

Supplemental Planning Analysis Technical Appendix

In this appendix, Duke Energy Carolinas, LLC ("DEC") and Duke Energy Progress, LLC ("DEP" and, together with DEC, the "Companies") provide additional detailed technical inputs and modeling results for the supplemental modeling and additional portfolio analysis ("Supplemental Planning Analysis") developed in support of their 2023 Carolinas Resource Plan (the "Plan" or "Resource Plan"), including:

- Additional supporting information on inputs, modeling updates, and adjustments
- Additional supporting analysis including Reliability Verification, Bad Creek II Economic Verification, and Supplemental Coal Retirement Analysis
- Additional detail for Energy Transition Pathway 3 Portfolio Sensitivity Analysis
- Recommended Portfolio details including Load Capacity and Reserve Tables and First Year of Need calculations
- Other Supplemental Portfolio Analysis results

Additional Supporting Inputs, Modeling Updates and Adjustments

In addition to the updates to major inputs discussed in Section 2 (Methodology and Key Assumptions Updates), some additional updates were made to align with most current assumptions as part of normal business processes. These updates are less impactful than those explained in Section 2 but are still important to maintain the accuracy of the supplemental analytics. Table SPA T-1 below provides a summary of the updated inputs:

Table SPA T-1: Other Input Variable Updates

Input Variable	Supplemental Planning Analysis Assumption
Changes to Supply-Side Resources	
Lincoln CT 17[1]	Updated COD to BOY 2025 (from BOY 2024)
Bad Creek II	Projected capacity increased from 1,680 MW to 1,834 MW based on initial centerline equipment bids[2]
Allen 1 and 5 Retirements	Updated from March 31, 2024 to December 31, 2024 and September 30, 2024 to reflect the latest projected retirement dates of these units
Roxboro 2 and 4 Retirements	Switched retirement dates for the units
Changes in Modeling/Analytics	
Reserve Margin Schedule	Grow into 22% reserve margin by 2031
Ancillary Services	Updated ancillary services based on new expansion plan
Encompass Model Version	Updated to version 7.1.4
Minor Modeling Adjustments/Enhancements	Updated various data inputs in Encompass model[3]

Note 1: Combustion Turbine ("CT")
Note 2: Initial Plan modeling reflected a peak power capacity of 1,680 MW for Bad Creek II, but the capacity number was rounded to 1,700 MW in NTAP summaries including, but not limited to, Table 4-2. NTAP tables in the Supplemental Planning Analysis including, but not limited to, Table SPA 4-1, reflect the unrounded capacity of 1,834 MW and reflect a change of 134 MW relative to the rounded 1,700 MW capacity used in the initial Plans' NTAP summaries.
Note 3: Consistent with the Companies' approach when filing the initial Plan, the Companies will make available via Datasite updated detailed EnCompass and SERVM modeling files and will identify all file updates in the Supplemental Planning Analysis modeling process as part of that production of documents.

Table SPA T-2 below contains combined cycle, combustion turbine, and hydro uprates included in Portfolio P3 Fall Base. These uprates are incremental to those included in the initial Plan.

Table SPA T-2: Incremental Unit Uprates (Compared to Initial Plan)

Unit	Type of Unit	Incremental Uprate (MW)
Buck	Combined Cycle	13 [1]
Dan River	Combined Cycle	13 [1]
Richmond 4	Combined Cycle	13 [1]
Jocassee	Pumped Storage	76
Brunswick 2	Nuclear	9
Catawba 2	Nuclear	6.7
Wayne	Combustion Turbine	30
Rockingham	Combustion Turbine	50
Asheville	Combustion Turbine	10
Sutton	Combustion Turbine	16
WS Lee	Combustion Turbine	16
Misc. Hydro	Hydro	29.7 [2]

Note 1: Incremental to uprates included in the initial Plan.
Note 2: Uprates at Cedar Cliff, Tillery, Bear Creek, Thorpe, and Tuckasegee.

Additional Supporting Analyses

Reliability Verification

This section outlines the analytical process undertaken to provide reasonable assurance that the final P3 Fall Base portfolio performs at levels of reliability equivalent to or better than the current system configuration based on satisfying the Loss of Load Expectation ("LOLE") resource adequacy metric.

The process for conducting this analysis is the same as specified in the Portfolio LOLE Reliability Verification section of Appendix C to the 2023 Carolinas Resource Plan. As established in that document, the reliability target is 0.165 event-days per year. A portfolio that has a LOLE of greater than 0.165 event-days per year is judged to be unable to meet the one day of load shed every 10 years threshold. Table SPA T-3 below details the reliability metrics of the portfolio for years 2033 and 2038 as well as a point of comparison, which is the 2023 Resource Adequacy Study Island Combined Scenario with a study year of 2027. The metrics listed in Table SPA T-3 are the probability weighted average results of the simulations for P3 Fall Base.

Table SPA T-3: Reliability Metrics for P3 Fall Base, 2033 and 2038

Reliability Metric	2033 Metrics	2038 Metrics	RA Island Combined Scenario
CTs Added (count)	0	0	N/A
LOLE (event-day per year)	0.051	0.089	0.160
LOLH (event-hour per year)	0.181	0.373	0.517
LOLF (event per year)	0.052	0.093	0.161
EUE (MWh)	571	1,603	1,031
nEUE (ppm)	3	7	6
ARH (hour per year)	0.296	0.214	0.80

As shown in Table SPA T-3 above, P3 Fall Base requires no additional capacity to meet the 0.165 reliability target in either year evaluated.

This analysis was also conducted for Supplemental Portfolios P1 Fall Supplemental, P2 Fall Supplemental and SP SC No CO_2 Constraint Fall Supplemental, with additional capacity added to P1 Fall Supplemental and SP SC No CO_2 Constraint Fall Supplemental as a result.

