No/No	00_Base	02_LRTP	01_Mid50	7,430	7,610	7,657	7,628	7,898
02_No/Low	00_Base	02_LRTP	01_Mid50	10,868	10,432	10,307	10,186	9,671
03_No/High	00_Base	02_LRTP	01_Mid50	14,365	13,369	13,091	12,812	11,610
04_Low/Low	00_Base	02_LRTP	01_Mid50	9,995	9,719	9,697	9,553	9,344
05_Mid/Mid	00_Base	02_LRTP	01_Mid50	10,064	9,998	10,000	9,898	9,753
06_High/High	00_Base	02_LRTP	01_Mid50	10,324	10,338	10,315	10,257	10,177

Table 1. All Department Runs CO2 Emissions (tons), Conditionally Formatted from Low Cost (Green) to Mid Cost (Yellow) to High Cost (Red) in each row

Carbon Future	Contingency	L RTP	Forecast/NTEC	StatusQuo	PrefPlan	Early3	Early4	FastExit
01_No/No	00_Base	01_No LRTP	01_Mid50	85,316,466	74,948,487	74,183,591	77,918,436	63,377,413
01_No/No	01_Coal+20%	01_No LRTP	01_Mid50	73,876,949	65,720,976	65,070,438	65,907,307	58,267,504
01_No/No	02_Coal-10%	01_No LRTP	01_Mid50	90,065,980	80,935,595	80,022,108	81,603,643	65,019,081
01_No/No	05_Lower Gas-50%	01_No LRTP	01_Mid50	77,241,843	71,022,828	67,547,795	65,552,926	60,065,811
01_No/No	06_Low Gas-25%	01_No LRTP	01_Mid50	80,050,348	75,412,692	71,955,256	68,250,625	61,898,594
01_No/No	07_High Gas+25%	01_No LRTP	01_Mid50	91,074,695	78,879,024	73,097,754	78,923,417	61,029,151
01_No/No	08_Higher Gas+50%	01_No LRTP	01_Mid50	92,642,355	76,899,739	74,645,316	76,781,391	61,321,334
01_No/No	09_Highest Gas+100%	01_No LRTP	01_Mid50	92,885,343	77,396,105	75,454,162	76,512,689	61,301,049
01_No/No	10_WHSL Mkt-50%	01_No LRTP	01_Mid50	68,190,715	66,871,026	66,155,524	65,866,662	60,276,260
01_No/No	11_WHSL Mkt-25%	01_No LRTP	01_Mid50	79,144,502	75,200,579	73,728,143	73,696,835	61,948,531
01_No/No	12_WHSL Mkt+25%	01_No LRTP	01_Mid50	88,226,258	78,754,555	76,911,938	76,564,192	64,646,344
01_No/No	13_WHSL Mkt+50%	01_No LRTP	01_Mid50	89,864,514	79,489,449	78,197,126	77,717,250	65,590,672
01_No/No	14_CapCosts-30%	01_No LRTP	01_Mid50	85,282,405	79,896,156	78,095,406	74,503,616	65,886,585
01_No/No	15_CapCosts+30%	01_No LRTP	01_Mid50	85,163,812	77,623,410	73,666,169	78,056,935	63,418,522
01_No/No	17_NoMktSales	01_No LRTP	01_Mid50	79,255,607	75,455,055	74,301,138	73,332,370	61,158,901
01_No/No	18_NoSalePurchase	01_No LRTP	01_Mid50	84,125,149	78,925,773	76,825,246	72,185,339	63,306,037
01_No/No	19_MktAccess-50%	01_No LRTP	01_Mid50	84,549,238	79,540,423	77,162,549	77,364,104	62,014,058
01_No/No	20_LoINTCONCosts	01_No LRTP	01_Mid50	85,174,095	71,505,390	71,405,084	71,425,882	57,639,075
01_No/No	21_ITC&PTC Extend	01_No LRTP	01_Mid50	85,236,170	77,675,499	77,527,820	77,641,210	63,260,396
01_No/No	22_WindCostLow	01_No LRTP	01_Mid50	85,255,561	75,008,306	74,146,558	74,830,844	60,763,208
01_No/No	23_WindCostHi	01_No LRTP	01_Mid50	85,177,853	75,072,953	77,929,179	77,963,358	63,450,893
01_No/No	24_SolCostLow	01_No LRTP	01_Mid50	84,735,942	77,027,973	76,177,012	76,465,246	62,464,294
01_No/No	25_SolCostHigh	01_No LRTP	01_Mid50	85,264,823	76,634,059	78,342,864	75,126,590	63,630,477
01_No/No	26_StorCostLow	01_No LRTP	01_Mid50	85,218,264	75,132,270	74,130,365	78,043,765	63,503,492
01_No/No	27_StorCostHigh	01_No LRTP	01_Mid50	85,199,367	74,940,215	74,112,642	77,980,192	63,520,428
01_No/No	28_AFR 2020 Low	01_No LRTP	01_Mid50	77,717,935	72,454,404	71,625,455	71,528,215	60,467,430
01_No/No	31_ResTOU	01_No LRTP	01_Mid50	85,204,033	78,032,530	73,848,642	77,981,468	63,513,532
01_No/No	32_High DG&EV	01_No LRTP	01_Mid50	85,205,515	74,755,397	74,093,744	78,054,451	63,555,187
01_No/No	33_RenewELCC-2.5%	01_No LRTP	01_Mid50	85,276,929	79,719,309	74,981,137	77,988,139	59,990,767
01_No/No	34_RenewELCC+2.5%	01_No LRTP	01_Mid50	85,190,691	74,836,843	73,363,560	77,960,733	63,496,911
01_No/No	35_PRM-2%	01_No LRTP	01_Mid50	85,291,486	77,997,726	73,769,282	77,961,819	63,425,554
01_No/No	36_PRM+2%	01_No LRTP	01_Mid50	85,262,935	78,595,157	74,684,155	77,955,454	59,518,808
02_No/Low	00_Base	01_No LRTP	01_Mid50	85,245,734	75,016,069	74,201,914	77,902,890	63,423,409
02_No/Low	01_Coal+20%	01_No LRTP	01_Mid50	73,994,126	65,726,242	65,117,287	65,973,569	58,321,173
02_No/Low	02_Coal-10%	01_No LRTP	01_Mid50	89,972,744	80,935,906	79,971,014	81,428,563	65,146,574
02_No/Low	05_Lower Gas-50%	01_No LRTP	01_Mid50	77,233,946	71,037,596	67,535,104	65,497,172	60,213,274
02_No/Low	06_Low Gas-25%	01_No LRTP	01_Mid50	80,178,035	75,245,044	72,007,103	68,375,932	61,845,888

02_No/Low	07_High Gas+25%	01_No LRTP	01_Mid50	90,961,163	78,717,335	73,010,907	78,692,857	61,014,189
02_No/Low	08_Higher Gas+50%	01_No LRTP	01_Mid50	92,690,538	76,955,320	74,614,829	76,825,031	61,365,363
02_No/Low	09_Highest Gas+100%	01_No LRTP	01_Mid50	92,904,918	77,486,287	75,504,584	76,469,270	61,397,886
02_No/Low	10_WHSL Mkt-50%	01_No LRTP	01_Mid50	67,995,255	66,868,489	66,509,206	65,866,370	60,246,711
02_No/Low	11_WHSL Mkt-25%	01_No LRTP	01_Mid50	78,954,297	75,248,073	73,786,516	73,705,784	61,870,366
02_No/Low	12_WHSL Mkt+25%	01_No LRTP	01_Mid50	88,201,080	78,788,357	76,890,190	76,409,284	64,724,046
02_No/Low	13_WHSL Mkt+50%	01_No LRTP	01_Mid50	90,034,036	79,538,245	78,157,662	77,719,657	65,629,847
02_No/Low	14_CapCosts-30%	01_No LRTP	01_Mid50	85,231,688	77,532,162	73,670,977	78,125,686	63,463,063
02_No/Low	15_CapCosts+30%	01_No LRTP	01_Mid50	85,223,422	80,016,536	78,101,625	74,464,216	65,889,346
02_No/Low	17_NoMktSales	01_No LRTP	01_Mid50	79,240,733	75,592,060	74,341,135	73,353,513	61,186,347
02_No/Low	18_NoSalePurchase	01_No LRTP	01_Mid50	84,015,532	78,899,142	76,796,096	72,171,525	63,205,053
02_No/Low	19_MktAccess-50%	01_No LRTP	01_Mid50	84,384,322	79,635,651	77,161,670	77,297,393	61,939,188
02_No/Low	20_LoINTCONCosts	01_No LRTP	01_Mid50	85,281,961	71,508,850	71,631,274	71,425,528	57,635,406
02_No/Low	21_ITC&PTC Extend	01_No LRTP	01_Mid50	85,201,263	77,591,316	77,440,243	77,701,263	63,358,503
02_No/Low	22_WindCostLow	01_No LRTP	01_Mid50	85,194,236	75,000,248	74,094,795	74,814,241	60,766,775
02_No/Low	23_WindCostHi	01_No LRTP	01_Mid50	85,379,854	75,030,561	77,973,077	77,943,519	63,494,554
02_No/Low	24_SolCostLow	01_No LRTP	01_Mid50	84,829,705	77,070,882	76,115,913	76,360,843	62,401,479
02_No/Low	25_SolCostHigh	01_No LRTP	01_Mid50	85,194,949	76,620,893	78,277,541	75,116,212	63,710,390
02_No/Low	26_StorCostLow	01_No LRTP	01_Mid50	85,184,915	74,953,642	74,016,518	78,033,534	63,575,342
02_No/Low	27_StorCostHigh	01_No LRTP	01_Mid50	85,238,292	75,008,765	74,087,545	77,911,668	63,432,771
02_No/Low	28_AFR 2020 Low	01_No LRTP	01_Mid50	77,677,553	72,514,924	71,702,216	71,512,865	60,589,917
02_No/Low	31_ResTOU	01_No LRTP	01_Mid50	85,157,216	77,977,842	73,890,364	77,893,314	63,440,380
02_No/Low	32_High DG&EV	01_No LRTP	01_Mid50	85,184,255	74,722,875	74,068,213	77,989,248	63,512,496
02_No/Low	33_RenewELCC-2.5%	01_No LRTP	01_Mid50	85,116,292	79,804,232	74,995,903	77,914,216	59,869,729
02_No/Low	34_RenewELCC+2.5%	01_No LRTP	01_Mid50	85,147,138	74,715,496	73,309,046	78,023,591	63,451,779
02_No/Low	35_PRM-2%	01_No LRTP	01_Mid50	85,332,245	78,062,915	73,787,050	77,935,442	63,485,536
02_No/Low	36_PRM+2%	01_No LRTP	01_Mid50	85,250,409	78,505,357	74,683,148	77,979,816	59,570,404
03_No/High	00_Base	01_No LRTP	01_Mid50	85,247,225	74,972,512	74,100,441	77,897,860	63,424,843
03_No/High	01_Coal+20%	01_No LRTP	01_Mid50	73,994,559	65,683,365	65,157,336	66,036,440	58,309,207
03_No/High	02_Coal-10%	01_No LRTP	01_Mid50	90,026,452	80,874,040	80,048,623	81,557,804	65,079,191
03_No/High	05_Lower Gas-50%	01_No LRTP	01_Mid50	77,155,669	71,018,345	67,452,139	65,385,726	60,104,247
03_No/High	06_Low Gas-25%	01_No LRTP	01_Mid50	80,067,644	75,416,643	72,005,575	68,226,361	61,894,239
03_No/High	07_High Gas+25%	01_No LRTP	01_Mid50	91,093,884	78,810,253	72,968,121	78,790,856	60,995,168
03_No/High	08_Higher Gas+50%	01_No LRTP	01_Mid50	92,629,314	76,855,202	74,653,862	76,773,879	61,295,976
03_No/High	09_Highest Gas+100%	01_No LRTP	01_Mid50	92,924,939	77,513,664	75,563,926	76,587,621	61,343,124
03_No/High	10_WHSL Mkt-50%	01_No LRTP	01_Mid50	68,190,477	66,839,004	66,357,837	65,814,305	60,263,732
03_No/High	11_WHSL Mkt-25%	01_No LRTP	01_Mid50	79,059,787	75,108,389	73,776,279	73,803,758	61,880,556
03_No/High	12_WHSL Mkt+25%	01_No LRTP	01_Mid50	88,230,162	78,815,796	76,904,069	76,607,817	64,701,148
03_No/High	13_WHSL Mkt+50%	01_No LRTP	01_Mid50	89,894,203	79,570,850	78,174,116	77,744,825	65,692,834
03_No/High	14_CapCosts-30%	01_No LRTP	01_Mid50	85,279,226	77,570,411	73,676,610	78,142,946	63,469,136

