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Docket No. E-100, Sub 165

DUKE ENERGY PROGRESS 2020 INTEGRATED RESOURCE PLAN CONTENTS

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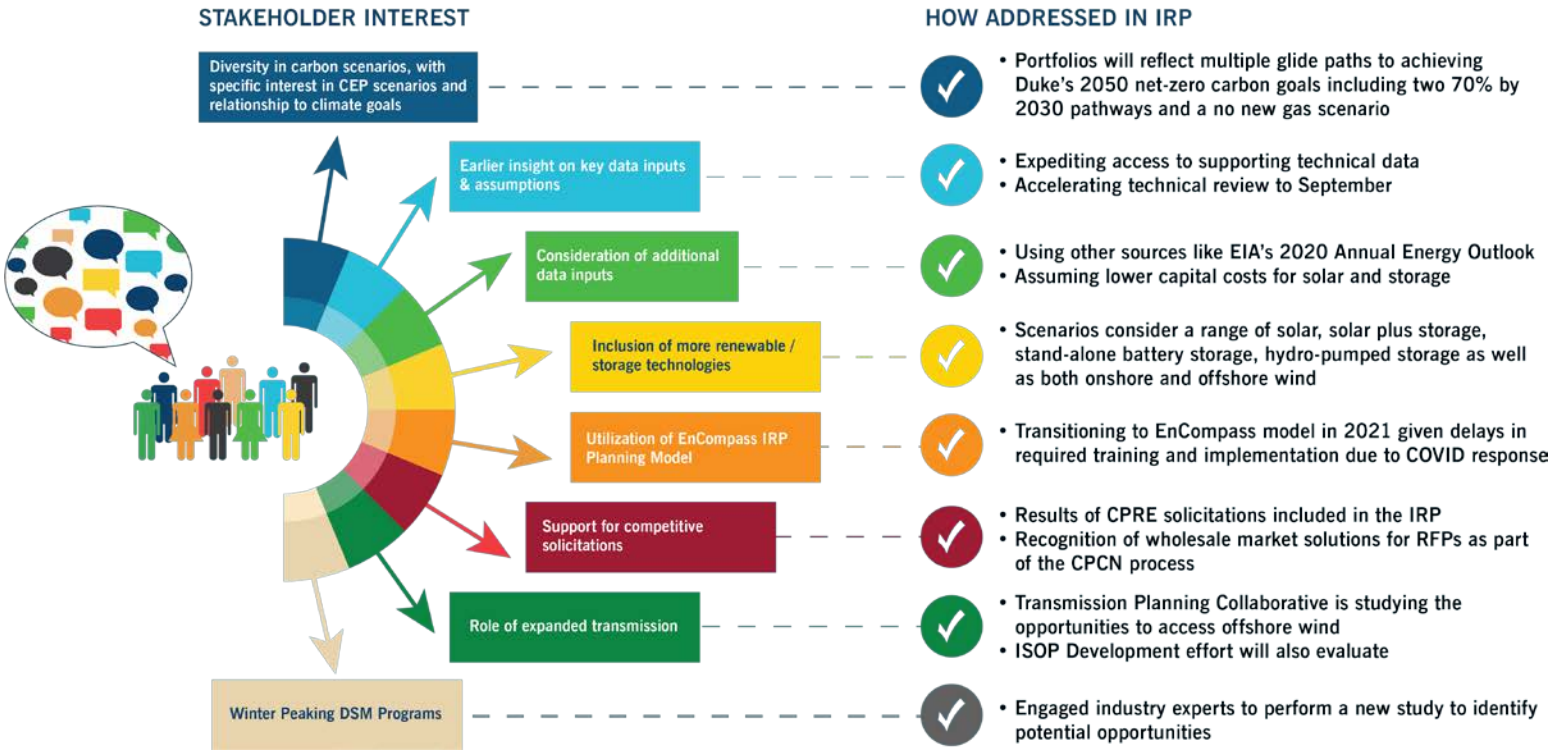
ATTACHMENTS FILED AS SEPARATE DOCUMENTS:

the planning process. The Company initiated this engagement with local listening sessions followed by a series of virtual events which were facilitated by ICF,[6] and consisted of an IRP 101 education session and three stakeholder virtual forums, with over 200 participants from stakeholder groups involved across all activities. The forums included presentations and discussions from Duke Energy subject matter experts, and enabled discussion around the areas of greatest interest to stakeholders as identified through listening sessions, and pre- and post-engagement surveys. The sessions drew unique external stakeholder participants from across the Carolinas and provided recommendations in the areas of resource planning, carbon reduction, energy efficiency and demand response. Input from stakeholders helped shape the IRP development, and influenced the evaluation of different pathways in the 2020 IRP. A summary report of these activities was developed by ICF and can be found on Duke Energy's web site[7].