Bad Creek Powerhouse II Economic Verification

Consistent with the approach in the initial Resource Plan, the Companies included Bad Creek Powerhouse II in all portfolios when developing portfolios to simplify the complex storage analysis within the Capacity Expansion Step in the Supplemental Planning Analysis. To confirm the economic inclusion of this resource, given the updated load forecast, supplemental resource cost assumptions for Bad Creek II, and the additional input assumptions contained in the Supplemental Planning Analysis, the Companies conducted an economic verification, where the Companies reoptimized portfolio resource selections explicitly excluding Bad Creek II and allowed the model to economically select resources to meet the requirements of the system. This economic verification resulted in a present value of revenue requirement ("PVRR") savings of approximately $1 billion in PVRR through 2050 when Bad Creek II was included in the resource portfolio in P3 Fall Base relative to a portfolio without Bad Creek II.

Supplemental Coal Retirement Analysis Results

The Companies conducted supplemental coal retirement analysis consistent with a Pathway 3 2035 Interim Target[1] compliance date given the supplemental input assumptions discussed in Section 2 of the Supplemental Planning Analysis. The results of the supplemental coal retirement analysis are presented below in Table SPA T-4.

Table SPA T-4: Supplemental Coal Retirement Analysis Results

Coal Units	Pathway 3 Optimal Unit Retirement Date	Supplemental Coal Retirement Analysis – Model Selected Retirement Date
Belews Creek 1 & 2	2036	2033
Cliffside 5	2031	2031
Marshall 1 & 2	2029	2029
Marshall 3 & 4	2032	2032
Mayo 1	2031	2035
Roxboro 1	2029	2029
Roxboro 2[1]	2029	2034
Roxboro 3	2034	2034
Roxboro 4[1]	2034	2029

Note 1: Based on execution considerations, the Companies updated the Coal Retirement Analysis Unit Groups for Roxboro, switching Unit 2 with Unit 4, so that Roxboro 1 and 4 would be grouped together and Roxboro 2 and 3 would be grouped together in the supplemental coal retirement analysis.

These results of the supplemental coal retirement analysis confirm that with the increased fuel supply assumptions and resource availability, along with the other inputs integrated into the Supplemental Planning Analysis, the model determined that a similar schedule to the Pathway 3 Optimal Retirement dates is economically justified. The supplemental coal retirement analysis provides additional justification for the Companies' originally determined optimal unit retirement dates under Pathway 3, with the order and timing of Cliffside 5 and Marshall 3 and 4 aligning to the result of the supplemental coal retirement analysis, while there was no deviation for Marshall 1 and 2 and the Roxboro coal plant retirements.

The supplemental coal retirement analysis deviates from the Pathway 3 retirement schedule for Mayo and Belews Creek; however, the Companies continue to support the initially determined Pathway 3 retirement dates for these units as components of a more orderly and optimal retirement schedule. For Mayo, as stated in the original filing,[2] this coal unit is a single-unit site that is among the most expensive of the coal units to operate and, given the lack of operational efficiency for the single-unit

[1] Interim Target as defined in Carolinas Resource Plan Chapter 3 (Portfolios) is 70% carbon-dioxide ("CO_2") emissions reduction from 2005 levels.

[2] Carolinas Resource Plan, Appendix F (Coal Retirement Analysis) at 14-15.

site and the low capacity factor and run hours projected by the model in the 2030s, the Companies continue to support the optimal retirement date for Mayo to be 2031 to further enhance executability of the transition by allowing time for replacement resources necessitated by coal unit retirements. For Belews Creek 1 and 2, in part because this site is well suited for and being pursued as the first early site permit for advanced nuclear, the Companies continue to support delaying retirement of these units to 2036. This timeline is generally consistent with the timing planned for the first advanced nuclear small modular reactor units coming online and provides more capacity through the transition relative to the economically selected date, providing added reliability to the system. For these reasons, the Companies continue to support the optimal unit retirement dates presented in the initial Plan filing.

Depending on how future load growth ultimately materializes, the Companies may have the opportunity to accelerate coal unit retirements if load is lower than forecasted or, in the alternative, may need to defer retirement of some coal resources if load is higher than expected, to ensure adequate dispatchable capacity resources remain on the grid through the transition of the fleet. The Companies' optimal unit retirement dates continue to recognize the importance of an orderly and paced-out coal retirement schedule that allows executability of the transition in a prudent and flexible manner while ensuring adequacy of resources to maintain reliability. Importantly, while the potential for some deferral of coal retirements may be required as load develops, this must be balanced and evaluated against the need to mitigate risk to customers of continued operation of coal and of the executability of the transition as discussed in Appendix F to the initial Plan and to provide for an orderly exit from coal by the end of 2035.

Supplemental Pathway 3 Sensitivity Analysis Portfolio Results

P3 Fall High Load

Continued rapid economic development in the Carolinas would necessitate the addition of generation resources beyond those envisioned in Portfolio P3 Fall Base and may require adjustments to the Companies' planned coal retirement schedule. Relative to P3 Fall Base, the P3 Fall Base High Load portfolio, developed using the Continued Economic Development load forecast described in Section 2, includes one additional combined cycle ("CC") unit (1,360 MW), 2,640 MW of additional batteries, and 750 MW of additional solar by 2038. In addition, continued rapid economic development in the Carolinas may necessitate delaying certain coal unit retirements. The emphasis on firm, dispatchable generation and additional energy storage reflects the high load factor customer demand anticipated in the Continued Economic Development load forecast. This sensitivity analysis confirms that the Interim Target could be achieved by 2037 in a future with continued rapid economic development.

P3 Fall High Load Interruptible

With the continued rapid economic development in the Carolinas, the Companies are continuing to pursue innovative ways of working with customers on demand-side management solutions to reduce the need for incremental supply-side resources to meet growing load. This Sensitivity Analysis Portfolio quantifies the potential impact of incremental interruptible load associated with the Continued Economic Development load forecast to offset a portion of the peak capacity need. Specifically, the

portfolio was developed on the assumption that up to 1,000 MW of load could be interrupted. This Sensitivity Analysis Portfolio demonstrates that this level of interruptible load could offset the need for a 425 MW CT capacity and 700 MW of battery energy storage through 2031. This Sensitivity Analysis Portfolio results in a $1.3 billion lower PVRR through 2050 relative to P3 Fall High Load by offsetting or deferring the aforementioned resources. Although this portfolio was developed using interruptible load, customer-sited standby generation or similar programs could also potentially serve to offset supply side peak capacity resources to a certain degree, depending on the nature and terms of the program. Importantly in this scenario, any interruptible load that offsets capacity would need to be available at guaranteed levels and reliable when called upon in order to maintain or improve reliability.