03_No/High	15_CapCosts+30%	01_No LRTP	01_Mid50	85,179,932	80,010,131	78,034,247	74,527,158	65,968,236
03_No/High	17_NoMktSales	01_No LRTP	01_Mid50	79,326,480	75,528,759	74,407,129	73,375,994	61,077,473
03_No/High	18_NoSalePurchase	01_No LRTP	01_Mid50	83,991,109	78,905,494	76,748,767	72,256,990	63,306,721
03_No/High	19_MktAccess-50%	01_No LRTP	01_Mid50	84,404,555	79,679,566	77,206,844	77,328,426	61,972,281
03_No/High	20_LoINTCONCosts	01_No LRTP	01_Mid50	85,266,308	71,563,311	71,473,725	71,421,028	57,754,538
03_No/High	21_ITC&PTC Extend	01_No LRTP	01_Mid50	85,285,243	77,609,690	77,443,886	77,684,912	63,323,213
03_No/High	22_WindCostLow	01_No LRTP	01_Mid50	85,240,084	74,877,647	73,966,624	74,928,629	60,653,118
03_No/High	23_WindCostHi	01_No LRTP	01_Mid50	85,277,369	75,027,537	78,071,218	77,963,453	63,480,100
03_No/High	24_SolCostLow	01_No LRTP	01_Mid50	84,842,816	77,069,814	76,140,543	76,393,761	62,478,657
03_No/High	25_SolCostHigh	01_No LRTP	01_Mid50	85,238,314	76,660,015	78,349,356	75,226,143	63,645,532
03_No/High	26_StorCostLow	01_No LRTP	01_Mid50	85,194,765	75,029,674	74,103,791	77,906,963	63,523,277
03_No/High	27_StorCostHigh	01_No LRTP	01_Mid50	85,315,693	75,089,606	74,151,627	77,996,465	63,496,496
03_No/High	28_AFR 2020 Low	01_No LRTP	01_Mid50	77,726,209	72,527,395	71,576,705	71,478,429	60,483,734
03_No/High	31_ResTOU	01_No LRTP	01_Mid50	85,208,456	78,040,222	73,814,867	78,055,401	63,478,105
03_No/High	32_High DG&EV	01_No LRTP	01_Mid50	85,148,146	74,691,434	74,123,967	78,008,305	63,454,744
03_No/High	33_RenewELCC-2.5%	01_No LRTP	01_Mid50	85,142,654	79,770,309	74,927,960	77,982,843	59,918,296
03_No/High	34_RenewELCC+2.5%	01_No LRTP	01_Mid50	85,130,014	74,711,221	73,178,764	77,945,338	63,414,576
03_No/High	35_PRM-2%	01_No LRTP	01_Mid50	85,335,441	78,000,988	74,009,210	78,002,901	63,539,063
03_No/High	36_PRM+2%	01_No LRTP	01_Mid50	85,214,161	78,620,198	74,712,511	77,957,881	59,519,692
04_Low/Low	00_Base	01_No LRTP	01_Mid50	75,096,470	66,959,775	65,482,038	67,282,334	58,220,548
04_Low/Low	01_Coal+20%	01_No LRTP	01_Mid50	62,341,725	59,774,267	59,218,117	59,411,236	53,732,386
04_Low/Low	02_Coal-10%	01_No LRTP	01_Mid50	82,852,587	69,374,266	68,354,175	69,284,077	59,564,654
04_Low/Low	05_Lower Gas-50%	01_No LRTP	01_Mid50	74,277,733	68,776,040	65,628,479	63,782,231	59,227,188
04_Low/Low	06_Low Gas-25%	01_No LRTP	01_Mid50	72,703,723	70,085,193	67,739,637	65,766,708	60,248,675
04_Low/Low	07_High Gas+25%	01_No LRTP	01_Mid50	76,763,829	70,026,079	65,875,671	67,197,105	57,459,783
04_Low/Low	08_Higher Gas+50%	01_No LRTP	01_Mid50	80,286,679	73,129,157	68,418,095	69,584,387	58,556,651
04_Low/Low	09_Highest Gas+100%	01_No LRTP	01_Mid50	81,631,770	74,362,730	70,055,239	70,404,175	60,810,602
04_Low/Low	10_WHSL Mkt-50%	01_No LRTP	01_Mid50	62,052,681	62,373,327	60,889,848	61,489,111	58,448,893
04_Low/Low	11_WHSL Mkt-25%	01_No LRTP	01_Mid50	71,121,945	64,534,868	67,266,952	68,065,100	56,845,982
04_Low/Low	12_WHSL Mkt+25%	01_No LRTP	01_Mid50	74,913,866	70,162,785	69,101,588	64,820,326	57,422,148
04_Low/Low	13_WHSL Mkt+50%	01_No LRTP	01_Mid50	77,088,877	73,342,171	70,772,819	66,149,042	60,519,155
04_Low/Low	14_CapCosts-30%	01_No LRTP	01_Mid50	74,974,857	66,898,186	65,026,557	67,170,554	55,387,482
04_Low/Low	15_CapCosts+30%	01_No LRTP	01_Mid50	75,042,802	67,861,759	65,963,147	65,242,534	57,574,195
04_Low/Low	17_NoMktSales	01_No LRTP	01_Mid50	72,646,664	65,301,425	65,138,135	65,818,336	57,409,516
04_Low/Low	18_NoSalePurchase	01_No LRTP	01_Mid50	75,329,851	71,523,699	70,053,355	67,344,967	58,688,913
04_Low/Low	19_MktAccess-50%	01_No LRTP	01_Mid50	74,653,973	67,851,763	70,049,059	70,186,311	58,043,829
04_Low/Low	20_LoINTCONCosts	01_No LRTP	01_Mid50	67,562,670	63,617,274	62,793,793	63,568,125	55,638,604
04_Low/Low	21_ITC&PTC Extend	01_No LRTP	01_Mid50	74,186,812	66,257,395	65,121,788	65,946,158	57,667,845
04_Low/Low	22_WindCostLow	01_No LRTP	01_Mid50	71,402,099	66,846,524	62,715,370	67,026,981	55,528,409
04_Low/Low	23_WindCostHi	01_No LRTP	01_Mid50	75,043,139	66,995,026	65,544,575	67,279,697	58,335,753

04_Low/Low	24_SolCostLow	01_No LRTP	01_Mid50	72,523,838	66,563,745	65,347,088	65,575,354	57,021,626
04_Low/Low	25_SolCostHigh	01_No LRTP	01_Mid50	75,023,327	65,194,576	66,274,676	67,677,394	58,287,703
04_Low/Low	26_StorCostLow	01_No LRTP	01_Mid50	75,144,951	66,948,648	65,431,667	66,885,878	58,226,774
04_Low/Low	27_StorCostHigh	01_No LRTP	01_Mid50	75,067,468	67,110,809	65,539,895	67,268,085	58,353,112
04_Low/Low	28_AFR 2020 Low	01_No LRTP	01_Mid50	67,528,789	60,843,894	60,393,808	60,286,187	52,802,159
04_Low/Low	31_ResTOU	01_No LRTP	01_Mid50	75,009,405	67,174,591	66,141,209	67,140,260	58,207,356
04_Low/Low	32_High DG&EV	01_No LRTP	01_Mid50	75,021,355	67,154,582	66,278,008	66,870,712	58,463,187
04_Low/Low	33_RenewELCC-2.5%	01_No LRTP	01_Mid50	75,248,425	66,562,659	66,285,786	67,245,802	55,444,172
04_Low/Low	34_RenewELCC+2.5%	01_No LRTP	01_Mid50	75,094,247	66,798,691	66,017,076	67,186,319	58,354,910
04_Low/Low	35_PRM-2%	01_No LRTP	01_Mid50	75,131,646	67,246,214	66,200,232	66,979,948	58,279,907
04_Low/Low	36_PRM+2%	01_No LRTP	01_Mid50	74,767,710	66,236,508	65,532,398	67,221,590	55,517,023
05_Mid/Mid	00_Base	01_No LRTP	01_Mid50	59,662,351	57,378,083	57,675,614	56,885,653	52,786,331
05_Mid/Mid	01_Coal+20%	01_No LRTP	01_Mid50	55,426,649	55,024,657	50,487,192	51,710,383	51,674,328
05_Mid/Mid	02_Coal-10%	01_No LRTP	01_Mid50	62,311,453	59,838,947	59,300,286	58,785,670	54,090,515
05_Mid/Mid	05_Lower Gas-50%	01_No LRTP	01_Mid50	58,194,540	57,985,613	55,636,646	57,662,084	57,580,766
05_Mid/Mid	06_Low Gas-25%	01_No LRTP	01_Mid50	58,835,792	55,432,121	53,507,238	56,508,589	53,622,111
05_Mid/Mid	07_High Gas+25%	01_No LRTP	01_Mid50	60,731,680	58,967,925	58,582,544	57,936,384	52,925,621
05_Mid/Mid	08_Higher Gas+50%	01_No LRTP	01_Mid50	64,139,794	61,260,091	59,148,982	60,221,937	52,937,509
05_Mid/Mid	09_Highest Gas+100%	01_No LRTP	01_Mid50	69,358,031	65,892,647	63,604,048	64,395,418	55,384,837
05_Mid/Mid	10_WHSL Mkt-50%	01_No LRTP	01_Mid50	59,890,005	58,721,713	58,115,891	59,308,323	55,802,109
05_Mid/Mid	11_WHSL Mkt-25%	01_No LRTP	01_Mid50	56,842,940	53,011,809	52,949,964	55,774,713	51,441,883
05_Mid/Mid	12_WHSL Mkt+25%	01_No LRTP	01_Mid50	64,523,195	61,355,521	57,647,834	57,846,127	54,578,252
05_Mid/Mid	13_WHSL Mkt+50%	01_No LRTP	01_Mid50	67,645,090	63,805,987	59,225,045	59,576,352	54,574,778
05_Mid/Mid	14_CapCosts-30%	01_No LRTP	01_Mid50	59,768,632	57,437,829	56,390,494	57,159,472	53,260,018
05_Mid/Mid	15_CapCosts+30%	01_No LRTP	01_Mid50	59,725,670	57,224,059	55,163,285	54,488,716	51,342,712
05_Mid/Mid	17_NoMktSales	01_No LRTP	01_Mid50	59,473,235	54,944,968	55,220,927	54,161,705	50,471,016
05_Mid/Mid	18_NoSalePurchase	01_No LRTP	01_Mid50	69,104,478	63,707,689	61,769,078	58,371,004	54,400,683
05_Mid/Mid	19_MktAccess-50%	01_No LRTP	01_Mid50	62,309,239	61,323,141	56,731,663	54,414,208	53,751,233
05_Mid/Mid	20_LoINTCONCosts	01_No LRTP	01_Mid50	58,690,041	58,012,827	57,322,957	56,888,900	52,380,279
05_Mid/Mid	21_ITC&PTC Extend	01_No LRTP	01_Mid50	58,984,035	57,703,539	56,579,718	56,729,568	51,898,080
05_Mid/Mid	22_WindCostLow	01_No LRTP	01_Mid50	58,396,039	57,339,448	55,726,273	55,375,609	52,539,224
05_Mid/Mid	23_WindCostHi	01_No LRTP	01_Mid50	59,700,630	57,576,459	57,697,726	57,014,227	52,734,397
05_Mid/Mid	24_SolCostLow	01_No LRTP	01_Mid50	58,754,912	57,828,912	57,327,820	56,468,881	52,322,206
05_Mid/Mid	25_SolCostHigh	01_No LRTP	01_Mid50	61,237,714	57,792,592	58,685,266	58,082,722	53,570,965
05_Mid/Mid	26_StorCostLow	01_No LRTP	01_Mid50	59,669,914	57,370,797	57,660,719	56,900,329	52,742,614
05_Mid/Mid	27_StorCostHigh	01_No LRTP	01_Mid50	59,753,680	57,615,160	57,934,177	57,015,340	52,837,797
05_Mid/Mid	28_AFR 2020 Low	01_No LRTP	01_Mid50	53,334,027	52,640,355	52,262,991	51,140,490	47,987,742
05_Mid/Mid	31_ResTOU	01_No LRTP	01_Mid50	59,517,867	58,152,240	57,717,246	56,987,961	52,623,094
05_Mid/Mid	32_High DG&EV	01_No LRTP	01_Mid50	60,106,326	58,530,683	57,733,751	56,945,897	53,198,971
05_Mid/Mid	33_RenewELCC-2.5%	01_No LRTP	01_Mid50	59,714,113	57,751,666	57,858,072	56,946,866	53,291,845

05_Mid/Mid	34_RenewELCC+2.5%	01_No LRTP	01_Mid50	59,755,997	58,252,751	57,813,745	56,889,385	52,752,031
05_Mid/Mid	35_PRM-2%	01_No LRTP	01_Mid50	59,683,356	58,159,294	57,744,739	56,929,290	52,726,044
05_Mid/Mid	36_PRM+2%	01_No LRTP	01_Mid50	59,671,568	57,755,128	57,717,546	56,895,220	53,223,590
06_High/High	00_Base	01_No LRTP	01_Mid50	54,110,000	53,747,053	50,070,414	52,623,766	50,187,772
06_High/High	01_Coal+20%	01_No LRTP	01_Mid50	50,753,006	50,214,859	48,629,742	49,968,288	48,951,579
06_High/High	02_Coal-10%	01_No LRTP	01_Mid50	55,599,788	55,272,187	53,635,214	53,912,681	51,557,136
06_High/High	05_Lower Gas-50%	01_No LRTP	01_Mid50	53,030,789	52,217,546	50,914,010	53,956,158	54,314,118
06_High/High	06_Low Gas-25%	01_No LRTP	01_Mid50	52,994,131	51,645,815	50,132,019	51,632,926	50,011,164
06_High/High	07_High Gas+25%	01_No LRTP	01_Mid50	54,366,487	53,567,693	52,369,300	53,384,483	50,188,080
06_High/High	08_Higher Gas+50%	01_No LRTP	01_Mid50	53,748,618	54,653,575	53,548,422	53,133,663	49,341,021
06_High/High	09_Highest Gas+100%	01_No LRTP	01_Mid50	58,932,157	58,681,211	56,285,743	55,484,149	50,780,304
06_High/High	10_WHSL Mkt-50%	01_No LRTP	01_Mid50	59,009,795	57,701,649	54,722,138	58,362,033	55,546,688
06_High/High	11_WHSL Mkt-25%	01_No LRTP	01_Mid50	51,350,495	50,543,666	50,471,698	50,424,819	49,628,043
06_High/High	12_WHSL Mkt+25%	01_No LRTP	01_Mid50	56,436,208	55,279,410	51,716,773	53,090,422	52,547,771
06_High/High	13_WHSL Mkt+50%	01_No LRTP	01_Mid50	58,185,065	55,288,495	52,574,175	54,543,090	51,855,275
06_High/High	14_CapCosts-30%	01_No LRTP	01_Mid50	54,219,272	53,814,236	52,977,557	52,342,558	50,555,985
06_High/High	15_CapCosts+30%	01_No LRTP	01_Mid50	54,127,204	51,926,217	50,231,728	51,467,702	49,256,987
06_High/High	17_NoMktSales	01_No LRTP	01_Mid50	52,760,985	52,204,835	48,301,010	50,678,334	49,644,876
06_High/High	18_NoSalePurchase	01_No LRTP	01_Mid50	61,430,179	58,296,649	55,474,728	55,498,855	52,110,123
06_High/High	19_MktAccess-50%	01_No LRTP	01_Mid50	56,959,418	52,919,638	50,238,028	52,746,939	49,025,788
06_High/High	20_LoINTCONCosts	01_No LRTP	01_Mid50	52,219,165	52,833,517	48,002,447	51,541,148	49,989,133
06_High/High	21_ITC&PTC Extend	01_No LRTP	01_Mid50	54,115,999	54,408,195	49,961,043	51,281,629	49,450,948
06_High/High	22_WindCostLow	01_No LRTP	01_Mid50	51,761,644	51,641,070	48,568,559	50,948,228	49,228,228
06_High/High	23_WindCostHi	01_No LRTP	01_Mid50	53,715,174	53,378,897	50,077,522	52,567,072	50,170,121
06_High/High	24_SolCostLow	01_No LRTP	01_Mid50	53,102,361	53,295,167	49,490,077	52,177,062	50,785,856
06_High/High	25_SolCostHigh	01_No LRTP	01_Mid50	54,176,183	52,640,317	51,706,816	52,270,149	50,220,629
06_High/High	26_StorCostLow	01_No LRTP	01_Mid50	54,122,404	53,922,701	50,260,799	52,645,547	50,180,940
06_High/High	27_StorCostHigh	01_No LRTP	01_Mid50	54,171,082	53,854,351	50,138,467	52,668,790	50,172,880
06_High/High	28_AFR 2020 Low	01_No LRTP	01_Mid50	47,679,362	47,739,646	47,603,733	46,299,540	46,131,140
06_High/High	31_ResTOU	01_No LRTP	01_Mid50	54,221,044	53,137,686	50,241,789	52,127,777	50,940,552
06_High/High	32_High DG&EV	01_No LRTP	01_Mid50	54,235,638	52,991,170	50,065,571	52,089,397	50,158,829
06_High/High	33_RenewELCC-2.5%	01_No LRTP	01_Mid50	54,227,484	52,386,948	50,361,885	52,591,396	50,535,510
06_High/High	34_RenewELCC+2.5%	01_No LRTP	01_Mid50	54,189,175	54,233,603	50,131,298	52,601,811	50,134,154
06_High/High	35_PRM-2%	01_No LRTP	01_Mid50	54,151,822	54,087,783	50,181,592	52,544,292	50,335,932
06_High/High	36_PRM+2%	01_No LRTP	01_Mid50	54,198,103	52,356,151	49,976,689	52,530,879	50,169,816
01_No/No	00_Base	01_No LRTP	02_Mid20	91,038,214	81,231,748	78,756,903	70,705,435	63,488,595
01_No/No	01_Coal+20%	01_No LRTP	02_Mid20	77,635,149	74,007,588	70,636,043	67,783,617	61,135,554
01_No/No	02_Coal-10%	01_No LRTP	02_Mid20	93,512,996	86,608,811	80,219,739	75,674,478	67,414,624
01_No/No	05_Lower Gas-50%	01_No LRTP	02_Mid20	87,605,605	79,994,850	75,403,576	59,055,644	65,572,775
01_No/No	06_Low Gas-25%	01_No LRTP	02_Mid20	89,236,731	83,138,619	78,873,105	75,634,821	66,911,710