2020 IRP INFORMED BY NEW STUDIES, ILLUSTRATES MULTIPLE PATHWAYS

The 2020 IRP is informed by several new studies and analysis as well as collaboration and input

[6] www.icf.com, ICF, an advisory and professional services company with a specialty in utility sector planning.
[7] www.duke-energy.com/irp.

weather, regional economic and demographic trends, electricity prices and appliance efficiencies. The average annual growth rate of Residential energy sales in the Spring 2020 forecast, including the impacts of Utility Energy Efficiency programs (UEE), rooftop solar and electric vehicles from 2021-2035 is 1.4%.

The three largest sectors in the Commercial class are offices, education and retail. The Commercial forecast also uses an SAE model to reflect naturally occurring as well as government mandated efficiency changes. Commercial energy sales are expected to grow 0.1% per year over the forecast horizon.

The Industrial class is forecasted by a standard econometric model, with drivers such as total manufacturing output and the price of electricity. Overall, Industrial sales are expected to decline 0.2% per year over the forecast horizon.

The Company continues to look at ways to improve the load forecasting methodology in order to develop the most accurate and reasonable demand forecasts for DEP. The 2020 load forecast update is lower compared to the 2019 IRP. The decrease in the 2020 update is primarily driven by refinements to peak history, the addition of 2019 peak history and declines in Commercial and Industrial energy sales. The 2020 update also includes revised projections for rooftop solar and electric vehicle programs and the impacts of voltage control programs. The key economic drivers and forecast changes are shown below in Tables 3-A and 3-B. A more detailed discussion of the load forecast can be found in Appendix C.

TABLE 3-A
KEY DRIVERS

	2021-2035
Real Income	2.9%
Manufacturing Industrial Production Index (IPI)	1.1%
Population	1.5%

Table 3-B reflects a comparison between the 2020 and 2019 growth rates of the load forecast with and without impacts of EE.

TABLE 5-A

DEP BASE WITH CARBON POLICY TOTAL RENEWABLES

DEP BASE RENEWABLES - COMPLIANCE + NON-COMPLIANCE															
	MW NAMEPLATE					MW CONTRIBUTION TO SUMMER PEAK					MW CONTRIBUTION TO WINTER PEAK				
	SOLAR ONLY	SOLAR WITH STORAGE	BIOMASS / HYDRO	WIND	TOTAL	SOLAR ONLY	SOLAR WITH STORAGE	BIOMASS/ HYDRO	WIND	TOTAL	SOLAR ONLY	SOLAR WITH STORAGE	BIOMASS/ HYDRO	WIND	TOTAL
2021	2,888	0	284	0	3,171	1,011	0	284	0	1,294	29	0	284	0	312
2022	3,144	0	146	0	3,291	1,092	0	146	0	1,238	31	0	146	0	178
2023	3,430	0	135	0	3,565	1,134	0	135	0	1,270	34	0	135	0	169
2024	3,641	14	131	0	3,786	1,166	8	131	0	1,305	36	3	131	0	171
2025	3,850	13	131	0	3,995	1,190	8	131	0	1,329	39	3	131	0	173
2026	4,128	13	120	0	4,262	1,218	7	120	0	1,345	41	3	120	0	165
2027	4,184	88	120	0	4,392	1,223	48	120	0	1,391	42	22	120	0	184
2028	4,239	163	116	0	4,518	1,229	88	116	0	1,433	42	41	116	0	199
2029	4,294	237	60	0	4,591	1,234	128	60	0	1,422	43	59	60	0	162
2030	4,323	436	43	0	4,802	1,237	234	43	0	1,515	43	109	43	0	195
2031	4,352	634	43	0	5,029	1,240	340	43	0	1,623	44	158	43	0	245
2032	4,331	856	42	0	5,228	1,238	460	42	0	1,740	43	214	42	0	299
2033	4,311	1,076	42	150	5,579	1,236	581	42	12	1,870	43	269	42	53	406
2034	4,290	1,296	41	300	5,928	1,234	701	41	24	2,000	43	324	41	105	513
2035	4,270	1,514	41	450	6,276	1,232	822	41	36	2,131	43	379	41	158	620

Data presented on a year beginning basis.

Solar includes 0.5% per year degradation.

Capacity listed excludes REC Only Contracts.

Solar contribution to peak based on 2018 Astrapé analysis; solar with storage contribution to peak based on 2020 Astrapé ELLC study.

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storage costs evolve. Currently the Company forecasts an approximate 50% decline in battery storage costs by 2030 understanding that the actual pace of technological advancements, or even future potential policy mandates that influence storage costs, may change this forecast in future IRPs.

Additionally, the projected steep cost declines of battery storage add some risk to early adoption of this technology. The pace at which storage is integrated on the system is important as the benefits gained from storage may be captured a few years later at a lower cost to customers. As a result, striking the proper pace of adoption will require balancing the operational benefits of earlier adoption with the cost savings from a more measured pace.