P3 Fall High CC/CT Cost

The Companies developed the P3 Fall High CC/CT Cost portfolio to evaluate potential changes in CC and CT resource selection under higher capital cost assumptions. For this portfolio, the Companies increased the projected capital cost of CC and CT units by 25% from the Fall Base assumptions. The model continued to select five CC units in this case, consistent with P3 Fall Base, and selected only one fewer CT unit (four units, rather than five in P3 Fall Base) by 2038, the end of the Base Planning Period. This result underscores the need for additional flexible, dispatchable generating resources in combination with significant levels of intermittent renewable resources in order to meet the growing, around-the-clock energy needs of customers in the Carolinas and to maintain reliability while retiring aging coal stations.

Tables SPA T-5 and SPA T-6 below provide differences in resource selection between P3 Fall Base and the supplemental Pathway 3 Sensitivity Analysis Portfolios by 2035 and 2038, respectively.

Table SPA T-5: Supplemental Pathway 3 Sensitivity Analysis Portfolios' Cumulative Resource Changes (Nameplate MW) Relative to P3 Fall Base by 2035

	Coal	Solar	Battery	CC	CT	Onshore Wind	Pumped Storage	Nuclear	Offshore Wind
P3 Fall Base	-6,225	12,600	5,100	6,800	2,125	2,100	1,834	600	2,400
Δ P3 Fall High Load	713	225	-160	0	0	-450	0	0	-800
Δ P3 Fall High Load Interruptible	713	225	-920	1,360	-425	-450	0	-300	-800
Δ P3 Fall High CC/CT Cost	0	150	280	0	-425	0	0	0	0

Table SPA T-6: Supplemental Pathway 3 Sensitivity Analysis Portfolios' Cumulative Resource Changes (Nameplate MW) Relative to P3 Fall Base by 2038

	Coal	Solar	Battery	CC	CT	Onshore Wind	Pumped Storage	Nuclear	Offshore Wind
P3 Fall Base	-8,445	17,475	6,320	6,800	2,125	2,250	1,834	2,100	2,400
Δ P3 Fall High Load	0	750	2,640	1,360	0	0	0	0	0
Δ P3 Fall High Load Interruptible	0	750	2,400	1,360	0	0	0	0	0
Δ P3 Fall High CC/CT Cost	0	-75	200	0	-425	0	0	0	0

Table SPA T-7 below presents PVRR differences between P3 Fall Base and the supplemental Pathway 3 Sensitivity Analysis portfolios through 2038 and 2050.

Table SPA T-7: Supplemental Pathway 3 Sensitivity Analysis Portfolios' PVRR Differences ($B) from P3 Fall Base by 2038 and 2050

	PVRR Through 2038			PVRR Through 2050		
	DEC	DEP	CAR	DEC	DEP	CAR
P3 Fall Base	$48	$30	$78	$89	$60	$149
Δ P3 Fall High Load	2	1	3	5	5	10
Δ P3 Fall High Load Interruptible	2	0	2	4	4	9
Δ P3 Fall High CC/CT Cost	1	1	1	2	0	2

Results for Fall Supplemental Updates to Pathway 1 and Pathway 2 Portfolios

In addition to the supplemental portfolios under Energy Transition Pathway 3, the Companies developed supplemental updates to the Core Portfolios under Energy Transition Pathway 1 and Energy Transition Pathway 2 using the Updated 2023 Fall Load Forecast and other inputs and assumptions described in Section 2 of this document. As noted in Section 3, Portfolio P3 Fall Base requires nearly all available renewable and nuclear generation to achieve the Interim Target by 2035. Therefore, in order to develop portfolios that reach the Interim Target prior to 2035, it was necessary for the Companies to increase resource availability assumptions for P1 Fall Supplemental and P2 Fall Supplemental as described below. All other methods and assumptions used to develop these

portfolios are consistent with those described in Chapter 2 (Methodology and Key Assumptions) and Appendix C (Quantative Analysis) of the Companies' August filing.

P1 Fall Supplemental

The projected energy need for 2030 in the Updated 2023 Fall Load Forecast is approximately 21,900 GWh greater than the projected 2030 need in the 2023 Spring Load Forecast used to develop portfolio P1 Base. That increase would need to be served entirely with carbon-free generation to avoid delaying the Interim Target and is roughly equivalent to the annual energy output of 9,300 MW of solar, or 9,400 MW of onshore wind in DEP, or 6,200 MW of offshore wind (without accounting for the energy storage capacity that would be required to move that energy in time to align with load). In order to allow the capacity expansion model to solve with a constraint of 70% NC CO_2 reduction by 2030, the Companies increased 2030 resource availability to the amounts that are otherwise available by 2035 under the Fall Base assumptions described in Section 2. P1 Fall Supplemental results in a PVRR increase of $34 billion relative to P3 Fall base, including a 20% cost risk premium to capital costs for the pace, scope, and scale of resource additions as described in Chapter 3 (Portfolios) of the initial Plan. This portfolio would require deployment of an additional $63 billion of capital by 2030 relative to P3 Fall Base. Table SPA T-8 below provides model-selected resource additions for portfolio P1 Fall Supplemental by 2030.

Table SPA T-8: Model-Selected Resource Additions for P1 Fall Supplemental by 2030 (Nameplate MW)

	Coal	Solar	Battery	CC	CT	Onshore Wind	Pumped Storage	Nuclear	Offshore Wind
P1 Fall Supplemental	-7,127	12,825	5,140	4,080	2,125	1,050	0	0	2,400

P2 Fall Supplemental

The projected energy need for 2033 in the Updated 2023 Fall Load Forecast is approximately 23,800 GWh greater than the projected 2033 need in the 2023 Spring Load Forecast used to develop portfolio P2 Base. That increase would need to be served entirely with carbon-free generation to avoid delaying the Interim Target and is roughly equivalent to the annual energy output of 10,100 MW of solar, or 10,200 MW of onshore wind in DEP, or 6,700 MW of offshore wind (without accounting for the energy storage capacity that would be required to move that energy in time to align with load). In order to allow the capacity expansion model to solve with a constraint of 70% NC CO_2 reduction by 2033, the Companies increased 2033 resource availability to the amounts that are otherwise available by 2035 under the Fall Base assumptions described in Section 2. P2 Fall Supplemental results in a PVRR increase of $6B relative to P3 Fall base. This portfolio would require deployment of an additional $21 billion of capital by 2033 relative to P3 Fall base. Table SPA T-9 below provides model-selected resource additions for portfolio P2 Fall Supplemental by 2033.