01_No/No	07_High Gas+25%	01_No LRTP	02_Mid20	92,824,606	81,460,412	75,913,728	74,314,541	61,390,089
01_No/No	08_Higher Gas+50%	01_No LRTP	02_Mid20	92,786,590	79,208,299	76,778,735	72,014,215	62,556,146
01_No/No	09_Highest Gas+100%	01_No LRTP	02_Mid20	92,994,144	78,683,822	76,666,695	72,302,258	61,741,000
01_No/No	10_WHSL Mkt-50%	01_No LRTP	02_Mid20	73,085,710	71,319,284	70,547,660	70,039,637	64,787,448
01_No/No	11_WHSL Mkt-25%	01_No LRTP	02_Mid20	84,240,209	80,211,950	78,239,545	72,423,370	66,876,798
01_No/No	12_WHSL Mkt+25%	01_No LRTP	02_Mid20	93,990,435	83,449,030	80,495,152	77,329,534	65,247,978
01_No/No	13_WHSL Mkt+50%	01_No LRTP	02_Mid20	91,150,029	84,584,410	77,865,318	79,895,460	66,573,054
01_No/No	14_CapCosts-30%	01_No LRTP	02_Mid20	91,090,957	81,363,226	78,746,299	74,955,806	66,628,338
01_No/No	15_CapCosts+30%	01_No LRTP	02_Mid20	90,976,295	81,311,850	78,791,600	73,823,618	66,543,532
01_No/No	17_NoMktSales	01_No LRTP	02_Mid20	85,359,970	81,207,712	79,165,410	72,962,195	66,131,142
01_No/No	18_NoSalePurchase	01_No LRTP	02_Mid20	87,002,286	79,849,877	77,220,750	76,347,604	62,009,406
01_No/No	19_MktAccess-50%	01_No LRTP	02_Mid20	90,994,404	80,848,992	78,110,301	77,321,518	65,691,873
01_No/No	20_LoINTCONCosts	01_No LRTP	02_Mid20	86,890,296	77,036,774	75,176,759	70,077,172	60,575,934
01_No/No	21_ITC&PTC Extend	01_No LRTP	02_Mid20	90,659,538	81,137,596	77,983,875	73,858,340	66,148,560
01_No/No	22_WindCostLow	01_No LRTP	02_Mid20	91,074,317	80,819,198	74,851,850	73,610,589	63,682,759
01_No/No	23_WindCostHi	01_No LRTP	02_Mid20	90,968,535	80,532,190	78,418,439	73,665,723	66,358,375
01_No/No	24_SolCostLow	01_No LRTP	02_Mid20	89,564,949	79,374,338	76,681,371	73,005,536	65,196,580
01_No/No	25_SolCostHigh	01_No LRTP	02_Mid20	91,047,964	81,611,574	78,987,650	73,219,246	63,895,986
01_No/No	26_StorCostLow	01_No LRTP	02_Mid20	91,000,261	81,269,395	78,725,332	73,746,407	63,459,746
01_No/No	27_StorCostHigh	01_No LRTP	02_Mid20	90,858,835	81,223,909	78,788,994	70,777,876	63,527,805
01_No/No	28_AFR 2020 Low	01_No LRTP	02_Mid20	83,476,067	78,076,994	75,765,005	70,943,389	60,764,722
01_No/No	31_ResTOU	01_No LRTP	02_Mid20	91,025,350	81,295,321	78,669,757	74,282,659	66,383,625
01_No/No	32_High DG&EV	01_No LRTP	02_Mid20	91,031,892	81,241,755	78,743,835	74,151,010	63,710,239
01_No/No	33_RenewELCC-2.5%	01_No LRTP	02_Mid20	91,047,731	81,424,033	78,735,353	70,416,326	66,420,116
01_No/No	34_RenewELCC+2.5%	01_No LRTP	02_Mid20	90,927,556	81,239,460	78,725,899	74,063,944	63,543,018
01_No/No	35_PRM-2%	01_No LRTP	02_Mid20	90,922,804	81,326,664	78,749,955	74,454,935	63,543,975
01_No/No	36_PRM+2%	01_No LRTP	02_Mid20	91,079,748	81,337,110	75,311,560	70,424,506	63,310,790
02_No/Low	00_Base	01_No LRTP	02_Mid20	91,002,906	81,229,360	78,752,123	70,602,876	63,530,454
02_No/Low	01_Coal+20%	01_No LRTP	02_Mid20	77,684,621	73,854,809	70,895,873	67,731,022	61,099,646
02_No/Low	02_Coal-10%	01_No LRTP	02_Mid20	93,507,931	86,525,259	80,154,201	75,530,170	67,262,895
02_No/Low	05_Lower Gas-50%	01_No LRTP	02_Mid20	87,604,251	79,976,836	75,614,143	59,264,520	65,594,291
02_No/Low	06_Low Gas-25%	01_No LRTP	02_Mid20	89,343,571	83,122,490	78,867,915	75,717,741	66,920,246
02_No/Low	07_High Gas+25%	01_No LRTP	02_Mid20	92,706,930	81,317,956	75,921,755	74,224,435	61,367,648
02_No/Low	08_Higher Gas+50%	01_No LRTP	02_Mid20	92,826,475	79,252,528	76,768,128	72,088,292	62,515,534
02_No/Low	09_Highest Gas+100%	01_No LRTP	02_Mid20	93,018,100	78,682,265	76,638,539	72,260,050	61,791,300
02_No/Low	10_WHSL Mkt-50%	01_No LRTP	02_Mid20	72,914,461	71,394,796	70,668,375	69,964,617	64,938,107
02_No/Low	11_WHSL Mkt-25%	01_No LRTP	02_Mid20	84,247,632	80,157,066	78,227,393	72,382,047	66,808,783
02_No/Low	12_WHSL Mkt+25%	01_No LRTP	02_Mid20	93,919,114	83,548,136	80,394,290	80,368,906	65,352,921
02_No/Low	13_WHSL Mkt+50%	01_No LRTP	02_Mid20	91,305,195	84,628,807	77,810,696	79,864,808	66,587,268
02_No/Low	14_CapCosts-30%	01_No LRTP	02_Mid20	90,940,071	81,233,203	78,713,942	75,057,539	66,560,840

02_No/Low	15_CapCosts+30%	01_No LRTP	02_Mid20	91,065,368	81,377,702	78,778,568	74,933,825	66,592,895
02_No/Low	17_NoMktSales	01_No LRTP	02_Mid20	85,370,974	81,197,572	79,110,396	73,008,071	66,194,689
02_No/Low	18_NoSalePurchase	01_No LRTP	02_Mid20	86,937,996	79,752,248	77,093,130	76,320,708	61,864,111
02_No/Low	19_MktAccess-50%	01_No LRTP	02_Mid20	90,846,772	80,865,177	78,138,658	76,572,437	65,690,070
02_No/Low	20_LoINTCONCosts	01_No LRTP	02_Mid20	86,884,174	77,190,495	75,258,562	70,174,497	60,567,562
02_No/Low	21_ITC&PTC Extend	01_No LRTP	02_Mid20	90,542,252	81,161,528	77,883,356	70,638,227	66,115,693
02_No/Low	22_WindCostLow	01_No LRTP	02_Mid20	90,975,985	80,741,272	74,897,928	73,633,073	63,745,903
02_No/Low	23_WindCostHi	01_No LRTP	02_Mid20	91,103,858	80,423,210	78,455,165	73,717,605	66,367,093
02_No/Low	24_SolCostLow	01_No LRTP	02_Mid20	89,576,728	79,234,714	76,666,150	73,025,744	65,233,183
02_No/Low	25_SolCostHigh	01_No LRTP	02_Mid20	90,970,387	81,729,943	79,024,650	73,283,581	63,895,728
02_No/Low	26_StorCostLow	01_No LRTP	02_Mid20	91,005,786	81,308,264	78,698,650	70,803,055	63,595,136
02_No/Low	27_StorCostHigh	01_No LRTP	02_Mid20	90,934,139	81,244,363	78,753,846	70,690,836	63,590,001
02_No/Low	28_AFR 2020 Low	01_No LRTP	02_Mid20	83,376,133	78,116,910	75,715,045	70,596,684	60,737,757
02_No/Low	31_ResTOU	01_No LRTP	02_Mid20	90,977,202	81,194,100	78,750,932	74,167,815	66,407,378
02_No/Low	32_High DG&EV	01_No LRTP	02_Mid20	90,969,717	81,275,259	78,734,577	74,163,998	63,687,304
02_No/Low	33_RenewELCC-2.5%	01_No LRTP	02_Mid20	91,042,655	81,449,270	78,765,595	70,394,277	66,331,246
02_No/Low	34_RenewELCC+2.5%	01_No LRTP	02_Mid20	90,954,211	81,295,234	78,801,871	74,122,860	63,523,020
02_No/Low	35_PRM-2%	01_No LRTP	02_Mid20	91,021,605	81,230,884	78,740,713	74,233,299	63,545,594
02_No/Low	36_PRM+2%	01_No LRTP	02_Mid20	90,936,378	81,257,160	75,166,705	70,424,146	63,296,029
03_No/High	00_Base	01_No LRTP	02_Mid20	91,023,025	81,165,002	78,671,256	70,713,116	63,496,271
03_No/High	01_Coal+20%	01_No LRTP	02_Mid20	77,567,883	74,047,931	70,888,091	67,748,752	61,018,488
03_No/High	02_Coal-10%	01_No LRTP	02_Mid20	93,380,222	86,532,454	80,244,434	75,557,194	67,369,812
03_No/High	05_Lower Gas-50%	01_No LRTP	02_Mid20	87,484,842	79,868,557	75,354,253	59,157,296	65,584,296
03_No/High	06_Low Gas-25%	01_No LRTP	02_Mid20	89,381,826	83,151,245	78,796,763	75,717,447	66,903,627
03_No/High	07_High Gas+25%	01_No LRTP	02_Mid20	92,735,657	81,322,147	75,897,252	74,186,857	61,355,692
03_No/High	08_Higher Gas+50%	01_No LRTP	02_Mid20	92,775,950	79,206,606	76,835,177	72,080,164	62,587,336
03_No/High	09_Highest Gas+100%	01_No LRTP	02_Mid20	92,992,869	78,741,549	76,666,400	72,349,653	61,798,988
03_No/High	10_WHSL Mkt-50%	01_No LRTP	02_Mid20	72,935,782	71,234,030	70,687,503	70,021,367	64,935,493
03_No/High	11_WHSL Mkt-25%	01_No LRTP	02_Mid20	84,346,622	80,162,458	78,287,764	72,437,899	66,865,529
03_No/High	12_WHSL Mkt+25%	01_No LRTP	02_Mid20	93,969,138	83,479,966	80,446,292	77,408,553	65,347,451
03_No/High	13_WHSL Mkt+50%	01_No LRTP	02_Mid20	91,252,122	84,589,831	77,879,927	79,868,017	66,553,377
03_No/High	14_CapCosts-30%	01_No LRTP	02_Mid20	91,016,288	81,276,521	78,762,450	73,848,215	66,563,645
03_No/High	15_CapCosts+30%	01_No LRTP	02_Mid20	91,038,884	81,419,825	78,751,625	75,032,383	66,633,796
03_No/High	17_NoMktSales	01_No LRTP	02_Mid20	85,408,568	81,236,067	79,169,721	73,035,019	66,151,021
03_No/High	18_NoSalePurchase	01_No LRTP	02_Mid20	86,861,922	79,823,776	77,160,705	76,987,233	62,008,399
03_No/High	19_MktAccess-50%	01_No LRTP	02_Mid20	90,900,012	80,939,764	78,340,996	76,273,520	65,781,905
03_No/High	20_LoINTCONCosts	01_No LRTP	02_Mid20	86,818,807	77,152,979	75,165,371	70,148,382	60,609,381
03_No/High	21_ITC&PTC Extend	01_No LRTP	02_Mid20	90,567,383	81,120,584	78,010,434	73,904,509	66,118,457
03_No/High	22_WindCostLow	01_No LRTP	02_Mid20	91,028,752	80,874,448	74,834,867	73,597,959	63,738,523
03_No/High	23_WindCostHi	01_No LRTP	02_Mid20	90,961,908	80,444,434	78,552,910	73,727,456	66,368,145