However, as is the case with all energy-limited resources, as the penetration of short-term duration storage increases, the incremental benefit of that resource diminishes. To investigate how quickly this loss of value could occur, the Company commissioned Astrapé Consulting, a nationally recognized expert in the field, to conduct a detailed Capacity Value of Battery Storage study that is included as an attachment to the DEP IRP and is discussed in greater detail in Appendix H. This study assessed the contribution to winter peak capacity of varying levels and durations of both standalone battery storage and battery storage paired with solar resources under increasing levels of solar integration. As shown in Figure 6-A, longer duration batteries maintain capacity value as market penetration increases. For instances, 6-hour batteries maintain over 80% contribution to winter peak demand for up to nearly 3,000 MW on the system, and 4-hour batteries maintain 80% capacity value for nearly 2,200 MW. Conversely, 2-hour batteries fall below 80% at just 1,100 MW on the system. This drop is even more dramatic when considering the incremental value of battery storage shown in Figure 6-B. While the first 800 MW of two-hour batteries on the system provide almost 90% to meeting winter peak capacity needs, the next 800 MW provide about half of that value.

Two-hour storage generally performs the same function as DSM programs that, not only reduce winter peak demand, but also tend to flatten demand by shifting energy from the peak hour to hours just beyond the peak. This flattening of peak demand is one of the main drivers for rapid degradation in capacity value of 2-hours storage. As the Company seeks to expand winter DSM programs, the value of two-hour storage will likely diminish, and for these reasons, DEP only considered four and six-hour battery storage in the IRP.

ELECTRIC VEHICLES

Another important form of energy storage is electric vehicles. Electrification is expected to play an important role in the reduction of carbon dioxide emissions across all sectors of the economy. Electric vehicles (EVs) in particular are poised to transform and decarbonize the transportation industry which accounts for 28% of US carbon dioxide emissions, more than any other economic sector[2].

EVs also offer financial benefits for consumers and for the electric grid. EV drivers save money on fuel and maintenance costs, and the purchase of a new EV can be offset by up to $7,500 with the Qualified Plug-In Electric Drive Motor Vehicle Tax Credit. Increasing EV growth can create benefits for all utility customers by increasing utilization of the electric grid and putting downward pressure on rates.

Duke Energy receives monthly updates on light-duty vehicle registrations from the Electric Power Research Institute (EPRI). Registrations are tracked by county and attributed to DEP based on the size of its customer count in each county. Reporting and analysis focus on plug-in electric vehicles (PEVs) which are charged from the electric grid. Conventional vehicles and hybrid EVs are also tracked to provide context for PEV growth within the total vehicle market.

According to EPRI, 2,200 new PEVs were registered in 2019, and 8,200 PEVs were in operation by the end of the year. Most of those vehicles were adopted in NC which had 8,000 PEVs in operation compared to 200 in SC. Annual registrations increased from 2018 to 2019 by a small margin. The modest growth was partly due to an outsized increase in 2018 (+130%) driven by the popular Tesla Model 3 sedan.

On October 29, 2018, NC Governor Cooper issued Executive Order 80, in which he directed the State of NC to "strive to accomplish" increasing the number of registered, zero-emission vehicles to at least 80,000 by 2025. In order to adequately respond to state policies like Executive Order 80 and considering the significant pace of EV adoption in its service territories, Duke Energy recognizes that it must prepare for and better understand the electrical needs and impacts of EVs on its systems. As

[2] U.S. EPA's Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2018.