Table SPA T-9: Model-Selected Resource Additions for P2 Fall Supplemental by 2033 (Nameplate MW)

	Coal	Solar	Battery	CC	CT	Onshore Wind	Pumped Storage	Nuclear	Offshore Wind
P2 Fall Supplemental	-6,225	12,825	6,040	6,800	2,125	2,100	0	0	2,400

Recommended Portfolio – P3 Fall Base

Load, Capacity and Reserves Summary

Tables SPA T-10 through SPA T-13 below present the Winter and Summer Load, Capacity and Reserves ("LCR") tables for DEC and DEP for the reference Portfolio P3 Fall Base.[3]

[3] See Rule R8-60A(f)(10).

Table SPA T-10: DEC Winter Load, Capacity, and Reserves Tables (P3 Fall Base)

Line		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
1	Gross System Peak Forecast	17,671	17,905	18,330	19,124	19,797	20,480	21,224	21,747	22,080	22,570	22,770	23,150	23,449	23,796	24,101
2	Cumulative EE Contribution at Peak	-7	-89	-172	-259	-343	-463	-545	-627	-705	-775	-821	-853	-875	-889	-893
3	**Net System Peak Forecast**	**17,664**	**17,817**	**18,158**	**18,865**	**19,454**	**20,016**	**20,679**	**21,120**	**21,375**	**21,795**	**21,949**	**22,298**	**22,574**	**22,907**	**23,208**
4	**Existing Dispatchable Resources**	**20,609**	**20,627**	**20,678**	**20,751**	**21,005**	**20,287**	**20,348**	**19,825**	**18,499**	**18,494**	**18,491**	**18,488**	**16,266**	**16,266**	**16,266**
5	Nuclear	5,650	5,650	5,650	5,650	5,650	5,657	5,680	5,703	5,699	5,699	5,699	5,699	5,699	5,699	5,699
6	CC	2,145	2,145	2,145	2,159	2,225	2,225	2,225	2,225	2,225	2,225	2,225	2,225	2,225	2,225	2,225
7	CT	3,249	3,651	3,651	3,707	3,717	3,717	3,717	3,717	3,717	3,717	3,717	3,717	3,717	3,717	3,717
8	Coal/DFO	6,119	5,693	5,693	5,693	5,693	4,933	4,933	4,387	3,069	3,069	3,069	3,069	849	849	849
9	Gas Boiler	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Hydro	1,050	1,050	1,050	1,053	1,066	1,066	1,066	1,066	1,066	1,066	1,066	1,066	1,066	1,066	1,066
11	Pumped Storage	2,380	2,420	2,420	2,420	2,420	2,458	2,496	2,496	2,496	2,496	2,496	2,496	2,496	2,496	2,496
12	Standalone Battery	0	2	53	53	218	216	215	215	211	206	203	200	198	198	198
13	CHP	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
14	**Existing Variable Resources**	**73**	**101**	**109**	**128**	**150**	**153**	**157**	**157**	**157**	**156**	**155**	**154**	**154**	**153**	**152**
15	Solar	73	101	109	128	150	153	157	157	157	156	155	154	154	153	152
16	**Purchases**	**323**	**313**	**315**	**314**	**315**	**315**	**311**	**311**	**301**	**299**	**301**	**302**	**304**	**305**	**307**
17	Non-Renewable Purchases	178	178	180	181	182	182	183	185	186	188	189	191	192	194	195
18	Compliance Renewables	108	105	105	102	102	102	97	95	84	82	82	82	82	82	82
19	Non-Compliance Renewables	37	31	31	31	31	31	31	31	31	29	29	29	29	29	29
20	**Undesignated Future Resources**	**0**	**0**	**0**	**100**	**604**	**2,178**	**3,115**	**4,486**	**5,986**	**7,518**	**9,432**	**10,361**	**10,878**	**11,485**	**12,093**
21	Nuclear	0	0	0	0	0	0	0	0	0	0	0	600	900	1,500	2,100
22	CC	0	0	0	0	0	0	0	1,359	2,718	4,077	4,077	4,077	4,077	4,077	4,077
23	CT	0	0	0	0	0	1,274	2,124	2,124	2,124	2,124	2,124	2,124	2,124	2,124	2,124
24	Solar	0	0	0	0	13	25	36	48	57	66	74	82	89	97	104
25	Onshore Wind	0	0	0	0	0	0	0	0	0	0	0	158	206	206	206
26	Offshore Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	Pumped Storage	0	0	0	0	0	0	0	0	0	0	1,742	1,742	1,742	1,742	1,742
28	Standalone Battery	0	0	0	100	394	488	487	487	477	467	459	453	448	448	448
29	Paired Battery	0	0	0	0	197	390	468	468	610	784	955	1,124	1,291	1,291	1,291
30	**Production Capacity**	**21,004**	**21,042**	**21,103**	**21,292**	**22,074**	**22,933**	**23,930**	**24,779**	**24,942**	**26,467**	**28,378**	**29,305**	**27,601**	**28,209**	**28,817**
31	**Demand Side Management (DSM)**	**640**	**859**	**972**	**1,063**	**1,110**	**1,120**	**1,131**	**1,144**	**1,157**	**1,171**	**1,185**	**1,200**	**1,213**	**1,226**	**1,238**
32	DSM	612	729	795	873	915	922	932	943	955	967	978	990	1,001	1,011	1,021
33	IVVC Peak Shaving	27	129	177	190	195	197	199	201	203	204	206	210	212	215	217
34	**Total Firm Capacity**	**21,644**	**21,901**	**22,075**	**22,355**	**23,184**	**24,053**	**25,061**	**25,923**	**26,100**	**27,638**	**29,563**	**30,505**	**28,814**	**29,435**	**30,055**
35	**Total Reserve Capacity**	**3,980**	**4,084**	**3,917**	**3,490**	**3,730**	**4,036**	**4,382**	**4,803**	**4,725**	**5,844**	**7,614**	**8,207**	**6,240**	**6,527**	**6,847**
36	**Reserve Margin**	**22.53%**	**22.92%**	**21.57%**	**18.50%**	**19.17%**	**20.17%**	**21.19%**	**22.74%**	**22.11%**	**26.81%**	**34.69%**	**36.81%**	**27.64%**	**28.50%**	**29.50%**