03_No/High	24_SolCostLow	01_No LRTP	02_Mid20	89,547,078	79,366,052	76,754,909	73,062,397	65,250,668
03_No/High	25_SolCostHigh	01_No LRTP	02_Mid20	90,958,530	81,653,396	78,948,749	73,189,013	63,899,933
03_No/High	26_StorCostLow	01_No LRTP	02_Mid20	90,932,183	81,189,313	78,729,648	73,674,080	63,457,653
03_No/High	27_StorCostHigh	01_No LRTP	02_Mid20	91,013,178	81,193,879	78,688,813	70,664,512	63,583,839
03_No/High	28_AFR 2020 Low	01_No LRTP	02_Mid20	83,435,189	78,183,242	75,672,360	71,015,470	60,774,409
03_No/High	31_ResTOU	01_No LRTP	02_Mid20	90,985,952	81,270,565	78,757,304	74,193,110	66,464,490
03_No/High	32_High DG&EV	01_No LRTP	02_Mid20	90,973,972	81,278,420	78,690,113	74,089,122	63,637,734
03_No/High	33_RenewELCC-2.5%	01_No LRTP	02_Mid20	91,047,799	81,464,206	78,842,121	70,413,962	66,365,578
03_No/High	34_RenewELCC+2.5%	01_No LRTP	02_Mid20	91,070,017	81,238,369	78,714,109	74,041,434	63,472,141
03_No/High	35_PRM-2%	01_No LRTP	02_Mid20	91,076,745	81,190,529	78,823,153	74,530,885	63,551,393
03_No/High	36_PRM+2%	01_No LRTP	02_Mid20	91,024,410	81,373,706	75,205,604	70,354,058	63,365,015
04_Low/Low	00_Base	01_No LRTP	02_Mid20	78,513,759	73,263,568	71,669,221	67,287,358	61,403,232
04_Low/Low	01_Coal+20%	01_No LRTP	02_Mid20	70,523,711	65,975,910	62,674,048	64,071,992	55,514,041
04_Low/Low	02_Coal-10%	01_No LRTP	02_Mid20	84,923,769	75,794,931	73,646,794	74,203,140	62,615,395
04_Low/Low	05_Lower Gas-50%	01_No LRTP	02_Mid20	80,102,311	73,254,725	64,912,986	71,533,335	64,326,547
04_Low/Low	06_Low Gas-25%	01_No LRTP	02_Mid20	77,233,473	71,155,402	70,459,378	72,979,050	61,852,139
04_Low/Low	07_High Gas+25%	01_No LRTP	02_Mid20	80,552,838	75,018,268	72,897,621	69,310,563	58,947,906
04_Low/Low	08_Higher Gas+50%	01_No LRTP	02_Mid20	81,581,790	72,090,173	70,378,897	70,224,504	59,962,471
04_Low/Low	09_Highest Gas+100%	01_No LRTP	02_Mid20	81,545,384	72,854,888	71,029,856	70,664,873	60,277,529
04_Low/Low	10_WHSL Mkt-50%	01_No LRTP	02_Mid20	68,686,810	67,968,436	66,856,393	66,760,593	62,839,344
04_Low/Low	11_WHSL Mkt-25%	01_No LRTP	02_Mid20	78,847,228	72,000,799	69,867,745	69,191,670	61,075,631
04_Low/Low	12_WHSL Mkt+25%	01_No LRTP	02_Mid20	82,477,136	76,663,034	73,627,632	71,305,748	60,446,977
04_Low/Low	13_WHSL Mkt+50%	01_No LRTP	02_Mid20	84,549,379	78,690,918	75,262,769	72,922,197	64,253,215
04_Low/Low	14_CapCosts-30%	01_No LRTP	02_Mid20	78,561,229	68,632,878	71,450,251	71,779,977	58,099,796
04_Low/Low	15_CapCosts+30%	01_No LRTP	02_Mid20	78,453,541	73,943,279	71,338,468	68,087,743	61,414,536
04_Low/Low	17_NoMktSales	01_No LRTP	02_Mid20	77,450,862	73,941,463	71,703,323	67,649,610	60,992,798
04_Low/Low	18_NoSalePurchase	01_No LRTP	02_Mid20	83,664,962	78,124,758	70,589,744	70,350,412	57,326,612
04_Low/Low	19_MktAccess-50%	01_No LRTP	02_Mid20	83,628,551	74,475,483	72,464,713	70,680,282	61,093,268
04_Low/Low	20_LoINTCONCosts	01_No LRTP	02_Mid20	74,759,106	70,485,528	68,106,376	68,581,870	58,189,646
04_Low/Low	21_ITC&PTC Extend	01_No LRTP	02_Mid20	77,172,076	72,837,232	70,425,740	68,037,666	60,647,253
04_Low/Low	22_WindCostLow	01_No LRTP	02_Mid20	78,549,941	73,210,004	68,017,612	68,039,080	58,144,857
04_Low/Low	23_WindCostHi	01_No LRTP	02_Mid20	78,146,737	73,767,980	71,708,848	70,553,901	61,322,509
04_Low/Low	24_SolCostLow	01_No LRTP	02_Mid20	79,510,592	72,634,878	69,871,007	68,022,171	60,176,060
04_Low/Low	25_SolCostHigh	01_No LRTP	02_Mid20	78,797,206	74,462,826	71,856,207	68,029,919	58,475,343
04_Low/Low	26_StorCostLow	01_No LRTP	02_Mid20	78,481,983	73,226,825	71,502,806	67,387,069	61,404,261
04_Low/Low	27_StorCostHigh	01_No LRTP	02_Mid20	78,552,797	73,432,294	71,579,775	67,266,282	61,362,985
04_Low/Low	28_AFR 2020 Low	01_No LRTP	02_Mid20	74,869,402	66,256,858	65,166,284	66,487,159	55,437,283
04_Low/Low	31_ResTOU	01_No LRTP	02_Mid20	78,370,478	73,275,091	71,641,671	68,122,812	58,105,666
04_Low/Low	32_High DG&EV	01_No LRTP	02_Mid20	78,467,247	73,347,515	71,339,020	68,095,145	58,108,948
04_Low/Low	33_RenewELCC-2.5%	01_No LRTP	02_Mid20	78,619,693	73,292,811	71,609,882	67,909,843	61,351,822

04_Low/Low	34_RenewELCC+2.5%	01_No LRTP	02_Mid20	78,388,530	73,714,993	71,704,072	68,076,999	58,133,762
04_Low/Low	35_PRM-2%	01_No LRTP	02_Mid20	78,584,022	73,781,036	71,658,228	68,021,686	58,100,362
04_Low/Low	36_PRM+2%	01_No LRTP	02_Mid20	78,551,573	73,916,979	71,651,759	68,085,663	61,352,486
05_Mid/Mid	00_Base	01_No LRTP	02_Mid20	67,370,375	63,163,934	59,768,677	59,600,566	54,405,783
05_Mid/Mid	01_Coal+20%	01_No LRTP	02_Mid20	62,622,088	58,561,414	55,618,650	56,768,624	52,611,463
05_Mid/Mid	02_Coal-10%	01_No LRTP	02_Mid20	69,969,637	65,507,813	62,688,932	61,169,029	55,644,007
05_Mid/Mid	05_Lower Gas-50%	01_No LRTP	02_Mid20	65,740,759	61,940,487	61,342,901	61,756,343	59,244,420
05_Mid/Mid	06_Low Gas-25%	01_No LRTP	02_Mid20	67,456,658	62,199,225	58,983,228	59,200,756	57,008,593
05_Mid/Mid	07_High Gas+25%	01_No LRTP	02_Mid20	67,843,780	64,250,756	62,837,106	63,300,106	55,214,769
05_Mid/Mid	08_Higher Gas+50%	01_No LRTP	02_Mid20	68,984,489	65,253,383	63,611,502	64,324,560	56,908,378
05_Mid/Mid	09_Highest Gas+100%	01_No LRTP	02_Mid20	69,859,676	66,701,814	65,356,196	65,089,413	57,083,326
05_Mid/Mid	10_WHSL Mkt-50%	01_No LRTP	02_Mid20	66,332,025	63,617,202	61,587,726	63,427,151	57,685,807
05_Mid/Mid	11_WHSL Mkt-25%	01_No LRTP	02_Mid20	61,276,023	57,959,773	56,454,164	57,219,594	52,233,340
05_Mid/Mid	12_WHSL Mkt+25%	01_No LRTP	02_Mid20	71,580,824	67,285,821	62,956,512	63,350,478	56,628,133
05_Mid/Mid	13_WHSL Mkt+50%	01_No LRTP	02_Mid20	72,877,500	69,165,907	65,621,963	65,712,986	57,362,072
05_Mid/Mid	14_CapCosts-30%	01_No LRTP	02_Mid20	67,186,098	63,371,696	59,550,371	62,581,696	53,743,983
05_Mid/Mid	15_CapCosts+30%	01_No LRTP	02_Mid20	67,192,361	63,446,846	60,348,571	59,951,020	54,272,985
05_Mid/Mid	17_NoMktSales	01_No LRTP	02_Mid20	67,526,074	60,157,748	57,970,897	56,262,751	52,088,214
05_Mid/Mid	18_NoSalePurchase	01_No LRTP	02_Mid20	73,700,666	67,046,275	63,150,093	63,033,373	53,917,098
05_Mid/Mid	19_MktAccess-50%	01_No LRTP	02_Mid20	70,972,822	67,687,918	64,194,696	60,860,366	55,706,576
05_Mid/Mid	20_LoINTCONCosts	01_No LRTP	02_Mid20	65,088,131	63,138,061	59,113,634	59,747,262	54,340,757
05_Mid/Mid	21_ITC&PTC Extend	01_No LRTP	02_Mid20	66,820,330	62,894,316	59,841,779	58,953,420	54,175,414
05_Mid/Mid	22_WindCostLow	01_No LRTP	02_Mid20	66,012,705	62,087,020	59,188,324	59,819,305	54,628,658
05_Mid/Mid	23_WindCostHi	01_No LRTP	02_Mid20	67,287,863	63,488,610	59,903,109	59,764,410	54,386,222
05_Mid/Mid	24_SolCostLow	01_No LRTP	02_Mid20	66,764,337	63,181,475	60,129,639	58,680,074	53,988,033
05_Mid/Mid	25_SolCostHigh	01_No LRTP	02_Mid20	68,429,679	64,531,054	61,739,776	60,372,349	55,338,888
05_Mid/Mid	26_StorCostLow	01_No LRTP	02_Mid20	67,275,112	63,139,564	59,860,397	59,721,526	54,377,976
05_Mid/Mid	27_StorCostHigh	01_No LRTP	02_Mid20	67,253,894	63,259,099	59,794,680	59,717,751	54,407,170
05_Mid/Mid	28_AFR 2020 Low	01_No LRTP	02_Mid20	60,772,726	57,249,648	54,369,402	53,980,243	49,542,637
05_Mid/Mid	31_ResTOU	01_No LRTP	02_Mid20	67,230,243	63,003,800	60,399,424	59,619,216	54,328,706
05_Mid/Mid	32_High DG&EV	01_No LRTP	02_Mid20	67,452,845	63,486,200	60,435,079	59,599,984	54,942,429
05_Mid/Mid	33_RenewELCC-2.5%	01_No LRTP	02_Mid20	67,198,514	63,533,380	60,427,617	59,645,165	54,304,804
05_Mid/Mid	34_RenewELCC+2.5%	01_No LRTP	02_Mid20	67,328,319	63,488,543	60,238,798	59,593,734	54,395,776
05_Mid/Mid	35_PRM-2%	01_No LRTP	02_Mid20	67,410,611	63,210,443	60,260,686	59,587,365	54,400,421
05_Mid/Mid	36_PRM+2%	01_No LRTP	02_Mid20	67,229,367	63,202,100	60,494,569	59,584,709	54,270,371
06_High/High	00_Base	01_No LRTP	02_Mid20	60,768,723	56,715,615	53,901,959	55,405,025	52,581,346
06_High/High	01_Coal+20%	01_No LRTP	02_Mid20	55,521,081	53,148,212	51,719,419	54,001,505	50,763,760
06_High/High	02_Coal-10%	01_No LRTP	02_Mid20	61,955,702	58,328,961	54,665,494	56,909,789	53,392,430
06_High/High	05_Lower Gas-50%	01_No LRTP	02_Mid20	58,678,177	57,719,127	54,027,712	56,060,257	54,959,477
06_High/High	06_Low Gas-25%	01_No LRTP	02_Mid20	59,690,386	57,320,942	54,587,247	55,786,799	52,939,710

06_High/High	07_High Gas+25%	01_No LRTP	02_Mid20	61,548,580	57,303,062	55,648,619	58,428,008	52,539,185
06_High/High	08_Higher Gas+50%	01_No LRTP	02_Mid20	60,220,115	57,479,665	55,441,620	57,171,708	52,288,882
06_High/High	09_Highest Gas+100%	01_No LRTP	02_Mid20	61,943,395	59,116,276	56,780,905	58,100,814	50,340,193
06_High/High	10_WHSL Mkt-50%	01_No LRTP	02_Mid20	62,054,984	59,100,591	57,383,876	58,771,242	57,192,380
06_High/High	11_WHSL Mkt-25%	01_No LRTP	02_Mid20	57,465,752	53,678,897	51,678,301	54,035,115	51,502,966
06_High/High	12_WHSL Mkt+25%	01_No LRTP	02_Mid20	61,316,667	57,243,415	54,304,438	56,578,639	51,645,806
06_High/High	13_WHSL Mkt+50%	01_No LRTP	02_Mid20	64,052,867	59,477,994	57,275,432	59,024,211	52,830,356
06_High/High	14_CapCosts-30%	01_No LRTP	02_Mid20	60,612,674	56,440,997	52,941,775	56,786,569	50,930,844
06_High/High	15_CapCosts+30%	01_No LRTP	02_Mid20	60,703,512	56,739,629	54,005,161	56,064,050	52,271,193
06_High/High	17_NoMktSales	01_No LRTP	02_Mid20	56,435,298	55,900,281	53,204,938	54,244,391	50,457,854
06_High/High	18_NoSalePurchase	01_No LRTP	02_Mid20	66,727,554	59,508,751	57,276,048	59,248,766	52,935,791
06_High/High	19_MktAccess-50%	01_No LRTP	02_Mid20	64,758,238	60,706,078	57,737,164	57,637,472	54,044,608
06_High/High	20_LoINTCONCosts	01_No LRTP	02_Mid20	58,655,341	54,364,242	52,665,255	53,381,144	52,136,453
06_High/High	21_ITC&PTC Extend	01_No LRTP	02_Mid20	60,733,270	56,626,634	53,096,295	55,341,673	51,528,959
06_High/High	22_WindCostLow	01_No LRTP	02_Mid20	58,686,241	55,519,102	52,748,461	55,416,867	51,162,435
06_High/High	23_WindCostHi	01_No LRTP	02_Mid20	59,017,465	57,213,290	53,694,625	55,609,888	52,556,845
06_High/High	24_SolCostLow	01_No LRTP	02_Mid20	59,727,917	54,949,309	53,483,849	55,439,475	52,030,344
06_High/High	25_SolCostHigh	01_No LRTP	02_Mid20	59,212,445	56,857,373	52,643,521	55,360,019	53,385,072
06_High/High	26_StorCostLow	01_No LRTP	02_Mid20	60,553,963	56,946,812	54,059,157	55,306,153	52,480,041
06_High/High	27_StorCostHigh	01_No LRTP	02_Mid20	60,669,217	56,914,341	53,927,527	55,350,679	52,446,132
06_High/High	28_AFR 2020 Low	01_No LRTP	02_Mid20	53,904,591	50,863,491	47,718,618	49,950,640	47,370,125
06_High/High	31_ResTOU	01_No LRTP	02_Mid20	60,712,198	57,133,953	53,943,083	55,793,421	52,148,670
06_High/High	32_High DG&EV	01_No LRTP	02_Mid20	60,681,960	56,894,547	53,994,414	55,666,984	52,386,357
06_High/High	33_RenewELCC-2.5%	01_No LRTP	02_Mid20	60,714,849	57,028,027	54,004,861	55,140,729	52,537,030
06_High/High	34_RenewELCC+2.5%	01_No LRTP	02_Mid20	60,797,359	57,132,364	53,959,283	55,319,199	52,460,099
06_High/High	35_PRM-2%	01_No LRTP	02_Mid20	60,654,263	57,133,868	54,083,653	55,374,949	52,610,368
06_High/High	36_PRM+2%	01_No LRTP	02_Mid20	60,643,417	57,246,839	54,040,705	55,226,248	52,529,265
01_No/No	00_Base	01_No LRTP	03_High50	91,956,056	82,114,698	83,581,079	82,677,720	71,541,137
01_No/No	01_Coal+20%	01_No LRTP	03_High50	81,151,334	77,294,144	74,410,492	71,054,940	65,261,949
01_No/No	02_Coal-10%	01_No LRTP	03_High50	98,257,162	88,751,145	82,550,530	87,206,367	72,991,995
01_No/No	05_Lower Gas-50%	01_No LRTP	03_High50	88,332,577	81,369,008	77,410,431	75,351,880	68,834,560
01_No/No	06_Low Gas-25%	01_No LRTP	03_High50	89,070,928	82,119,073	79,843,706	74,537,591	70,527,053
01_No/No	07_High Gas+25%	01_No LRTP	03_High50	96,569,758	82,576,815	83,161,212	83,949,215	68,272,905
01_No/No	08_Higher Gas+50%	01_No LRTP	03_High50	98,140,819	87,408,487	84,804,071	85,220,256	68,948,096
01_No/No	09_Highest Gas+100%	01_No LRTP	03_High50	94,723,445	83,835,560	81,785,294	83,186,417	68,924,794
01_No/No	10_WHSL Mkt-50%	01_No LRTP	03_High50	79,428,546	77,442,828	76,917,565	76,194,854	70,441,734
01_No/No	11_WHSL Mkt-25%	01_No LRTP	03_High50	89,917,199	81,699,767	79,986,261	79,628,831	69,005,154
01_No/No	12_WHSL Mkt+25%	01_No LRTP	03_High50	94,588,044	88,009,238	84,949,602	82,536,351	72,945,808
01_No/No	13_WHSL Mkt+50%	01_No LRTP	03_High50	95,877,421	89,168,344	86,486,415	83,687,477	70,382,539
01_No/No	14_CapCosts-30%	01_No LRTP	03_High50	92,095,185	85,570,504	80,247,455	80,401,828	68,206,641