TABLE 12-F

BASE CASE WITH CARBON POLICY LOAD, CAPACITY AND RESERVES TABLE - SUMMER

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Load Forecast															
1 DEP System Summer Peak	12,885	12,909	12,913	13,063	13,207	13,381	13,461	13,589	13,833	13,918	14,093	14,241	14,377	14,499	14,757
2 Firm Sale	150	150	150	150	0	0	0	0	0	0	0	0	0	0	0
3 Cumulative New EE Programs	(67)	(101)	(133)	(162)	(191)	(220)	(245)	(265)	(281)	(287)	(286)	(282)	(277)	(247)	(237)
4 Adjusted Duke System Peak	**12,968**	**12,957**	**12,930**	**13,051**	**13,016**	**13,161**	**13,216**	**13,324**	**13,552**	**13,631**	**13,807**	**13,959**	**14,100**	**14,252**	**14,520**
Existing and Designated Resources															
5 Generating Capacity	12,477	12,477	12,477	12,477	12,479	12,479	12,303	12,307	10,915	9,147	9,147	9,147	9,147	9,147	9,147
6 Designated Additions / Uprates	0	0	0	2	0	0	4	0	6	0	0	0	0	0	0
7 Retirements / Derates	0	0	0	0	0	(176)	0	(1,392)	(1,774)	0	0	0	0	0	0
8 Cumulative Generating Capacity	**12,477**	**12,477**	**12,477**	**12,479**	**12,479**	**12,303**	**12,307**	**10,915**	**9,147**	**9,147**	**9,147**	**9,147**	**9,147**	**9,147**	**9,147**
Purchase Contracts															
9 Cumulative Purchase Contracts	**2,837**	**2,904**	**2,932**	**2,935**	**2,955**	**2,934**	**2,923**	**2,902**	**2,839**	**2,830**	**2,822**	**2,818**	**2,677**	**2,676**	**2,674**
Non-Compliance Renewable Purchases	352	558	603	625	657	696	682	667	604	595	587	585	583	582	581
Non-Renewables Purchases	2,485	2,346	2,330	2,311	2,298	2,237	2,240	2,235	2,235	2,235	2,235	2,234	2,094	2,094	2,094
Undesignated Future Resources															
10 Nuclear															
11 Combined Cycle								1,152	1,152						
12 Combustion Turbine						419	419		837						
13 Solar										38	38	56	56	56	56
14 Wind													53	53	53
15 Battery											457				479
Renewables															
16 Cumulative Renewables Capacity	**484**	**369**	**357**	**371**	**361**	**339**	**400**	**457**	**510**	**569**	**643**	**707**	**833**	**949**	**1,075**
Renewables w/o Storage	484	369	357	365	355	333	360	384	404	403	419	418	417	416	415
Solar w/ Storage (Solar Component)	0	0	0	3	3	3	19	35	50	59	69	69	68	68	68
Solar w/ Storage (Storage Component)	0	0	0	3	3	3	21	39	57	69	80	89	107	116	134
17 Combined Heat & Power	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 Grid-connected Energy Storage	29	14	17	17	19	19	19	0	0	0	0	0	0	0	0
19 Cumulative Production Capacity	**15,826**	**15,793**	**15,826**	**15,862**	**15,891**	**16,109**	**16,600**	**16,397**	**16,608**	**16,658**	**16,724**	**16,785**	**16,769**	**16,884**	**17,008**
Demand Side Management (DSM)															
20 Cumulative DSM Capacity	**966**	**976**	**980**	**979**	**786**	**788**	**789**	**791**	**794**	**796**	**800**	**803**	**806**	**809**	**812**
IVVC Peak Shaving	**-**	**-**	**9**	**19**	**96**	**97**	**98**	**99**	**100**	**100**	**101**	**102**	**103**	**104**	**105**
21 Cumulative Capacity w/ DSM	**16,792**	**16,769**	**16,816**	**16,861**	**16,773**	**16,994**	**17,488**	**17,287**	**17,501**	**17,555**	**17,625**	**17,690**	**17,679**	**17,798**	**17,925**
Reserves w/ DSM															
22 Generating Reserves	3,824	3,812	3,886	3,809	3,757	3,833	4,272	3,963	3,949	3,923	3,818	3,731	3,579	3,546	3,405
23 %Reserve Margin	**29.5%**	**29.4%**	**30.1%**	**29.2%**	**28.9%**	**29.1%**	**32.3%**	**29.7%**	**29.1%**	**28.8%**	**27.7%**	**26.7%**	**25.4%**	**24.9%**	**23.4%**