Table SPA T-11: DEP Winter Load, Capacity, and Reserves Tables (P3 Fall Base)

Line		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
1	Gross System Peak Forecast	13,973	14,146	14,348	14,652	14,906	15,352	15,503	15,633	15,792	15,995	16,097	16,309	16,388	16,583	16,725
2	Cumulative EE Contribution at Peak	-8	-24	-39	-55	-77	-94	-111	-129	-147	-164	-179	-189	-199	-209	-218
3	**Net System Peak Forecast**	**13,965**	**14,122**	**14,309**	**14,597**	**14,829**	**15,258**	**15,392**	**15,504**	**15,645**	**15,832**	**15,919**	**16,120**	**16,189**	**16,374**	**16,507**
4	**Existing Dispatchable Resources**	**13,627**	**13,629**	**13,777**	**13,908**	**13,923**	**12,912**	**12,925**	**12,212**	**12,212**	**12,211**	**10,840**	**10,837**	**10,836**	**10,836**	**10,835**
5	Nuclear	3,730	3,730	3,730	3,730	3,730	3,752	3,765	3,765	3,765	3,765	3,765	3,765	3,765	3,765	3,765
6	CC	3,583	3,583	3,676	3,744	3,744	3,784	3,784	3,784	3,784	3,784	3,784	3,784	3,784	3,784	3,784
7	CT	2,899	2,899	2,899	2,925	2,940	2,955	2,955	2,955	2,955	2,955	2,955	2,955	2,955	2,955	2,955
8	Coal/DFO	3,175	3,175	3,175	3,175	3,175	2,084	2,084	1,371	1,371	1,371	0	0	0	0	0
9	Gas Boiler	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Hydro	228	228	233	238	238	242	242	242	242	242	242	242	242	242	242
11	Pumped Storage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	Standalone Battery	12	14	64	96	96	95	95	95	95	95	94	91	90	90	90
13	CHP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	**Existing Variable Resources**	**239**	**263**	**277**	**305**	**323**	**322**	**320**	**318**	**317**	**315**	**314**	**312**	**311**	**309**	**307**
15	Solar	239	263	277	305	323	322	320	318	317	315	314	312	311	309	307
16	**Purchases**	**2,537**	**2,596**	**2,541**	**2,544**	**2,536**	**2,346**	**2,168**	**2,168**	**2,168**	**2,168**	**2,168**	**2,168**	**2,168**	**2,168**	**2,168**
17	Non-Renewable Purchases	2,396	2,455	2,400	2,403	2,397	2,217	2,039	2,039	2,039	2,039	2,039	2,039	2,039	2,039	2,039
18	Compliance Renewables	69	69	69	69	67	57	57	57	57	57	57	57	57	57	57
19	Non-Compliance Renewables	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73
20	**Undesignated Future Resources**	**0**	**0**	**0**	**94**	**422**	**2,253**	**3,622**	**3,778**	**3,968**	**4,861**	**5,696**	**7,082**	**7,361**	**7,376**	**7,448**
21	Nuclear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	CC	0	0	0	0	0	1,359	2,718	2,718	2,718	2,718	2,718	2,718	2,718	2,718	2,718
23	CT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	Solar	0	0	0	0	29	55	65	80	98	115	132	149	166	181	192
25	Onshore Wind	0	0	0	0	0	0	0	126	298	435	555	555	555	555	555
26	Offshore Wind	0	0	0	0	0	0	0	0	0	534	1,027	1,479	1,479	1,479	1,479
27	Pumped Storage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	Standalone Battery	0	0	0	94	94	268	268	267	267	256	249	844	764	764	743
29	Paired Battery	0	0	0	0	300	571	571	587	587	803	1,015	1,337	1,680	1,680	1,761
30	**Production Capacity**	**16,403**	**16,488**	**16,595**	**16,851**	**17,205**	**17,833**	**19,035**	**18,477**	**18,665**	**19,556**	**19,018**	**20,400**	**20,676**	**20,689**	**20,759**
31	**Demand Side Management (DSM)**	**444**	**382**	**421**	**451**	**483**	**513**	**545**	**579**	**613**	**646**	**678**	**709**	**734**	**742**	**744**
32	DSM	226	236	273	302	333	362	393	424	457	489	519	548	571	577	578
33	IVVC Peak Shaving	219	146	148	149	150	151	152	155	156	157	159	161	163	164	166
34	**Total Firm Capacity**	**16,847**	**16,871**	**17,016**	**17,301**	**17,687**	**18,347**	**19,580**	**19,056**	**19,278**	**20,202**	**19,697**	**21,109**	**21,410**	**21,431**	**21,504**
35	**Total Reserve Capacity**	**2,883**	**2,749**	**2,707**	**2,704**	**2,859**	**3,088**	**4,188**	**3,552**	**3,633**	**4,370**	**3,778**	**4,989**	**5,221**	**5,057**	**4,997**
36	**Reserve Margin**	**20.64%**	**19.47%**	**18.92%**	**18.53%**	**19.28%**	**20.24%**	**27.21%**	**22.91%**	**23.22%**	**27.61%**	**23.73%**	**30.95%**	**32.25%**	**30.88%**	**30.27%**

Table SPA T-12: DEC Summer Load, Capacity, and Reserves Tables (P3 Fall Base)