01_No/No	15_CapCosts+30%	01_No LRTP	03_High50	91,795,835	83,711,161	83,225,678	83,477,087	65,073,878
01_No/No	17_NoMktSales	01_No LRTP	03_High50	90,442,200	80,639,630	79,938,130	79,481,754	68,109,994
01_No/No	18_NoSalePurchase	01_No LRTP	03_High50	92,287,887	82,276,774	79,764,064	75,732,235	62,934,293
01_No/No	19_MktAccess-50%	01_No LRTP	03_High50	91,605,446	85,223,651	79,840,921	83,439,704	70,470,112
01_No/No	20_LoINTCONCosts	01_No LRTP	03_High50	91,607,780	78,538,859	77,067,772	77,424,617	65,984,163
01_No/No	21_ITC&PTC Extend	01_No LRTP	03_High50	94,116,623	81,997,205	79,510,612	83,160,031	71,077,442
01_No/No	22_WindCostLow	01_No LRTP	03_High50	91,568,343	85,654,730	76,808,820	76,602,490	68,727,869
01_No/No	23_WindCostHi	01_No LRTP	03_High50	93,781,018	85,670,583	80,122,525	83,908,882	71,286,929
01_No/No	24_SolCostLow	01_No LRTP	03_High50	90,462,313	84,793,837	78,202,720	82,752,272	69,870,759
01_No/No	25_SolCostHigh	01_No LRTP	03_High50	92,108,037	86,033,836	83,790,547	80,622,316	71,692,693
01_No/No	26_StorCostLow	01_No LRTP	03_High50	92,037,945	82,103,475	83,640,733	82,775,758	71,475,451
01_No/No	27_StorCostHigh	01_No LRTP	03_High50	91,998,688	82,112,061	83,465,160	82,755,339	71,333,120
01_No/No	28_AFR 2020 Low	01_No LRTP	03_High50	77,715,828	72,454,404	71,625,455	71,528,215	60,451,722
01_No/No	31_ResTOU	01_No LRTP	03_High50	85,203,224	78,032,530	73,848,642	77,981,468	63,514,352
01_No/No	32_High DG&EV	01_No LRTP	03_High50	85,207,625	74,755,397	74,093,744	78,054,442	63,554,623
01_No/No	33_RenewELCC-2.5%	01_No LRTP	03_High50	91,977,569	82,102,623	83,560,476	77,951,122	71,599,176
01_No/No	34_RenewELCC+2.5%	01_No LRTP	03_High50	91,878,393	86,240,935	83,412,474	77,956,138	71,489,124
01_No/No	35_PRM-2%	01_No LRTP	03_High50	96,318,521	85,233,344	84,257,353	77,948,463	69,019,856
01_No/No	36_PRM+2%	01_No LRTP	03_High50	93,855,303	81,835,789	81,860,028	77,942,803	67,851,433
02_No/Low	00_Base	01_No LRTP	03_High50	91,987,188	82,018,805	83,560,583	77,880,359	71,438,921
02_No/Low	01_Coal+20%	01_No LRTP	03_High50	81,347,511	77,249,034	74,440,878	65,968,563	65,198,116
02_No/Low	02_Coal-10%	01_No LRTP	03_High50	98,133,284	88,709,852	82,465,372	81,405,861	73,066,279
02_No/Low	05_Lower Gas-50%	01_No LRTP	03_High50	88,381,794	81,467,840	77,427,465	65,465,175	68,876,030
02_No/Low	06_Low Gas-25%	01_No LRTP	03_High50	89,158,896	82,084,709	79,968,719	68,342,314	70,534,864
02_No/Low	07_High Gas+25%	01_No LRTP	03_High50	96,528,739	82,498,514	83,038,018	78,674,992	68,288,876
02_No/Low	08_Higher Gas+50%	01_No LRTP	03_High50	98,277,723	87,475,980	84,711,471	76,810,025	68,947,033
02_No/Low	09_Highest Gas+100%	01_No LRTP	03_High50	94,847,590	83,819,542	81,742,451	76,449,766	68,955,909
02_No/Low	10_WHSL Mkt-50%	01_No LRTP	03_High50	79,263,284	77,330,020	76,820,487	65,830,543	70,370,995
02_No/Low	11_WHSL Mkt-25%	01_No LRTP	03_High50	89,744,985	81,671,388	79,987,635	73,679,481	69,008,376
02_No/Low	12_WHSL Mkt+25%	01_No LRTP	03_High50	94,650,423	88,022,605	84,937,504	76,357,988	73,031,885
02_No/Low	13_WHSL Mkt+50%	01_No LRTP	03_High50	96,002,576	89,146,918	86,401,312	77,738,696	70,418,702
02_No/Low	14_CapCosts-30%	01_No LRTP	03_High50	92,035,094	83,694,759	83,149,393	78,094,417	65,070,227
02_No/Low	15_CapCosts+30%	01_No LRTP	03_High50	91,952,379	85,590,701	80,106,487	74,400,379	68,281,743
02_No/Low	17_NoMktSales	01_No LRTP	03_High50	90,526,762	80,736,395	79,808,905	73,354,646	68,120,390
02_No/Low	18_NoSalePurchase	01_No LRTP	03_High50	92,238,947	82,163,685	79,716,239	72,208,690	62,874,763
02_No/Low	19_MktAccess-50%	01_No LRTP	03_High50	91,519,390	85,252,245	79,812,118	77,276,693	70,370,182
02_No/Low	20_LoINTCONCosts	01_No LRTP	03_High50	91,678,576	78,654,055	77,287,567	71,404,377	65,820,703
02_No/Low	21_ITC&PTC Extend	01_No LRTP	03_High50	94,030,772	81,986,461	79,478,974	77,683,456	71,139,042
02_No/Low	22_WindCostLow	01_No LRTP	03_High50	91,595,327	85,624,626	76,789,751	74,803,908	68,695,454
02_No/Low	23_WindCostHi	01_No LRTP	03_High50	93,929,513	85,684,767	80,218,921	77,917,656	71,396,786

02_No/Low	24_SolCostLow	01_No LRTP	03_High50	90,573,260	84,835,240	78,326,704	76,325,271	69,868,902
02_No/Low	25_SolCostHigh	01_No LRTP	03_High50	91,869,311	86,059,991	83,750,571	75,081,533	71,765,282
02_No/Low	26_StorCostLow	01_No LRTP	03_High50	92,039,425	82,090,124	83,489,366	78,025,386	71,586,988
02_No/Low	27_StorCostHigh	01_No LRTP	03_High50	91,923,275	82,227,566	83,523,358	77,899,888	71,358,258
02_No/Low	28_AFR 2020 Low	01_No LRTP	03_High50	77,681,652	72,514,924	71,702,216	71,518,389	60,594,211
02_No/Low	31_ResTOU	01_No LRTP	03_High50	85,138,828	77,977,842	73,890,364	77,893,464	63,441,640
02_No/Low	32_High DG&EV	01_No LRTP	03_High50	85,173,902	74,722,875	74,068,213	77,989,248	63,508,931
02_No/Low	33_RenewELCC-2.5%	01_No LRTP	03_High50	91,862,780	82,102,346	83,538,424	77,877,128	71,479,392
02_No/Low	34_RenewELCC+2.5%	01_No LRTP	03_High50	91,914,585	86,193,197	83,577,992	78,017,233	71,470,020
02_No/Low	35_PRM-2%	01_No LRTP	03_High50	96,476,203	85,386,107	84,303,575	77,927,691	69,129,977
02_No/Low	36_PRM+2%	01_No LRTP	03_High50	93,951,308	81,716,409	81,646,623	77,959,706	67,905,850
03_No/High	00_Base	01_No LRTP	03_High50	92,015,064	82,075,039	83,552,897	77,914,843	71,427,353
03_No/High	01_Coal+20%	01_No LRTP	03_High50	81,306,448	77,275,309	74,369,430	66,033,277	65,271,193
03_No/High	02_Coal-10%	01_No LRTP	03_High50	98,266,632	88,700,570	82,590,002	81,538,372	73,050,000
03_No/High	05_Lower Gas-50%	01_No LRTP	03_High50	88,318,254	81,444,961	77,283,370	65,356,831	68,707,744
03_No/High	06_Low Gas-25%	01_No LRTP	03_High50	89,008,806	82,147,257	79,999,126	68,200,993	70,577,154
03_No/High	07_High Gas+25%	01_No LRTP	03_High50	96,579,873	82,427,952	83,102,188	78,768,549	68,300,496
03_No/High	08_Higher Gas+50%	01_No LRTP	03_High50	98,240,209	87,472,746	84,791,745	76,749,610	68,978,340
03_No/High	09_Highest Gas+100%	01_No LRTP	03_High50	94,866,945	83,842,904	81,734,314	76,566,828	68,925,155
03_No/High	10_WHSL Mkt-50%	01_No LRTP	03_High50	79,353,333	77,314,006	76,767,645	65,764,844	70,493,374
03_No/High	11_WHSL Mkt-25%	01_No LRTP	03_High50	89,712,245	81,632,164	80,096,414	73,791,836	69,051,549
03_No/High	12_WHSL Mkt+25%	01_No LRTP	03_High50	94,574,302	88,012,526	84,949,648	76,559,015	72,954,156
03_No/High	13_WHSL Mkt+50%	01_No LRTP	03_High50	95,885,958	89,210,520	86,429,453	77,712,227	70,464,722
03_No/High	14_CapCosts-30%	01_No LRTP	03_High50	92,040,847	83,655,337	83,053,037	78,138,760	65,065,693
03_No/High	15_CapCosts+30%	01_No LRTP	03_High50	91,976,464	85,538,612	80,066,528	74,564,740	68,348,083
03_No/High	17_NoMktSales	01_No LRTP	03_High50	90,477,673	80,574,006	79,853,190	73,341,270	68,040,175
03_No/High	18_NoSalePurchase	01_No LRTP	03_High50	92,328,177	82,191,707	79,603,526	72,235,470	62,980,654
03_No/High	19_MktAccess-50%	01_No LRTP	03_High50	91,522,035	85,305,631	79,919,789	77,304,398	70,475,400
03_No/High	20_LoINTCONCosts	01_No LRTP	03_High50	91,630,827	78,645,331	77,124,083	71,389,920	66,003,855
03_No/High	21_ITC&PTC Extend	01_No LRTP	03_High50	94,082,367	81,974,673	79,502,428	77,657,961	71,063,320
03_No/High	22_WindCostLow	01_No LRTP	03_High50	91,588,056	85,751,286	76,763,619	74,907,316	68,667,873
03_No/High	23_WindCostHi	01_No LRTP	03_High50	93,826,017	85,777,716	80,230,024	77,950,971	71,339,328
03_No/High	24_SolCostLow	01_No LRTP	03_High50	90,587,703	84,842,784	78,300,687	76,354,677	69,872,766
03_No/High	25_SolCostHigh	01_No LRTP	03_High50	92,001,818	86,077,788	83,771,832	75,227,811	71,719,669
03_No/High	26_StorCostLow	01_No LRTP	03_High50	91,888,050	82,013,253	83,565,438	77,887,876	71,510,111
03_No/High	27_StorCostHigh	01_No LRTP	03_High50	92,041,016	82,120,484	83,532,614	77,965,547	71,321,842
03_No/High	28_AFR 2020 Low	01_No LRTP	03_High50	77,739,514	72,527,395	71,576,705	71,477,288	60,480,766
03_No/High	31_ResTOU	01_No LRTP	03_High50	85,215,271	78,040,222	73,814,867	78,059,681	63,484,030
03_No/High	32_High DG&EV	01_No LRTP	03_High50	85,133,432	74,691,434	74,123,967	78,008,795	63,450,234
03_No/High	33_RenewELCC-2.5%	01_No LRTP	03_High50	91,997,957	82,072,709	83,603,365	77,949,051	71,473,242