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TABLE 12-G
DEP ASSUMPTIONS OF LOAD, CAPACITY, AND RESERVES TABLES

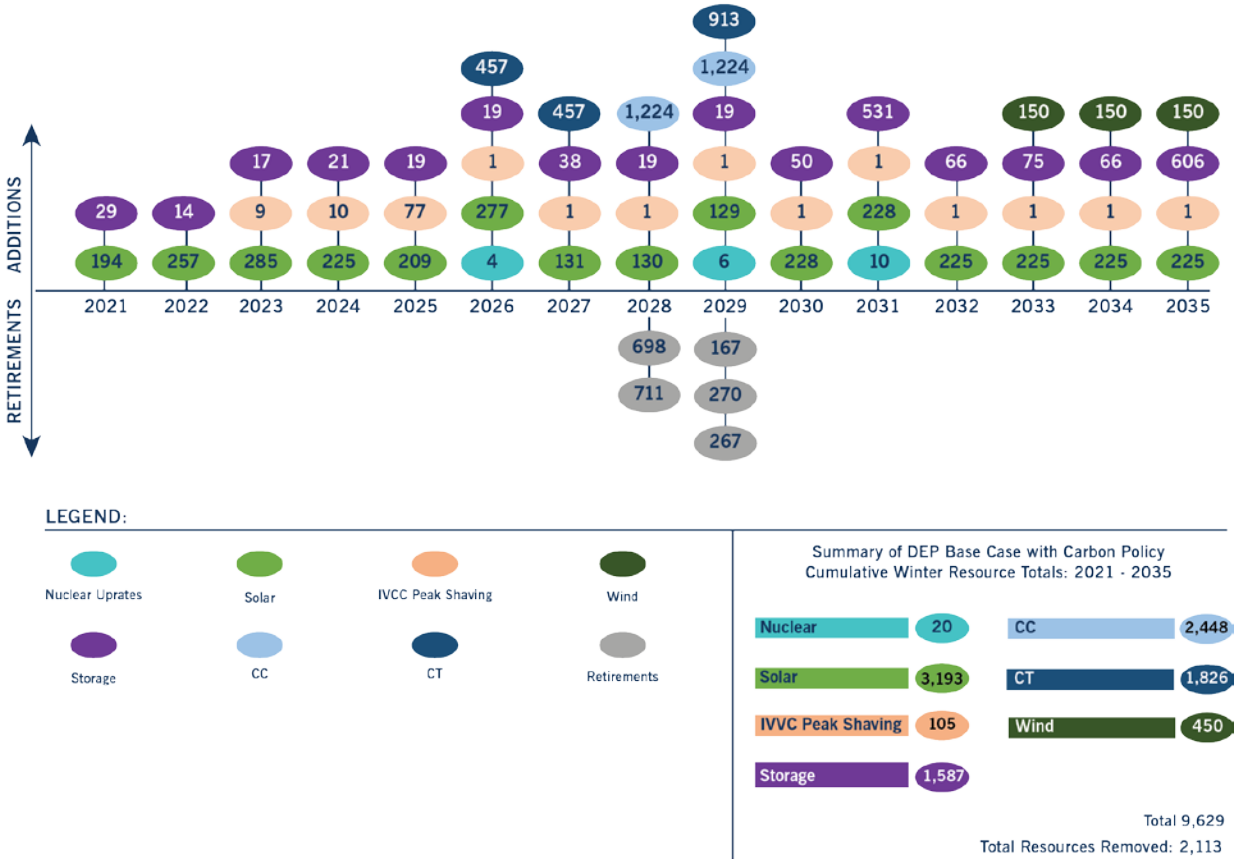
The following notes are numbered to match the line numbers on the Winter Projections of Load, Capacity, and Reserves tables. All values are MW (winter ratings) except where shown as a percent.

LINE ITEM	LINE INCLUSION[2]
1.	Peak demand for the Duke Energy Carolinas System as defined in Chapter 3 and Appendix C.
2.	Firm sale of 150 MW through 2024.
3.	Cumulative new energy efficiency and conservation programs (does not include demand response programs).
4.	Peak load adjusted for firm sales and cumulative energy efficiency.
5.	Existing generating capacity reflecting the impacts of designated additions, planned uprates, retirements and derates as of January 1, 2020.
6.	Designated Capacity Additions
	Nuclear uprates: Brunswick 1; 4 MW available for the winter of 2025. Brunswick 2; 6 MW available for the winter of 2028; 10 MW available for the winter of 2030.
7.	Estimated retirement dates for planning that represent most economical retirement date for coal units as determined in Coal Retirement Analysis discussed in Chapter 11. Other units represent estimated retirement dates based on the depreciation study approved in the most recent DEP rate case: Darlington 1-4, 6-8 and 10 (514 MW): March 2020 Blewett 1-4 (68 MW): December 2025 Weatherspoon 1-4 (164 MW): December 2025 Roxboro 3 and 4 (1,409 MW): December 2027 Roxboro 1 and 2 (1,053 MW): December 2028 Mayo 1 (746 MW): December 2028
	All nuclear units are assumed to have subsequent license renewal at the end of the current license.
	All hydro facilities are assumed to operate through the planning horizon.
	All retirement dates are subject to review on an ongoing basis. Dates used in the 2020 IRP are for planning purposes only, unless the unit is already planned for retirement.
8.	Sum of lines 5 through 7.

[2] Capacity must be on-line by June 1 to be included in available capacity for the summer peak of that year and by December 1 to be included in available capacity for the winter peak of the following year.