Line		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
1	Gross System Peak Forecast	18,135	18,432	18,758	19,754	20,445	21,033	21,867	22,294	22,576	23,143	23,439	23,732	24,337	24,673	25,031
2	Cumulative EE Contribution at Peak	-49	-131	-213	-294	-373	-450	-528	-469	-537	-600	-640	-664	-681	-693	-703
3	**Net System Peak Forecast**	**18,086**	**18,301**	**18,545**	**19,460**	**20,072**	**20,584**	**21,339**	**21,824**	**22,038**	**22,542**	**22,799**	**23,068**	**23,656**	**23,980**	**24,328**
4	**Existing Dispatchable Resources**	**19,683**	**19,629**	**19,683**	**19,798**	**20,007**	**19,310**	**19,371**	**18,848**	**17,526**	**17,521**	**17,518**	**17,515**	**15,293**	**15,293**	**15,293**
5	Nuclear	5,474	5,474	5,474	5,474	5,474	5,481	5,504	5,526	5,526	5,526	5,526	5,526	5,526	5,526	5,526
6	CC	2,010	2,010	2,010	2,057	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090
7	CT	2,633	2,998	2,998	3,054	3,064	3,064	3,064	3,064	3,064	3,064	3,064	3,064	3,064	3,064	3,064
8	Coal/DFO	6,087	5,666	5,666	5,666	5,666	4,926	4,926	4,382	3,064	3,064	3,064	3,064	844	844	844
9	Gas Boiler	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Hydro	1,047	1,047	1,049	1,061	1,063	1,063	1,063	1,063	1,063	1,063	1,063	1,063	1,063	1,063	1,063
11	Pumped Storage	2,420	2,420	2,420	2,420	2,420	2,458	2,496	2,496	2,496	2,496	2,496	2,496	2,496	2,496	2,496
12	Standalone Battery	0	2	53	53	218	216	215	215	211	206	203	200	198	198	198
13	CHP	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
14	**Existing Variable Resources**	**907**	**1,051**	**1,151**	**1,481**	**1,582**	**1,620**	**1,631**	**1,623**	**1,615**	**1,606**	**1,599**	**1,591**	**1,583**	**1,574**	**1,567**
15	Solar	907	1,051	1,151	1,481	1,582	1,620	1,631	1,623	1,615	1,606	1,599	1,591	1,583	1,574	1,567
16	**Purchases**	**323**	**313**	**315**	**314**	**315**	**315**	**311**	**311**	**301**	**299**	**301**	**302**	**304**	**305**	**307**
17	Non-Renewable Purchases	178	178	180	181	182	182	183	185	186	188	189	191	192	194	195
18	Compliance Renewables	108	105	105	102	102	102	97	95	84	82	82	82	82	82	82
19	Non-Compliance Renewables	37	31	31	31	31	31	31	31	31	29	29	29	29	29	29
20	**Undesignated Future Resources**	**0**	**0**	**0**	**100**	**772**	**2,394**	**3,410**	**4,883**	**6,461**	**8,044**	**10,089**	**11,041**	**11,580**	**12,239**	**12,899**
21	Nuclear	0	0	0	0	0	0	0	0	0	0	0	600	900	1,500	2,100
22	CC	0	0	0	0	0	0	0	1,265	2,530	3,794	3,794	3,794	3,794	3,794	3,794
23	CT	0	0	0	0	0	1,156	1,926	1,926	1,926	1,926	1,926	1,926	1,926	1,926	1,926
24	Solar	0	0	0	0	180	360	529	737	919	1,072	1,212	1,351	1,413	1,472	1,531
25	Onshore Wind	0	0	0	0	0	0	0	0	0	0	0	50	66	66	66
26	Offshore Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	Pumped Storage	0	0	0	0	0	0	0	0	0	0	1,742	1,742	1,742	1,742	1,742
28	Standalone Battery	0	0	0	100	394	488	487	487	477	467	459	453	448	448	448
29	Paired Battery	0	0	0	0	197	390	468	468	610	784	955	1,124	1,291	1,291	1,291
30	**Production Capacity**	**20,913**	**20,994**	**21,149**	**21,693**	**22,676**	**23,639**	**24,723**	**25,664**	**25,903**	**27,471**	**29,506**	**30,449**	**28,760**	**29,411**	**30,065**
31	**Demand Side Management (DSM)**	**1,300**	**1,482**	**1,589**	**1,645**	**1,662**	**1,668**	**1,676**	**1,685**	**1,695**	**1,705**	**1,714**	**1,725**	**1,734**	**1,743**	**1,751**
32	DSM	1,272	1,352	1,412	1,454	1,467	1,471	1,477	1,485	1,492	1,500	1,508	1,515	1,522	1,528	1,534
33	IVVC Peak Shaving	27	129	177	190	195	197	199	201	203	204	206	210	212	215	217
34	**Total Firm Capacity**	**22,212**	**22,475**	**22,738**	**23,338**	**24,338**	**25,307**	**26,399**	**27,350**	**27,598**	**29,176**	**31,221**	**32,174**	**30,495**	**31,154**	**31,816**
35	**Total Reserve Capacity**	**4,127**	**4,174**	**4,193**	**3,877**	**4,265**	**4,723**	**5,060**	**5,525**	**5,559**	**6,633**	**8,421**	**9,106**	**6,839**	**7,174**	**7,488**
36	**Reserve Margin**	**22.82%**	**22.81%**	**22.61%**	**19.92%**	**21.25%**	**22.95%**	**23.71%**	**25.32%**	**25.23%**	**29.43%**	**36.94%**	**39.47%**	**28.91%**	**29.92%**	**30.78%**