03_No/High	34_RenewELCC+2.5%	01_No LRTP	03_High50	91,952,410	86,219,773	83,541,688	77,936,657	71,484,224
03_No/High	35_PRM-2%	01_No LRTP	03_High50	96,428,523	85,256,186	84,354,035	78,000,570	69,131,928
03_No/High	36_PRM+2%	01_No LRTP	03_High50	93,821,774	81,803,951	81,786,497	77,955,569	67,935,931
04_Low/Low	00_Base	01_No LRTP	03_High50	81,420,140	74,312,989	75,908,945	67,257,875	63,112,189
04_Low/Low	01_Coal+20%	01_No LRTP	03_High50	72,517,305	69,562,623	67,147,943	59,395,356	60,067,331
04_Low/Low	02_Coal-10%	01_No LRTP	03_High50	85,414,901	80,214,018	78,236,192	69,272,321	64,780,710
04_Low/Low	05_Lower Gas-50%	01_No LRTP	03_High50	81,367,761	75,282,004	73,502,673	63,774,422	65,079,881
04_Low/Low	06_Low Gas-25%	01_No LRTP	03_High50	83,354,346	77,098,181	70,142,392	65,729,050	66,079,334
04_Low/Low	07_High Gas+25%	01_No LRTP	03_High50	87,064,584	76,833,617	75,765,781	67,171,044	64,063,738
04_Low/Low	08_Higher Gas+50%	01_No LRTP	03_High50	90,615,505	79,135,643	77,578,032	69,560,783	66,714,929
04_Low/Low	09_Highest Gas+100%	01_No LRTP	03_High50	91,947,359	81,599,940	79,469,336	70,380,992	67,637,945
04_Low/Low	10_WHSL Mkt-50%	01_No LRTP	03_High50	72,814,852	72,355,517	71,162,954	61,445,640	67,573,188
04_Low/Low	11_WHSL Mkt-25%	01_No LRTP	03_High50	78,528,625	76,078,207	74,405,404	68,019,936	65,795,345
04_Low/Low	12_WHSL Mkt+25%	01_No LRTP	03_High50	85,382,139	80,816,230	75,095,373	64,829,949	65,008,234
04_Low/Low	13_WHSL Mkt+50%	01_No LRTP	03_High50	87,702,674	82,901,513	80,115,559	66,115,767	66,174,961
04_Low/Low	14_CapCosts-30%	01_No LRTP	03_High50	81,428,788	74,104,638	71,947,265	67,141,244	60,665,856
04_Low/Low	15_CapCosts+30%	01_No LRTP	03_High50	81,442,640	78,180,217	75,954,225	65,244,119	63,088,291
04_Low/Low	17_NoMktSales	01_No LRTP	03_High50	75,958,249	76,932,433	67,993,429	65,778,490	65,173,269
04_Low/Low	18_NoSalePurchase	01_No LRTP	03_High50	79,479,240	75,141,113	72,694,997	67,298,385	61,236,477
04_Low/Low	19_MktAccess-50%	01_No LRTP	03_High50	85,729,116	78,181,624	76,169,296	70,171,115	65,227,736
04_Low/Low	20_LoINTCONCosts	01_No LRTP	03_High50	78,565,880	74,215,551	72,398,108	63,701,414	63,146,742
04_Low/Low	21_ITC&PTC Extend	01_No LRTP	03_High50	76,813,989	76,744,157	74,615,988	65,931,214	62,827,212
04_Low/Low	22_WindCostLow	01_No LRTP	03_High50	78,558,290	74,129,125	72,386,058	66,332,236	62,744,148
04_Low/Low	23_WindCostHi	01_No LRTP	03_High50	85,231,251	77,433,372	75,779,557	67,263,001	65,828,762
04_Low/Low	24_SolCostLow	01_No LRTP	03_High50	82,796,139	72,870,089	73,958,639	65,575,081	62,270,046
04_Low/Low	25_SolCostHigh	01_No LRTP	03_High50	81,757,948	75,097,900	72,977,442	67,680,540	63,408,290
04_Low/Low	26_StorCostLow	01_No LRTP	03_High50	81,448,544	74,342,654	75,716,136	66,875,467	63,079,276
04_Low/Low	27_StorCostHigh	01_No LRTP	03_High50	81,550,753	74,334,304	75,814,042	66,851,571	63,108,476
04_Low/Low	28_AFR 2020 Low	01_No LRTP	03_High50	67,536,494	60,843,894	60,393,808	60,278,366	52,805,485
04_Low/Low	31_ResTOU	01_No LRTP	03_High50	75,018,874	67,174,591	66,141,209	67,141,919	58,179,241
04_Low/Low	32_High DG&EV	01_No LRTP	03_High50	74,995,123	67,154,582	66,278,008	67,221,535	58,459,992
04_Low/Low	33_RenewELCC-2.5%	01_No LRTP	03_High50	81,567,482	78,112,743	75,924,821	67,241,613	62,974,039
04_Low/Low	34_RenewELCC+2.5%	01_No LRTP	03_High50	81,448,347	77,771,480	72,422,860	66,830,661	63,127,235
04_Low/Low	35_PRM-2%	01_No LRTP	03_High50	82,318,299	77,796,839	75,858,669	66,969,645	62,981,751
04_Low/Low	36_PRM+2%	01_No LRTP	03_High50	77,075,764	74,130,236	74,411,752	67,189,560	62,292,006
05_Mid/Mid	00_Base	01_No LRTP	03_High50	69,786,533	66,559,112	63,338,751	56,858,304	59,140,238
05_Mid/Mid	01_Coal+20%	01_No LRTP	03_High50	65,224,539	61,276,824	59,352,494	51,696,730	57,330,492
05_Mid/Mid	02_Coal-10%	01_No LRTP	03_High50	72,378,428	68,526,418	66,788,424	58,759,041	60,488,617
05_Mid/Mid	05_Lower Gas-50%	01_No LRTP	03_High50	68,808,693	64,578,456	64,090,682	57,652,962	62,907,823
05_Mid/Mid	06_Low Gas-25%	01_No LRTP	03_High50	68,807,517	64,666,416	61,967,960	56,499,478	59,064,274

05_Mid/Mid	07_High Gas+25%	01_No LRTP	03_High50	70,500,810	64,768,119	66,524,602	57,910,197	59,814,401
05_Mid/Mid	08_Higher Gas+50%	01_No LRTP	03_High50	73,779,975	66,495,824	68,672,614	60,187,426	59,160,175
05_Mid/Mid	09_Highest Gas+100%	01_No LRTP	03_High50	79,432,545	73,327,037	73,606,412	64,383,923	61,558,719
05_Mid/Mid	10_WHSL Mkt-50%	01_No LRTP	03_High50	66,941,233	65,041,978	63,769,512	59,292,649	63,087,237
05_Mid/Mid	11_WHSL Mkt-25%	01_No LRTP	03_High50	64,432,005	61,854,119	60,503,980	55,759,151	57,611,089
05_Mid/Mid	12_WHSL Mkt+25%	01_No LRTP	03_High50	73,804,813	69,607,372	67,482,123	57,835,446	61,028,188
05_Mid/Mid	13_WHSL Mkt+50%	01_No LRTP	03_High50	75,808,743	71,292,958	68,121,793	59,568,152	62,056,492
05_Mid/Mid	14_CapCosts-30%	01_No LRTP	03_High50	69,853,553	65,153,022	63,630,757	57,111,156	58,383,383
05_Mid/Mid	15_CapCosts+30%	01_No LRTP	03_High50	69,928,205	66,072,069	63,463,106	54,463,798	59,160,773
05_Mid/Mid	17_NoMktSales	01_No LRTP	03_High50	66,500,994	64,055,420	61,254,455	54,140,953	56,634,161
05_Mid/Mid	18_NoSalePurchase	01_No LRTP	03_High50	71,979,967	66,924,856	64,285,014	58,310,073	57,181,515
05_Mid/Mid	19_MktAccess-50%	01_No LRTP	03_High50	73,095,591	67,950,349	65,947,156	54,401,886	59,620,401
05_Mid/Mid	20_LoINTCONCosts	01_No LRTP	03_High50	67,447,434	64,703,370	62,285,536	56,866,073	59,063,269
05_Mid/Mid	21_ITC&PTC Extend	01_No LRTP	03_High50	69,202,554	66,002,824	63,336,148	56,714,165	58,545,952
05_Mid/Mid	22_WindCostLow	01_No LRTP	03_High50	67,595,320	64,313,538	62,670,814	55,359,183	58,657,469
05_Mid/Mid	23_WindCostHi	01_No LRTP	03_High50	69,920,404	67,174,223	63,945,443	56,980,847	59,095,037
05_Mid/Mid	24_SolCostLow	01_No LRTP	03_High50	69,550,910	63,754,980	64,057,478	56,443,913	58,810,474
05_Mid/Mid	25_SolCostHigh	01_No LRTP	03_High50	71,307,228	65,202,419	63,740,706	57,831,627	60,206,462
05_Mid/Mid	26_StorCostLow	01_No LRTP	03_High50	69,977,926	66,551,785	63,431,270	56,881,336	59,176,222
05_Mid/Mid	27_StorCostHigh	01_No LRTP	03_High50	69,825,411	66,671,579	63,124,300	57,000,962	59,165,725
05_Mid/Mid	28_AFR 2020 Low	01_No LRTP	03_High50	53,333,661	52,640,355	52,262,991	51,141,965	47,983,353
05_Mid/Mid	31_ResTOU	01_No LRTP	03_High50	59,512,253	58,152,240	57,717,246	56,986,725	52,623,734
05_Mid/Mid	32_High DG&EV	01_No LRTP	03_High50	60,105,820	58,530,683	57,733,751	56,931,297	53,210,461
05_Mid/Mid	33_RenewELCC-2.5%	01_No LRTP	03_High50	69,812,563	66,368,848	63,314,452	56,915,133	59,357,184
05_Mid/Mid	34_RenewELCC+2.5%	01_No LRTP	03_High50	69,883,212	67,061,253	63,731,844	56,882,547	59,271,553
05_Mid/Mid	35_PRM-2%	01_No LRTP	03_High50	69,916,407	67,073,398	63,739,245	56,905,023	59,247,360
05_Mid/Mid	36_PRM+2%	01_No LRTP	03_High50	68,826,126	66,031,703	62,577,143	56,864,053	58,518,821
06_High/High	00_Base	01_No LRTP	03_High50	61,895,229	58,239,360	56,376,237	52,608,261	57,176,387
06_High/High	01_Coal+20%	01_No LRTP	03_High50	57,581,980	56,438,105	54,798,482	49,953,923	54,435,328
06_High/High	02_Coal-10%	01_No LRTP	03_High50	62,772,548	60,882,232	57,969,801	53,886,775	57,850,840
06_High/High	05_Lower Gas-50%	01_No LRTP	03_High50	62,455,985	60,341,773	58,547,040	53,942,345	59,395,517
06_High/High	06_Low Gas-25%	01_No LRTP	03_High50	62,088,166	60,497,127	58,363,913	51,619,847	57,729,044
06_High/High	07_High Gas+25%	01_No LRTP	03_High50	61,916,318	61,432,267	56,783,331	53,347,753	54,846,531
06_High/High	08_Higher Gas+50%	01_No LRTP	03_High50	62,986,900	61,861,236	60,183,500	53,097,085	55,720,574
06_High/High	09_Highest Gas+100%	01_No LRTP	03_High50	64,782,465	64,990,003	61,253,967	55,459,295	55,059,275
06_High/High	10_WHSL Mkt-50%	01_No LRTP	03_High50	65,806,934	63,834,105	62,959,278	58,359,627	62,862,083
06_High/High	11_WHSL Mkt-25%	01_No LRTP	03_High50	60,361,300	57,879,767	56,511,459	50,402,339	56,754,151
06_High/High	12_WHSL Mkt+25%	01_No LRTP	03_High50	63,587,862	61,027,324	59,191,175	53,091,903	56,586,928
06_High/High	13_WHSL Mkt+50%	01_No LRTP	03_High50	65,622,021	61,677,279	59,943,630	54,517,997	57,205,666
06_High/High	14_CapCosts-30%	01_No LRTP	03_High50	61,757,009	60,269,157	59,496,267	52,332,828	56,478,599

06_High/High	15_CapCosts+30%	01_No LRTP	03_High50	61,760,227	58,796,642	56,580,379	51,451,144	56,663,526
06_High/High	17_NoMktSales	01_No LRTP	03_High50	59,539,047	57,955,289	56,591,455	50,659,821	55,332,657
06_High/High	18_NoSalePurchase	01_No LRTP	03_High50	68,500,357	63,432,653	58,304,511	55,471,212	56,132,768
06_High/High	19_MktAccess-50%	01_No LRTP	03_High50	63,582,356	59,896,753	59,108,588	52,707,019	57,126,827
06_High/High	20_LoINTCONCosts	01_No LRTP	03_High50	60,261,925	59,727,586	55,470,498	51,543,711	55,735,112
06_High/High	21_ITC&PTC Extend	01_No LRTP	03_High50	60,955,132	58,334,343	56,548,205	51,272,248	56,744,528
06_High/High	22_WindCostLow	01_No LRTP	03_High50	61,306,237	58,653,622	56,462,941	50,947,347	55,722,106
06_High/High	23_WindCostHi	01_No LRTP	03_High50	63,165,309	60,008,272	58,059,817	52,381,875	56,947,143
06_High/High	24_SolCostLow	01_No LRTP	03_High50	63,136,803	60,740,729	57,409,589	52,168,619	56,473,001
06_High/High	25_SolCostHigh	01_No LRTP	03_High50	58,782,683	57,301,424	55,799,505	52,257,336	56,207,265
06_High/High	26_StorCostLow	01_No LRTP	03_High50	61,799,759	58,293,663	56,551,671	52,643,577	57,000,495
06_High/High	27_StorCostHigh	01_No LRTP	03_High50	61,815,706	58,365,102	56,393,393	52,650,747	57,154,217
06_High/High	28_AFR 2020 Low	01_No LRTP	03_High50	47,675,943	47,739,646	47,603,733	46,295,894	46,122,822
06_High/High	31_ResTOU	01_No LRTP	03_High50	54,232,789	53,137,686	50,241,789	52,127,731	50,943,079
06_High/High	32_High DG&EV	01_No LRTP	03_High50	54,234,048	52,991,170	50,065,571	52,109,269	50,157,987
06_High/High	33_RenewELCC-2.5%	01_No LRTP	03_High50	61,860,856	59,028,298	56,659,068	52,574,480	57,046,603
06_High/High	34_RenewELCC+2.5%	01_No LRTP	03_High50	61,888,118	60,538,826	56,407,371	52,604,618	56,990,812
06_High/High	35_PRM-2%	01_No LRTP	03_High50	61,820,416	60,776,715	56,546,675	52,526,557	57,072,930
06_High/High	36_PRM+2%	01_No LRTP	03_High50	60,684,136	59,293,182	55,605,533	52,515,189	56,336,743
01_No/No	00_Base	01_No LRTP	04_High20	89,056,219	75,491,779	80,097,071	78,307,276	69,149,967
01_No/No	01_Coal+20%	01_No LRTP	04_High20	84,881,034	72,141,794	73,285,069	74,074,774	65,513,868
01_No/No	02_Coal-10%	01_No LRTP	04_High20	99,287,627	76,946,453	85,718,524	81,954,973	72,808,417
01_No/No	05_Lower Gas-50%	01_No LRTP	04_High20	84,978,913	73,046,168	76,980,870	75,253,091	67,699,029
01_No/No	06_Low Gas-25%	01_No LRTP	04_High20	89,208,915	74,325,875	77,191,508	81,377,033	72,744,570
01_No/No	07_High Gas+25%	01_No LRTP	04_High20	93,024,005	76,431,639	81,421,673	82,299,636	67,999,558
01_No/No	08_Higher Gas+50%	01_No LRTP	04_High20	92,624,667	76,840,388	80,026,377	82,266,086	67,030,700
01_No/No	09_Highest Gas+100%	01_No LRTP	04_High20	92,444,388	77,140,132	78,607,842	82,216,946	69,105,603
01_No/No	10_WHSL Mkt-50%	01_No LRTP	04_High20	83,964,785	62,226,661	77,580,315	81,002,617	71,308,458
01_No/No	11_WHSL Mkt-25%	01_No LRTP	04_High20	90,486,903	70,153,756	84,398,050	77,239,303	72,677,484
01_No/No	12_WHSL Mkt+25%	01_No LRTP	04_High20	94,143,299	78,129,708	81,776,502	81,773,951	68,112,946
01_No/No	13_WHSL Mkt+50%	01_No LRTP	04_High20	95,936,838	79,794,492	83,143,974	84,265,832	70,528,248
01_No/No	14_CapCosts-30%	01_No LRTP	04_High20	89,073,774	75,200,644	78,467,769	78,560,231	71,977,067
01_No/No	15_CapCosts+30%	01_No LRTP	04_High20	89,057,746	75,215,091	84,364,631	80,874,848	71,924,306
01_No/No	17_NoMktSales	01_No LRTP	04_High20	91,800,432	70,457,390	84,715,024	79,303,483	69,020,032
01_No/No	18_NoSalePurchase	01_No LRTP	04_High20	88,023,569	73,500,711	75,898,180	76,242,915	63,258,134
01_No/No	19_MktAccess-50%	01_No LRTP	04_High20	91,274,057	75,124,242	87,299,560	77,887,360	70,497,028
01_No/No	20_LoINTCONCosts	01_No LRTP	04_High20	89,481,701	75,217,352	81,135,035	78,932,059	69,049,090
01_No/No	21_ITC&PTC Extend	01_No LRTP	04_High20	91,200,274	75,314,755	78,123,166	79,803,793	68,577,345
01_No/No	22_WindCostLow	01_No LRTP	04_High20	89,056,138	75,284,829	83,938,874	78,762,976	66,581,091
01_No/No	23_WindCostHi	01_No LRTP	04_High20	90,861,569	75,316,481	84,279,641	78,750,710	71,937,388