FIGURE 12-F

DEP WINTER BASE CASE WITH CARBON POLICY ANNUAL ADDITIONS BY TECHNOLOGY



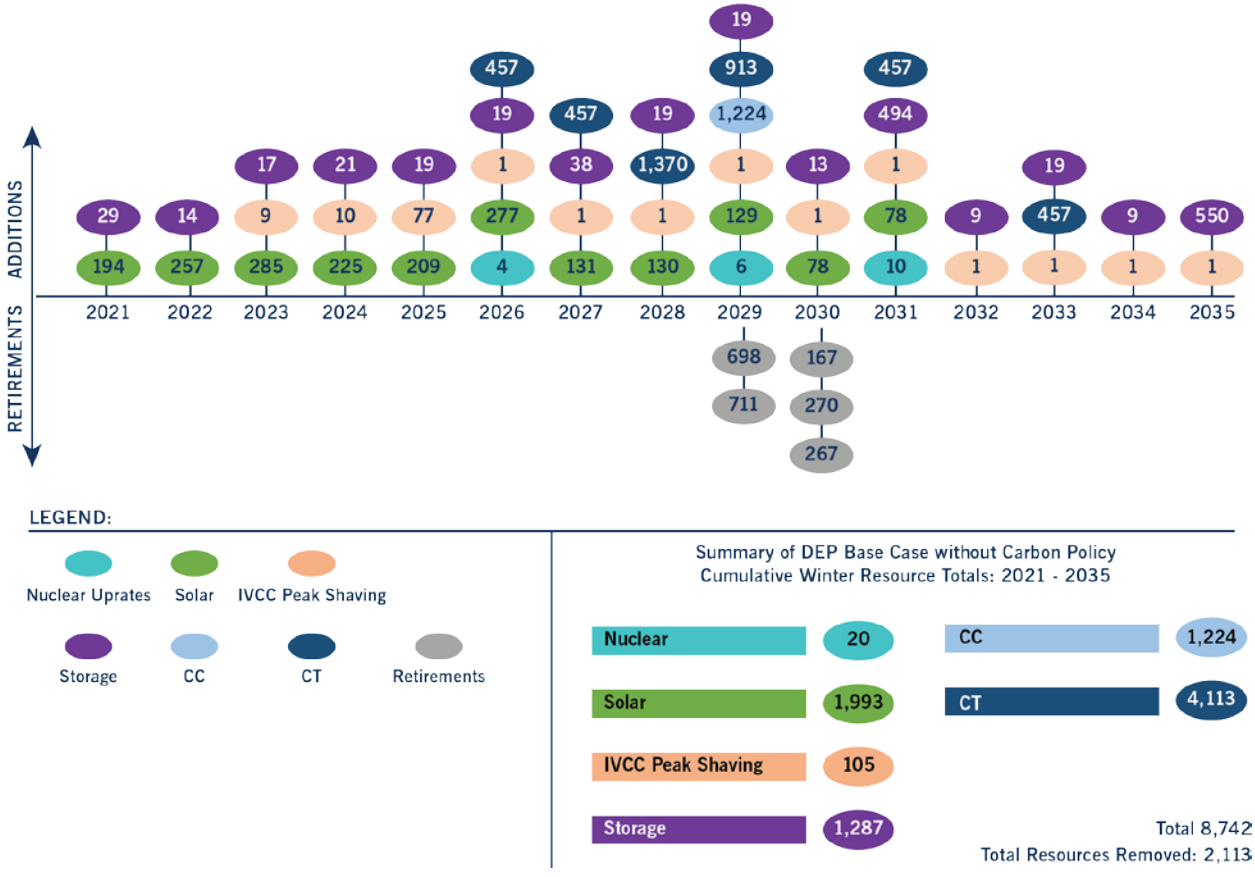
he following figures illustrate both the current and forecasted capacity for the DEP system, as projected by the Base Case with Carbon Policy. Figure 12-G depicts how the capacity mix for the DEP system changes with the passage of time. In 2035, the Base Case with Carbon Policy projects that DEP will have no reliance on coal and a significantly higher reliance on renewable resources and energy storage as compared to the current state. It is of particular note that nearly 50% of the new resources added over the study period are solar, wind and energy storage resources. Natural gas-fired resources continue to be an important part of maintaining the reliability of the DEP system, as well.

As mentioned above, the Company's Base Case with Carbon Policy resources depicted in Figure 12-G below reflects a significant amount of growth in solar capacity with nameplate solar growing from 2,888 MW in 2021 to 4,270 MW by 2035. However, given that solar resources only contribute approximately 1% of nameplate capacity at the time of the Company's winter peak, solar capacity contribution to winter

compared to the Base Case with Carbon Policy. Additionally, no incremental renewable resources were economically selected in this case.

A graphical presentation of the Winter Base Case without Carbon Policy resource plan is shown below in Figure 12-I. This figure provides annual incremental capacity additions to the DEP system by technology type for this case. Additionally, a summary of the total resources by technology is provided below the figure. Further details of the development of the Base Case without Carbon Policy may be found in Appendix A.

FIGURE 12-I
DEP WINTER BASE CASE WITHOUT CARBON POLICY
ANNUAL ADDITIONS BY TECHNOLOGY



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CONTINUE TO FIND OPPORTUNITIES TO ENHANCE EXISTING CLEAN RESOURCES

DEP is committed to continually looking for opportunities to improve and enhance its existing resources. DEP is expecting capacity uprates to its existing nuclear units, Brunswick and Harris, due to upcoming projects at those sites. The uprates total 20 MW and are projected to occur from 2025 to 2030.