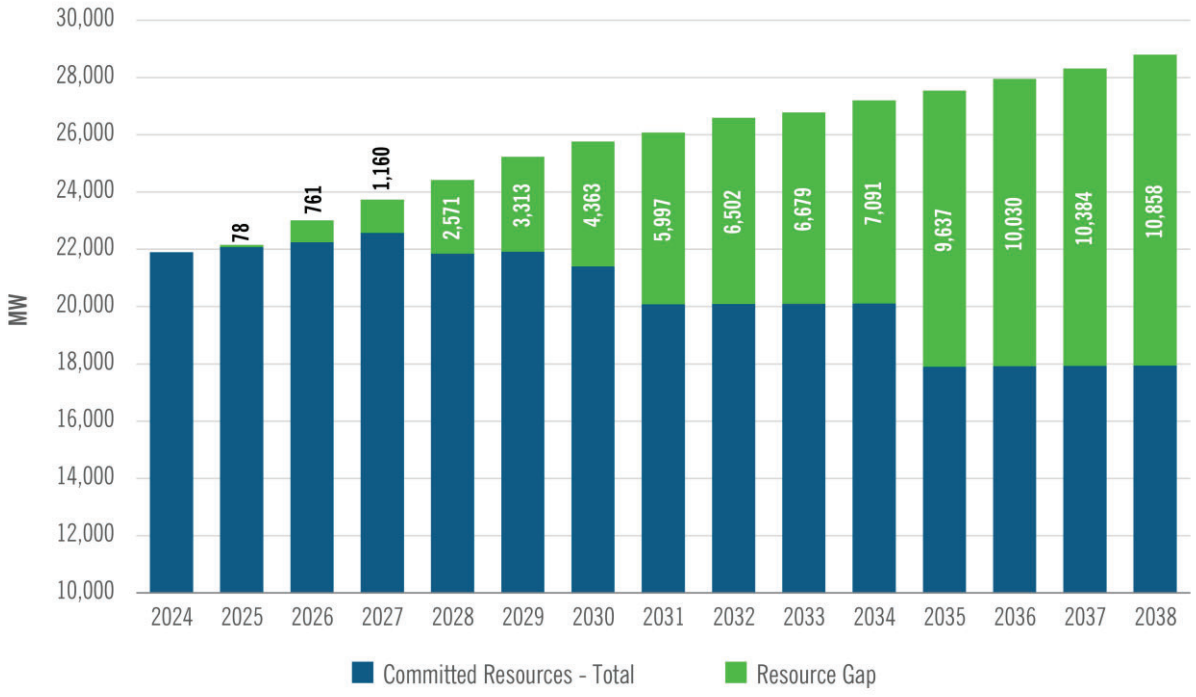
Table SPA T-13: DEP Summer Load, Capacity, and Reserves Tables (P3 Fall Base)

Line		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
1	Gross System Peak Forecast	12,679	12,929	13,243	13,621	13,944	14,253	14,673	14,918	15,153	15,417	15,492	15,677	15,931	16,136	16,410
2	Cumulative EE Contribution at Peak	-29	-81	-133	-186	-225	-291	-341	-390	-435	-474	-500	-515	-529	-540	-550
3	**Net System Peak Forecast**	**12,650**	**12,848**	**13,111**	**13,435**	**13,720**	**13,962**	**14,332**	**14,528**	**14,717**	**14,943**	**14,992**	**15,162**	**15,402**	**15,596**	**15,860**
4	**Existing Dispatchable Resources**	**12,459**	**12,466**	**12,656**	**12,725**	**12,806**	**11,741**	**11,741**	**11,037**	**11,037**	**11,036**	**9,674**	**9,671**	**9,670**	**9,670**	**9,670**
5	Nuclear	3,593	3,593	3,593	3,593	3,615	3,628	3,628	3,628	3,628	3,628	3,628	3,628	3,628	3,628	3,628
6	CC	3,079	3,079	3,172	3,210	3,250	3,250	3,250	3,250	3,250	3,250	3,250	3,250	3,250	3,250	3,250
7	CT	2,404	2,404	2,414	2,445	2,460	2,460	2,460	2,460	2,460	2,460	2,460	2,460	2,460	2,460	2,460
8	Coal/DFO	3,143	3,143	3,143	3,143	3,143	2,066	2,066	1,362	1,362	1,362	0	0	0	0	0
9	Gas Boiler	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Hydro	228	233	238	238	242	242	242	242	242	242	242	242	242	242	242
11	Pumped Storage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	Standalone Battery	12	14	96	96	96	95	95	95	95	95	94	91	90	90	90
13	CHP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	**Existing Variable Resources**	**2,039**	**2,110**	**2,197**	**2,480**	**2,498**	**2,485**	**2,471**	**2,460**	**2,448**	**2,435**	**2,423**	**2,411**	**2,399**	**2,387**	**2,375**
15	Solar	2,039	2,110	2,197	2,480	2,498	2,485	2,471	2,460	2,448	2,435	2,423	2,411	2,399	2,387	2,375
16	**Purchases**	**2,443**	**2,502**	**2,447**	**2,450**	**2,442**	**2,091**	**2,091**	**2,091**	**2,091**	**2,091**	**2,091**	**2,091**	**2,091**	**2,091**	**2,091**
17	Non-Renewable Purchases	2,302	2,361	2,306	2,309	2,303	1,962	1,962	1,962	1,962	1,962	1,962	1,962	1,962	1,962	1,962
18	Compliance Renewables	69	69	69	69	67	57	57	57	57	57	57	57	57	57	57
19	Non-Compliance Renewables	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73
20	**Undesignated Future Resources**	**0**	**0**	**0**	**94**	**628**	**2,561**	**3,938**	**4,153**	**4,329**	**4,977**	**5,598**	**6,858**	**7,168**	**7,208**	**7,300**
21	Nuclear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	CC	0	0	0	0	0	1,265	2,530	2,530	2,530	2,530	2,530	2,530	2,530	2,530	2,530
23	CT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	Solar	0	0	0	0	234	457	570	737	864	946	993	1,040	1,088	1,128	1,159
25	Onshore Wind	0	0	0	0	0	0	0	33	83	147	219	219	219	219	219
26	Offshore Wind	0	0	0	0	0	0	0	0	0	296	592	888	888	888	888
27	Pumped Storage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	Standalone Battery	0	0	0	94	94	268	268	267	267	256	249	844	764	764	743
29	Paired Battery	0	0	0	0	300	571	571	587	587	803	1,015	1,337	1,680	1,680	1,761
30	**Production Capacity**	**16,941**	**17,079**	**17,301**	**17,749**	**18,374**	**18,878**	**20,242**	**19,742**	**19,906**	**20,540**	**19,786**	**21,031**	**21,328**	**21,357**	**21,436**
31	**Demand Side Management (DSM)**	**930**	**868**	**895**	**917**	**944**	**973**	**1,004**	**1,038**	**1,072**	**1,103**	**1,134**	**1,162**	**1,177**	**1,182**	**1,184**
32	DSM	700	722	747	769	794	822	852	884	916	946	975	1,001	1,015	1,017	1,018
33	IVVC Peak Shaving	230	146	148	149	150	151	152	155	156	157	159	161	163	164	166
34	**Total Firm Capacity**	**17,871**	**17,947**	**18,196**	**18,666**	**19,317**	**19,851**	**21,246**	**20,780**	**20,977**	**21,644**	**20,921**	**22,193**	**22,505**	**22,538**	**22,620**
35	**Total Reserve Capacity**	**5,221**	**5,099**	**5,085**	**5,232**	**5,598**	**5,889**	**6,915**	**6,252**	**6,260**	**6,701**	**5,929**	**7,031**	**7,103**	**6,943**	**6,760**
36	**Reserve Margin**	**41.27%**	**39.69%**	**38.79%**	**38.94%**	**40.80%**	**42.18%**	**48.25%**	**43.03%**	**42.53%**	**44.84%**	**39.55%**	**46.37%**	**46.12%**	**44.52%**	**42.62%**