01_No/No	24_SolCostLow	01_No LRTP	04_High20	88,066,668	75,310,183	82,563,707	77,247,355	70,543,470
01_No/No	25_SolCostHigh	01_No LRTP	04_High20	88,735,420	75,239,429	84,894,906	78,657,253	72,342,932
01_No/No	26_StorCostLow	01_No LRTP	04_High20	89,031,719	75,267,490	80,126,217	78,313,680	68,277,413
01_No/No	27_StorCostHigh	01_No LRTP	04_High20	89,094,963	75,249,389	80,120,167	78,363,367	72,054,432
01_No/No	28_AFR 2020 Low	01_No LRTP	04_High20	83,485,270	68,356,807	75,765,005	72,404,810	60,764,722
01_No/No	31_ResTOU	01_No LRTP	04_High20	91,021,131	75,311,456	78,669,757	78,789,653	66,374,495
01_No/No	32_High DG&EV	01_No LRTP	04_High20	91,028,315	75,260,523	78,743,835	78,830,451	63,710,537
01_No/No	33_RenewELCC-2.5%	01_No LRTP	04_High20	87,461,713	75,267,577	84,291,462	77,455,716	69,194,894
01_No/No	34_RenewELCC+2.5%	01_No LRTP	04_High20	94,914,281	75,317,006	81,011,521	82,305,726	69,569,989
01_No/No	35_PRM-2%	01_No LRTP	04_High20	93,025,445	75,298,371	79,319,298	82,498,017	67,862,535
01_No/No	36_PRM+2%	01_No LRTP	04_High20	86,902,485	75,323,032	83,395,678	76,353,205	68,261,390
02_No/Low	00_Base	01_No LRTP	04_High20	88,997,213	75,254,281	80,034,627	78,290,873	69,158,868
02_No/Low	01_Coal+20%	01_No LRTP	04_High20	84,950,985	72,163,996	73,340,903	74,011,330	65,497,223
02_No/Low	02_Coal-10%	01_No LRTP	04_High20	99,290,845	76,927,844	85,646,183	81,922,511	72,872,637
02_No/Low	05_Lower Gas-50%	01_No LRTP	04_High20	84,980,302	72,993,138	77,115,854	75,283,336	67,717,490
02_No/Low	06_Low Gas-25%	01_No LRTP	04_High20	89,276,582	74,416,897	77,180,725	81,445,460	72,776,237
02_No/Low	07_High Gas+25%	01_No LRTP	04_High20	92,943,116	76,483,056	81,390,672	82,259,822	67,958,008
02_No/Low	08_Higher Gas+50%	01_No LRTP	04_High20	92,689,702	76,884,527	79,924,412	82,278,811	66,968,855
02_No/Low	09_Highest Gas+100%	01_No LRTP	04_High20	92,514,479	77,175,368	78,543,590	82,239,148	69,137,829
02_No/Low	10_WHSL Mkt-50%	01_No LRTP	04_High20	83,966,577	62,242,530	77,510,583	80,950,225	71,274,598
02_No/Low	11_WHSL Mkt-25%	01_No LRTP	04_High20	90,447,079	70,176,371	84,344,291	77,217,975	72,608,881
02_No/Low	12_WHSL Mkt+25%	01_No LRTP	04_High20	94,156,338	78,089,139	81,713,836	81,795,308	68,061,045
02_No/Low	13_WHSL Mkt+50%	01_No LRTP	04_High20	96,087,277	79,789,322	83,101,904	84,276,465	70,518,431
02_No/Low	14_CapCosts-30%	01_No LRTP	04_High20	88,998,936	75,272,171	84,335,742	80,911,273	72,003,190
02_No/Low	15_CapCosts+30%	01_No LRTP	04_High20	89,013,793	75,259,700	78,381,842	78,563,195	72,019,022
02_No/Low	17_NoMktSales	01_No LRTP	04_High20	91,831,279	70,529,660	84,753,839	79,302,986	69,006,773
02_No/Low	18_NoSalePurchase	01_No LRTP	04_High20	87,875,026	73,675,241	75,782,851	76,220,584	63,107,110
02_No/Low	19_MktAccess-50%	01_No LRTP	04_High20	91,143,264	75,102,061	87,351,683	77,817,644	70,472,682
02_No/Low	20_LoINTCONCosts	01_No LRTP	04_High20	89,512,785	75,397,732	81,136,464	78,960,691	69,176,261
02_No/Low	21_ITC&PTC Extend	01_No LRTP	04_High20	91,053,487	75,256,692	77,981,711	79,816,983	68,515,087
02_No/Low	22_WindCostLow	01_No LRTP	04_High20	89,026,903	75,316,646	83,872,789	78,793,937	66,572,533
02_No/Low	23_WindCostHi	01_No LRTP	04_High20	90,961,905	75,224,551	84,286,953	78,801,435	72,019,293
02_No/Low	24_SolCostLow	01_No LRTP	04_High20	88,008,553	75,266,518	82,563,059	77,251,708	70,509,316
02_No/Low	25_SolCostHigh	01_No LRTP	04_High20	88,667,888	75,297,091	84,878,291	78,616,137	72,373,622
02_No/Low	26_StorCostLow	01_No LRTP	04_High20	89,026,575	75,255,473	80,016,010	78,349,482	68,360,888
02_No/Low	27_StorCostHigh	01_No LRTP	04_High20	88,919,376	75,244,188	80,064,271	78,306,164	72,033,729
02_No/Low	28_AFR 2020 Low	01_No LRTP	04_High20	83,367,129	68,421,881	75,715,045	72,437,775	60,734,284
02_No/Low	31_ResTOU	01_No LRTP	04_High20	90,978,216	75,249,694	78,750,932	78,787,322	66,407,799
02_No/Low	32_High DG&EV	01_No LRTP	04_High20	90,960,409	75,177,366	78,734,577	78,819,384	63,692,552
02_No/Low	33_RenewELCC-2.5%	01_No LRTP	04_High20	87,442,887	75,263,779	84,323,307	77,351,291	69,147,208

02_No/Low	34_RenewELCC+2.5%	01_No LRTP	04_High20	94,953,196	75,268,582	81,048,833	82,367,973	69,616,810
02_No/Low	35_PRM-2%	01_No LRTP	04_High20	93,108,173	75,301,000	79,330,278	82,488,527	67,870,186
02_No/Low	36_PRM+2%	01_No LRTP	04_High20	86,819,206	75,252,423	83,381,029	76,360,741	68,260,268
03_No/High	00_Base	01_No LRTP	04_High20	89,065,788	75,372,916	80,091,109	78,317,382	69,130,966
03_No/High	01_Coal+20%	01_No LRTP	04_High20	84,864,637	72,110,764	73,370,524	74,125,724	65,420,324
03_No/High	02_Coal-10%	01_No LRTP	04_High20	99,244,089	76,926,982	85,669,679	81,901,452	72,856,299
03_No/High	05_Lower Gas-50%	01_No LRTP	04_High20	84,933,889	73,147,289	76,794,222	75,264,395	67,661,518
03_No/High	06_Low Gas-25%	01_No LRTP	04_High20	89,229,482	74,337,932	76,963,576	81,419,811	72,822,781
03_No/High	07_High Gas+25%	01_No LRTP	04_High20	92,955,293	76,492,307	81,405,299	82,276,495	67,985,079
03_No/High	08_Higher Gas+50%	01_No LRTP	04_High20	92,651,473	76,909,080	79,941,848	82,263,577	67,030,727
03_No/High	09_Highest Gas+100%	01_No LRTP	04_High20	92,454,794	77,119,977	78,560,856	82,316,638	69,152,865
03_No/High	10_WHSL Mkt-50%	01_No LRTP	04_High20	83,941,370	62,179,823	77,598,118	81,016,324	71,336,173
03_No/High	11_WHSL Mkt-25%	01_No LRTP	04_High20	90,521,431	70,207,058	84,388,934	77,236,627	72,588,868
03_No/High	12_WHSL Mkt+25%	01_No LRTP	04_High20	94,228,198	77,962,644	81,732,681	81,819,669	68,152,038
03_No/High	13_WHSL Mkt+50%	01_No LRTP	04_High20	96,018,875	79,761,495	83,128,093	84,264,683	70,542,687
03_No/High	14_CapCosts-30%	01_No LRTP	04_High20	88,985,762	75,306,131	84,307,677	80,824,558	71,985,898
03_No/High	15_CapCosts+30%	01_No LRTP	04_High20	89,118,568	75,233,913	78,311,698	78,631,669	71,942,203
03_No/High	17_NoMktSales	01_No LRTP	04_High20	91,875,433	70,581,013	84,753,540	79,180,561	68,996,301
03_No/High	18_NoSalePurchase	01_No LRTP	04_High20	87,860,019	73,545,163	75,931,339	76,237,119	63,219,849
03_No/High	19_MktAccess-50%	01_No LRTP	04_High20	91,149,036	75,096,910	87,284,933	77,892,341	70,546,413
03_No/High	20_LoINTCONCosts	01_No LRTP	04_High20	89,424,229	75,280,470	81,125,597	79,039,893	69,104,373
03_No/High	21_ITC&PTC Extend	01_No LRTP	04_High20	91,118,640	75,250,775	78,093,512	79,840,585	68,497,633
03_No/High	22_WindCostLow	01_No LRTP	04_High20	89,052,769	75,310,774	83,812,637	78,697,243	66,564,451
03_No/High	23_WindCostHi	01_No LRTP	04_High20	90,828,533	75,237,814	84,300,720	78,691,961	71,982,959
03_No/High	24_SolCostLow	01_No LRTP	04_High20	88,081,928	75,234,599	82,680,815	77,262,413	70,547,507
03_No/High	25_SolCostHigh	01_No LRTP	04_High20	88,635,380	75,266,338	84,828,223	78,558,022	72,318,012
03_No/High	26_StorCostLow	01_No LRTP	04_High20	88,983,006	75,236,029	80,039,874	78,216,849	68,304,653
03_No/High	27_StorCostHigh	01_No LRTP	04_High20	88,986,031	75,144,670	80,175,860	78,253,623	71,987,858
03_No/High	28_AFR 2020 Low	01_No LRTP	04_High20	83,435,168	68,496,438	75,672,360	72,504,171	60,778,097
03_No/High	31_ResTOU	01_No LRTP	04_High20	90,983,893	75,289,664	78,757,304	78,784,692	66,467,867
03_No/High	32_High DG&EV	01_No LRTP	04_High20	90,973,936	75,205,670	78,690,113	78,767,375	63,636,796
03_No/High	33_RenewELCC-2.5%	01_No LRTP	04_High20	87,443,824	75,231,785	84,300,513	77,302,497	69,153,860
03_No/High	34_RenewELCC+2.5%	01_No LRTP	04_High20	95,051,445	75,250,321	80,997,844	82,295,470	69,567,707
03_No/High	35_PRM-2%	01_No LRTP	04_High20	93,142,110	75,363,512	79,471,297	82,572,126	67,893,310
03_No/High	36_PRM+2%	01_No LRTP	04_High20	86,967,429	75,260,626	83,389,730	76,451,805	68,274,820
04_Low/Low	00_Base	01_No LRTP	04_High20	84,947,839	72,540,004	73,249,425	73,857,252	63,045,243
04_Low/Low	01_Coal+20%	01_No LRTP	04_High20	80,573,255	69,543,160	68,050,379	70,896,858	59,867,685
04_Low/Low	02_Coal-10%	01_No LRTP	04_High20	87,689,812	74,156,247	78,794,337	76,884,011	64,299,805
04_Low/Low	05_Lower Gas-50%	01_No LRTP	04_High20	78,120,345	70,874,749	71,221,706	69,748,779	66,558,597
04_Low/Low	06_Low Gas-25%	01_No LRTP	04_High20	84,431,047	71,965,506	70,248,347	74,406,317	67,579,420