ADDITION OF CLEAN NATURAL GAS RESOURCES [1]

- The Company continues to consider advanced technology combined cycle and combustion turbine units as excellent options for a diversified, reliable portfolio required to meet future customer demand. The improving efficiency and reliability of CCs coupled with the lower carbon content and continued trend of lower prices for natural gas make these resources economically attractive as well as very effective at enabling significant carbon reductions through accelerated economic coal retirements. As older units on the DEP system are retired, CC and CT units continue to play an important role in the Company's future diverse resource portfolio.

    - Two 1x1 combined cycle units (each with one CT and one steam turbine, for a total capacity of 560 MW winter / 474 MW summer began full operation at the Asheville site [2] by April 2020. These efficient units will assist in providing reliable energy to DEP's customers.

A summarization of the capacity resource changes for the Base Plans in the 2020 IRP is shown in Table 14-B below. Capacity retirements and resource additions are presented in the table as incremental values in the year in which the change impacts the winter peak. The values shown for renewable resources, EE, DSM and IVVC represent cumulative totals.

[1] Capacities represent winter ratings.
[2] Asheville CC individual components began commercial operation at various dates between 12/27/19 and 4/5/20.

COMBUSTION TURBINES									
	UNIT	WINTER (MW)	SUMMER (MW)	LOCATION	FUEL TYPE	RESOURCE TYPE	AGE (YEARS)	ESTIMATED REMAINING LIFE	RELICENSING STATUS
Asheville	3	185	160	Arden, NC	Natural Gas/Oil	Peaking	20	20	N/A
Asheville	4	185	160	Arden, NC	Natural Gas/Oil	Peaking	19	20	N/A
Blewett	1	17	13	Lilesville, NC	Oil	Peaking	48	6	N/A
Blewett	2	17	13	Lilesville, NC	Oil	Peaking	48	6	N/A
Blewett	3	17	13	Lilesville, NC	Oil	Peaking	48	6	N/A
Blewett	4	17	13	Lilesville, NC	Oil	Peaking	48	6	N/A
Darlington	1	63	50	Hartsville, S.C.	Natural Gas/Oil	Peaking	45	3 months	N/A
Darlington	2	64	48	Hartsville, S.C.	Oil	Peaking	45	3 months	N/A
Darlington	3	63	50	Hartsville, S.C.	Natural Gas/Oil	Peaking	45	3 months	N/A
Darlington	4	66	48	Hartsville, S.C.	Oil	Peaking	45	3 months	N/A
Darlington	6	62	43	Hartsville, S.C.	Oil	Peaking	45	3 months	N/A
Darlington	7	65	47	Hartsville, S.C.	Natural Gas/Oil	Peaking	45	3 months	N/A
Darlington	8	66	44	Hartsville, S.C.	Oil	Peaking	45	3 months	N/A
Darlington	10	65	49	Hartsville, S.C.	Oil	Peaking	45	3 months	N/A
Darlington	12	133	118	Hartsville, SC	Natural Gas/Oil	Peaking	22	18	N/A
Darlington	13	133	116	Hartsville, SC	Natural Gas/Oil	Peaking	22	18	N/A
Smith [4]	1	197	157	Hamlet, NC	Natural Gas/Oil	Peaking	18	22	N/A
Smith [4]	2	197	156	Hamlet, NC	Natural Gas/Oil	Peaking	18	22	N/A
Smith [4]	3	197	155	Hamlet, NC	Natural Gas/Oil	Peaking	18	22	N/A

NUCLEAR									
	UNIT	WINTER (MW)	SUMMER (MW)	LOCATION	FUEL TYPE	RESOURCE TYPE	AGE (YEARS)	ESTIMATED REMAINING LIFE	RELICENSING STATUS
Brunswick [2]	1	975	938	Southport, NC	Uranium	Base	42	37	2036
Brunswick[2]	2	953	932	Southport, NC	Uranium	Base	44	35	2034
Harris [2]	1	1009	964	New Hill, NC	Uranium	Base	32	47	2046
Robinson	2	793	759	Hartsville, SC	Uranium	Base	48	31	2030
Total NC		2,937	2,834						
Total SC		793	759						
Total Nuclear		3,730	3,593						

SOLAR									
	UNIT	WINTER (MW)	SUMMER (MW)	LOCATION	FUEL TYPE	RESOURCE TYPE	AGE (YEARS)	ESTIMATED REMAINING LIFE	RELICENSING STATUS
NC Solar		141	141	NC	Solar	Intermittent	Various	N/A	N/A
Total Solar		141	141						