First Year of Resource Need

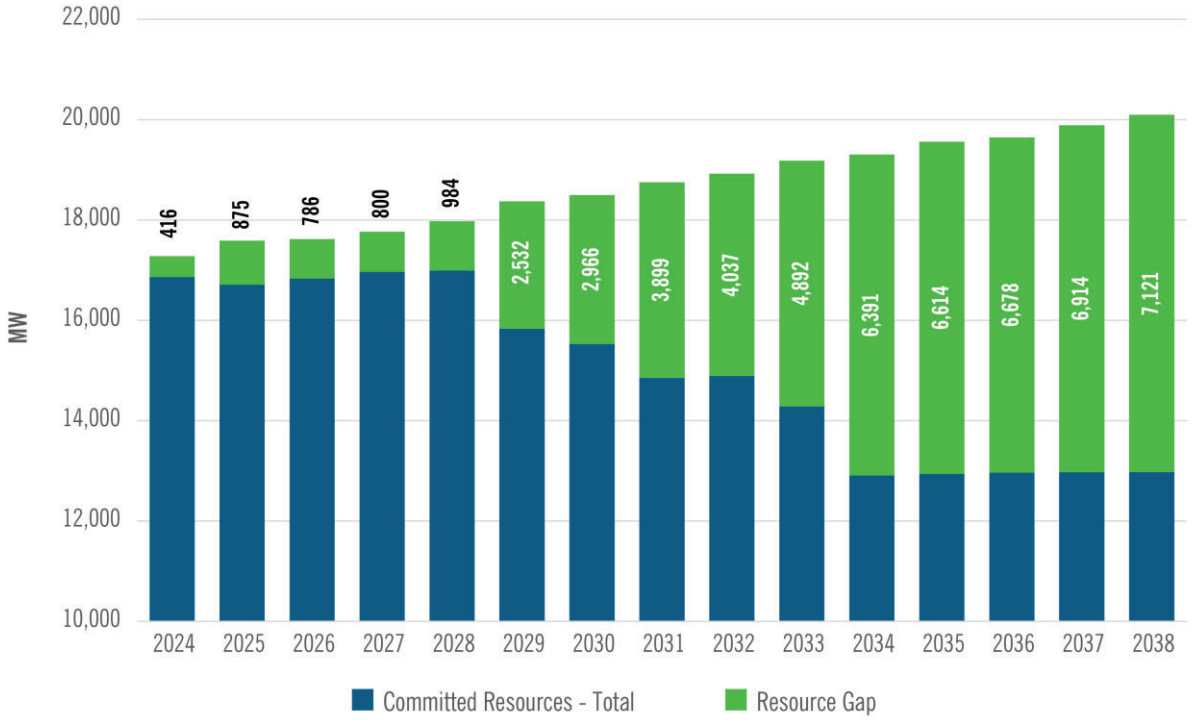
Using the recommended portfolio, P3 Fall Base, the Companies updated the first year of resource need for DEC and DEP. The process for the updated resource need calculations remains the same as provided in Appendix C (Quantitative Analysis) to the initial Plan.[4] Based on the use of P3 Fall Base, DEP's first year of resource need remains in 2024, consistent with the initial Plan, while DEC's first year of resource need is now 2025, an acceleration of three years from the initial Plan. Updated first year of resource need results are provided below in Figures SPA T-14 and SPA T-15.

Figure SPA T-14: DEC First Year of Resource Need (P3 Fall Base)



[4] Carolinas Resource Plan Appendix C (Quantitative Analysis) at 112-113.

Figure SPA T-15: DEP First Year of Resource Need (P3 Fall Base)



Results for Informational Portfolio SP SC No CO_2 Constraint Fall Supplemental

The Companies have conducted additional modeling on the Public Service Commission of South Carolina-ordered "no carbon constraint" scenario as part of the Supplemental Planning Analysis. While the Companies conducted the modeling, the Companies place no weight on this scenario and are not putting it forth as the preferred resource plan. The "no carbon constraint" analysis is not an executable Pathway as it does not comply with applicable laws and requirements. This scenario lacks resource diversity as a core planning objective, called for in both states' resource planning requirements, and would result in substantial customer exposure to gas availability and price volatility as well as foreseeable (proposed and future) regulatory compliance risks. The modeling producing this scenario also assumes adequate supply chains for the required generation, pipeline, and transmission required for the resources resulting from the modeling, but the volumes in the scenario exceed what the Companies view as executable. The Companies also note that this scenario is inconsistent with the needs of some of North Carolina's and South Carolina's largest employers and could potentially derail the economic development success that South Carolina and North Carolina have enjoyed, in addition to being inconsistent with operative law and policy in both South Carolina and North Carolina. The PVRR for the informational SC No CO_2 Constraint Fall portfolio is approximately $74 billion through 2038. Table SPA T-16 below provides model-selected resource additions for SC No CO_2 Constraint Fall through 2038.

Table SPA T-16: Model-Selected Resource Additions for PSCSC-Directed No CO2 Constraint Fall Supplemental by 2038 (Nameplate MW)

	Coal	Solar	Battery	CC	CT	Onshore Wind	Pumped Storage	Nuclear	Offshore Wind
SC No CO_2 Constraint Fall	-8,445	2,925	3,900	8,160	5,525	1,050	1,834	0	0