04_Low/Low	07_High Gas+25%	01_No LRTP	04_High20	87,122,110	73,747,877	74,828,385	78,423,864	64,332,302
04_Low/Low	08_Higher Gas+50%	01_No LRTP	04_High20	87,698,214	74,570,317	76,319,312	79,514,650	65,709,885
04_Low/Low	09_Highest Gas+100%	01_No LRTP	04_High20	88,164,627	75,072,908	76,325,097	79,744,556	67,516,261
04_Low/Low	10_WHSL Mkt-50%	01_No LRTP	04_High20	76,028,169	59,611,918	72,672,404	77,445,740	68,302,018
04_Low/Low	11_WHSL Mkt-25%	01_No LRTP	04_High20	78,184,717	66,629,774	75,922,961	72,605,506	66,572,341
04_Low/Low	12_WHSL Mkt+25%	01_No LRTP	04_High20	88,519,360	76,102,892	75,665,010	77,410,868	64,582,901
04_Low/Low	13_WHSL Mkt+50%	01_No LRTP	04_High20	90,836,979	78,195,888	78,639,725	79,317,929	65,832,481
04_Low/Low	14_CapCosts-30%	01_No LRTP	04_High20	85,018,851	72,551,477	73,298,744	78,300,261	63,089,775
04_Low/Low	15_CapCosts+30%	01_No LRTP	04_High20	84,909,628	72,514,771	73,232,812	74,237,894	63,096,307
04_Low/Low	17_NoMktSales	01_No LRTP	04_High20	80,418,364	68,248,246	77,956,335	69,458,157	66,969,019
04_Low/Low	18_NoSalePurchase	01_No LRTP	04_High20	86,414,694	72,866,276	74,717,921	69,854,177	61,712,809
04_Low/Low	19_MktAccess-50%	01_No LRTP	04_High20	86,437,967	73,400,364	77,483,854	73,993,143	66,243,726
04_Low/Low	20_LoINTCONCosts	01_No LRTP	04_High20	85,263,164	72,468,009	73,182,716	73,822,642	63,157,041
04_Low/Low	21_ITC&PTC Extend	01_No LRTP	04_High20	87,150,540	72,514,430	74,925,828	73,051,563	64,672,865
04_Low/Low	22_WindCostLow	01_No LRTP	04_High20	85,344,446	72,512,765	72,485,723	73,751,806	62,728,738
04_Low/Low	23_WindCostHi	01_No LRTP	04_High20	84,958,174	72,516,802	73,326,350	73,849,154	63,035,282
04_Low/Low	24_SolCostLow	01_No LRTP	04_High20	82,942,353	72,640,866	75,520,871	72,805,171	66,021,459
04_Low/Low	25_SolCostHigh	01_No LRTP	04_High20	85,582,420	72,593,384	74,220,134	74,553,309	67,398,501
04_Low/Low	26_StorCostLow	01_No LRTP	04_High20	84,960,346	72,556,463	73,119,708	73,753,489	63,147,513
04_Low/Low	27_StorCostHigh	01_No LRTP	04_High20	85,011,476	72,587,672	73,180,569	73,811,686	63,088,853
04_Low/Low	28_AFR 2020 Low	01_No LRTP	04_High20	74,873,278	66,703,272	65,166,284	66,538,952	55,431,062
04_Low/Low	31_ResTOU	01_No LRTP	04_High20	78,376,390	72,710,859	71,641,671	67,927,378	58,095,401
04_Low/Low	32_High DG&EV	01_No LRTP	04_High20	78,468,299	72,589,297	71,339,020	68,059,166	58,108,608
04_Low/Low	33_RenewELCC-2.5%	01_No LRTP	04_High20	83,339,828	72,539,761	76,490,864	72,190,795	66,908,511
04_Low/Low	34_RenewELCC+2.5%	01_No LRTP	04_High20	89,134,472	72,594,540	73,997,051	74,234,843	63,593,936
04_Low/Low	35_PRM-2%	01_No LRTP	04_High20	89,211,602	72,576,395	76,030,986	74,295,950	65,381,032
04_Low/Low	36_PRM+2%	01_No LRTP	04_High20	82,954,299	72,582,926	73,216,705	72,378,444	66,348,512
05_Mid/Mid	00_Base	01_No LRTP	04_High20	76,938,447	68,063,305	67,272,356	68,906,030	60,137,470
05_Mid/Mid	01_Coal+20%	01_No LRTP	04_High20	73,806,125	65,312,756	61,566,018	65,420,518	57,650,044
05_Mid/Mid	02_Coal-10%	01_No LRTP	04_High20	79,653,048	69,494,079	68,850,225	71,238,044	60,958,513
05_Mid/Mid	05_Lower Gas-50%	01_No LRTP	04_High20	69,865,491	66,416,974	61,741,257	68,140,983	61,992,385
05_Mid/Mid	06_Low Gas-25%	01_No LRTP	04_High20	76,714,175	67,444,624	63,580,267	68,786,941	59,171,531
05_Mid/Mid	07_High Gas+25%	01_No LRTP	04_High20	77,526,479	68,599,353	68,513,630	71,576,814	60,085,204
05_Mid/Mid	08_Higher Gas+50%	01_No LRTP	04_High20	78,937,287	69,531,229	69,774,615	71,672,400	59,640,379
05_Mid/Mid	09_Highest Gas+100%	01_No LRTP	04_High20	80,113,942	70,918,972	70,739,276	73,091,927	61,981,737
05_Mid/Mid	10_WHSL Mkt-50%	01_No LRTP	04_High20	66,757,523	57,246,248	64,063,771	68,605,956	65,286,770
05_Mid/Mid	11_WHSL Mkt-25%	01_No LRTP	04_High20	71,322,455	62,074,579	64,409,595	64,457,825	57,295,074
05_Mid/Mid	12_WHSL Mkt+25%	01_No LRTP	04_High20	79,656,402	72,695,077	67,870,193	70,891,889	61,229,009
05_Mid/Mid	13_WHSL Mkt+50%	01_No LRTP	04_High20	80,179,508	75,639,253	69,815,494	71,647,872	62,369,424
05_Mid/Mid	14_CapCosts-30%	01_No LRTP	04_High20	76,865,141	68,123,371	65,911,280	68,883,692	59,350,861

05_Mid/Mid	15_CapCosts+30%	01_No LRTP	04_High20	76,785,110	68,219,645	66,156,283	68,695,952	59,659,499
05_Mid/Mid	17_NoMktSales	01_No LRTP	04_High20	75,497,392	64,820,680	63,607,824	66,002,746	56,530,858
05_Mid/Mid	18_NoSalePurchase	01_No LRTP	04_High20	76,305,477	72,122,837	67,687,185	67,753,893	55,992,880
05_Mid/Mid	19_MktAccess-50%	01_No LRTP	04_High20	81,785,039	70,817,988	69,227,030	70,278,657	61,665,709
05_Mid/Mid	20_LoINTCONCosts	01_No LRTP	04_High20	74,702,743	68,123,058	65,534,627	68,780,555	58,918,840
05_Mid/Mid	21_ITC&PTC Extend	01_No LRTP	04_High20	76,552,224	68,058,054	66,945,592	68,037,846	59,765,555
05_Mid/Mid	22_WindCostLow	01_No LRTP	04_High20	74,385,267	68,143,183	63,693,715	68,447,224	58,715,018
05_Mid/Mid	23_WindCostHi	01_No LRTP	04_High20	77,673,356	68,108,222	66,533,084	68,982,510	59,344,401
05_Mid/Mid	24_SolCostLow	01_No LRTP	04_High20	77,527,240	68,085,129	66,718,325	68,159,175	59,990,750
05_Mid/Mid	25_SolCostHigh	01_No LRTP	04_High20	77,217,455	68,159,182	66,007,129	67,922,827	59,377,344
05_Mid/Mid	26_StorCostLow	01_No LRTP	04_High20	76,844,261	68,020,941	66,567,317	69,035,844	59,321,029
05_Mid/Mid	27_StorCostHigh	01_No LRTP	04_High20	76,876,157	68,234,045	66,054,023	68,942,918	59,388,376
05_Mid/Mid	28_AFR 2020 Low	01_No LRTP	04_High20	60,765,503	62,105,420	54,369,402	53,950,738	49,531,713
05_Mid/Mid	31_ResTOU	01_No LRTP	04_High20	67,238,127	68,244,322	60,399,424	59,540,427	54,324,991
05_Mid/Mid	32_High DG&EV	01_No LRTP	04_High20	67,444,939	68,183,751	60,435,079	59,442,746	54,942,233
05_Mid/Mid	33_RenewELCC-2.5%	01_No LRTP	04_High20	75,871,697	68,091,747	65,163,121	67,067,946	59,337,846
05_Mid/Mid	34_RenewELCC+2.5%	01_No LRTP	04_High20	76,954,668	68,113,212	67,296,806	69,067,437	60,901,057
05_Mid/Mid	35_PRM-2%	01_No LRTP	04_High20	76,994,371	68,150,255	67,892,110	69,104,390	61,424,403
05_Mid/Mid	36_PRM+2%	01_No LRTP	04_High20	75,328,626	68,129,470	64,743,392	67,162,825	59,319,118
06_High/High	00_Base	01_No LRTP	04_High20	66,201,669	64,550,191	59,832,251	61,075,383	56,173,891
06_High/High	01_Coal+20%	01_No LRTP	04_High20	63,512,785	62,023,094	56,122,450	58,320,425	54,666,933
06_High/High	02_Coal-10%	01_No LRTP	04_High20	67,834,389	66,031,266	59,595,376	62,556,957	58,115,556
06_High/High	05_Lower Gas-50%	01_No LRTP	04_High20	61,695,657	62,960,186	57,686,844	63,417,341	57,293,672
06_High/High	06_Low Gas-25%	01_No LRTP	04_High20	67,303,957	64,022,275	58,667,078	63,372,747	57,240,835
06_High/High	07_High Gas+25%	01_No LRTP	04_High20	66,605,109	64,996,827	61,108,018	60,235,131	55,665,344
06_High/High	08_Higher Gas+50%	01_No LRTP	04_High20	67,037,125	65,615,694	63,423,678	64,265,391	56,950,880
06_High/High	09_Highest Gas+100%	01_No LRTP	04_High20	70,362,897	67,249,778	63,807,742	64,881,337	58,250,185
06_High/High	10_WHSL Mkt-50%	01_No LRTP	04_High20	67,392,961	56,526,391	60,978,223	63,615,882	61,504,200
06_High/High	11_WHSL Mkt-25%	01_No LRTP	04_High20	65,347,483	59,391,226	57,805,103	62,676,860	56,071,657
06_High/High	12_WHSL Mkt+25%	01_No LRTP	04_High20	69,159,058	69,593,165	61,554,461	61,400,434	57,502,677
06_High/High	13_WHSL Mkt+50%	01_No LRTP	04_High20	72,207,698	73,091,261	62,888,139	63,111,778	57,806,652
06_High/High	14_CapCosts-30%	01_No LRTP	04_High20	66,077,073	64,592,428	57,993,079	61,356,327	55,972,420
06_High/High	15_CapCosts+30%	01_No LRTP	04_High20	66,215,816	64,615,080	59,890,126	61,149,811	56,136,819
06_High/High	17_NoMktSales	01_No LRTP	04_High20	68,166,737	62,094,704	57,050,872	62,176,387	56,445,162
06_High/High	18_NoSalePurchase	01_No LRTP	04_High20	70,911,148	71,819,801	61,914,457	58,654,117	52,984,050
06_High/High	19_MktAccess-50%	01_No LRTP	04_High20	70,604,472	69,091,977	62,013,706	63,319,377	57,989,546
06_High/High	20_LoINTCONCosts	01_No LRTP	04_High20	64,425,548	64,613,166	59,085,953	58,517,327	56,308,302
06_High/High	21_ITC&PTC Extend	01_No LRTP	04_High20	65,609,632	64,517,613	58,640,143	60,395,589	57,460,783
06_High/High	22_WindCostLow	01_No LRTP	04_High20	66,422,615	64,616,452	57,539,789	61,779,080	55,718,064
06_High/High	23_WindCostHi	01_No LRTP	04_High20	67,959,835	64,508,887	60,052,413	61,201,064	56,172,798

06_High/High	24_SolCostLow	01_No LRTP	04_High20	68,024,295	64,531,550	57,697,609	61,740,365	56,894,572
06_High/High	25_SolCostHigh	01_No LRTP	04_High20	65,746,401	64,428,891	58,630,486	60,301,526	56,427,558
06_High/High	26_StorCostLow	01_No LRTP	04_High20	66,075,555	64,599,245	59,963,468	61,145,016	56,071,371
06_High/High	27_StorCostHigh	01_No LRTP	04_High20	66,066,864	64,574,901	59,988,186	61,024,561	56,021,742
06_High/High	28_AFR 2020 Low	01_No LRTP	04_High20	53,905,702	57,975,324	47,718,618	49,981,193	47,360,577
06_High/High	31_ResTOU	01_No LRTP	04_High20	60,736,472	64,643,949	53,943,083	55,777,358	52,158,152
06_High/High	32_High DG&EV	01_No LRTP	04_High20	60,600,091	64,684,713	53,994,414	55,636,395	52,388,965
06_High/High	33_RenewELCC-2.5%	01_No LRTP	04_High20	66,104,934	64,596,596	58,042,083	61,207,321	55,328,465
06_High/High	34_RenewELCC+2.5%	01_No LRTP	04_High20	66,185,254	64,611,866	58,971,838	61,084,619	58,522,262
06_High/High	35_PRM-2%	01_No LRTP	04_High20	65,298,758	64,469,457	59,527,504	61,070,145	58,624,168
06_High/High	36_PRM+2%	01_No LRTP	04_High20	66,074,856	64,343,993	59,081,992	61,130,950	55,314,934
01_No/No	00_Base	02_LRTP	01_Mid50	85,330,305	77,539,755	73,611,315	72,710,013	61,014,019
02_No/Low	00_Base	02_LRTP	01_Mid50	85,245,700	77,562,900	73,604,379	72,779,904	60,886,379
03_No/High	00_Base	02_LRTP	01_Mid50	85,244,513	77,578,962	73,642,488	72,719,238	60,803,744
04_Low/Low	00_Base	02_LRTP	01_Mid50	75,090,870	66,959,775	65,641,955	61,956,345	55,325,211
05_Mid/Mid	00_Base	02_LRTP	01_Mid50	59,672,904	57,378,083	56,367,883	56,580,159	50,519,241
06_High/High	00_Base	02_LRTP	01_Mid50	54,113,125	53,747,053	51,746,170	52,996,232	48,272,586

CERTIFICATE OF SERVICE

I, Sharon Ferguson, hereby certify that I have this day, served copies of the following document on the attached list of persons by electronic filing, certified mail, e-mail, or by depositing a true and correct copy thereof properly enveloped with postage paid in the United States Mail at St. Paul, Minnesota.

**Minnesota Department of Commerce
Supplemental Comments**

Docket No. E015/RP-21-33

Dated this **29th** day of **July 2022**

/s/Sharon Ferguson

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Jessica L	Bayles	Jessica.Bayles@stoel.com	Stoel Rives LLP	1150 18th St NW Ste 325 Washington, DC 20036	Electronic Service	No	OFF_SL_21-33_Official CC Service List
Laura	Bishop	Laura.Bishop@state.mn.us	MN Pollution Control Agency	520 Lafayette Rd Saint Paul, MN 55155	Electronic Service	No	OFF_SL_21-33_Official CC Service List
Jon	Brekke	jbrekke@greenergy.com	Great River Energy	12300 Elm Creek Boulevard Maple Grove, MN 553694718	Electronic Service	No	OFF_SL_21-33_Official CC Service List
Christina	Brusven	cbrusven@fredlaw.com	Fredrikson Byron	200 S 6th St Ste 4000 Minneapolis, MN 554021425	Electronic Service	No	OFF_SL_21-33_Official CC Service List
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1400 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_21-33_Official CC Service List
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Brian	Edstrom	briane@cubminnesota.org	Citizens Utility Board of Minnesota	332 Minnesota St Ste W1360 Saint Paul, MN 55101	Electronic Service	No	OFF_SL_21-33_Official CC Service List
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	No	OFF_SL_21-33_Official CC Service List
Stephanie L	Fitzgerald	sfitzgerald@mncenter.org	Minnesota Center for Environmental Advocacy	1919 University Ave W Ste 515 Saint Paul, MN 55104-3435	Electronic Service	No	OFF_SL_21-33_Official CC Service List

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James D.	Larson	james.larson@avantenergy.com	Avant Energy Services	220 S 6th St Ste 1300 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_21-33_Official CC Service List
Annie	Levenson Falk	annielf@cubminnesota.org	Citizens Utility Board of Minnesota	332 Minnesota Street, Suite W1360 St. Paul, MN 55101	Electronic Service	No	OFF_SL_21-33_Official CC Service List
Eric	Lipman	eric.lipman@state.mn.us	Office of Administrative Hearings	PO Box 64620 St. Paul, MN 551640620	Electronic Service	Yes	OFF_SL_21-33_Official CC Service List
Susan	Ludwig	sludwig@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	OFF_SL_21-33_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 7th St E St. Paul, MN 55106	Electronic Service	No	OFF_SL_21-33_Official CC Service List
Daryl	Maxwell	dmaxwell@hydro.mb.ca	Manitoba Hydro	360 Portage Ave FL 16 PO Box 815, Station Main Winnipeg, Manitoba R3C 2P4 Canada	Electronic Service	No	OFF_SL_21-33_Official CC Service List
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David	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency	220 South Sixth Street Suite 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_21-33_Official CC Service List
Jennifer	Peterson	jppeterson@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	OFF_SL_21-33_Official CC Service List
Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	Yes	OFF_SL_21-33_Official CC Service List
Susan	Romans	sromans@allete.com	Minnesota Power	30 West Superior Street Legal Dept Duluth, MN 55802	Electronic Service	No	OFF_SL_21-33_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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Laurie	Williams	laurie.williams@sierraclub.org	Sierra Club	Environmental Law Program 1536 Wynkoop St Ste 200 Denver, CO 80202	Electronic Service	No	OFF_SL_21-33_Official CC Service List