PLANNING ASSUMPTIONS – UNIT RETIREMENTS [a, b, c]					
UNIT & PLANT NAME	LOCATION	WINTER CAPACITY (MW)	SUMMER CAPACITY (MW)	FUEL TYPE	EXPECTED RETIREMENT
Darlington 1	Hartsville, S.C.	63	50	Natural Gas/Oil	3/2020
Darlington 2	Hartsville, S.C.	64	48	Oil	3/2020
Darlington 3	Hartsville, S.C.	63	50	Natural Gas/Oil	3/2020
Darlington 4	Hartsville, S.C.	66	48	Oil	3/2020
Darlington 6	Hartsville, S.C.	62	43	Oil	3/2020
Darlington 7	Hartsville, S.C.	65	47	Natural Gas/Oil	3/2020
Darlington 8	Hartsville, S.C.	66	44	Oil	3/2020
Darlington 10	Hartsville, S.C.	65	49	Oil	3/2020
Mayo 1	Roxboro, N.C.	746	727	Coal	12/2028
Roxboro 1	Semora, N.C.	380	379	Coal	12/2028
Roxboro 2	Semora, N.C.	673	665	Coal	12/2028
Roxboro 3	Semora, N.C.	698	691	Coal	12/2027
Roxboro 4	Semora, N.C.	711	698	Coal	12/2027
Blewett 1	Lilesville, N.C.	17	13	Oil	12/2025
Blewett 2	Lilesville, N.C.	17	13	Oil	12/2025
Blewett 3	Lilesville, N.C.	65	13	Oil	12/2025
Blewett 4	Lilesville, N.C.	66	13	Oil	12/2025
Weatherspoon 1	Lumberton, N.C.	41	32	Natural Gas/Oil	12/2025
Weatherspoon 2	Lumberton, N.C.	41	32	Natural Gas/Oil	12/2025
Weatherspoon 3	Lumberton, N.C.	41	33	Natural Gas/Oil	12/2025
Weatherspoon 4	Lumberton, N.C.	41	31	Natural Gas/Oil	12/2025
Total		4,051	3,719		

NOTE a: Retirement assumptions are for planning purposes only; Coal retirement dates represent the economic retirement dates determined in the Coal Retirement Analysis (as discussed in Chapter 11). Other technology units represent retirement dates based on the depreciation study approved as part of the most recent DEP rate case.

NOTE b: For planning purposes, all portfolios in the 2020 IRP assume subsequent license renewal for existing nuclear facilities beginning at end of current operating licenses.

NOTE c: Asheville coal units and Darlington CT units have been officially retired as of January 2020 and March 2020, respectively. Darlington CT units are included in this table as their retirement shows up in the Winter of 2021 in the LCR tables.

Following are the EE and DSM programs currently available through DEP as of December 31, 2019:

RESIDENTIAL EE PROGRAMS	NON-RESIDENTIAL EE PROGRAMS	COMBINED RESIDENTIAL / NON-RESIDENTIAL EE PROGRAMS	RESIDENTIAL DSM PROGRAMS	NON-RESIDENTIAL DSM PROGRAMS
Energy Efficient Appliances and Devices	Non-Residential Smart $aver® Energy Efficient Products and Assessment	Energy Efficient Lighting	EnergyWise[SM] Home	CIG Demand Response Automation
Energy Efficiency Education	Non-Residential Smart $aver® Performance Incentive	Distribution System Demand Response (DSDR)		Large Load Curtailable Rates & Riders
Multi-Family Energy Efficiency	Small Business Energy Saver			EnergyWise® Business
My Home Energy Report				
Neighborhood Energy Saver (Low-Income)				
Residential Energy Assessments				
Residential New Construction				
Residential Smart $aver® Energy Efficiency				

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ENERGY EFFICIENCY PROGRAMS

Energy Efficiency programs are typically non-dispatchable education or incentive-based programs. Energy and capacity savings are achieved by changing customer behavior or through the installation of more energy-efficient equipment or structures. All cumulative effects (gross of Free Riders, at the Plant[1]) since the inception of these existing programs through the end of 2019 are summarized below. Please note that the cumulative impacts listed below include the impact of any Measurement and Verification performed since program inception and also note that a "Participant" in the information included below is based on the unit of measure for the specific energy efficiency measure (e.g. number of bulbs, kWh of savings, tons of refrigeration, etc.), and may not be the same as the number of customers that actually participate in these programs. The following provides more detail on DEP's existing EE programs.

RESIDENTIAL EE PROGRAMS

Energy Efficient Appliances and Devices Program

The Energy Efficient Appliances and Devices Program is a new program that combines DEP's previous "Save Energy and Water Kit" with a variety of high efficiency products available through the Company's Online Savings Store, including but not limited to Air Purifiers, Dehumidifiers and LED Fixtures. The Save Energy and Water kit offers low flow water fixtures and insulating pipe tape to residential single-family homeowners with electric water heaters. Program participants are eligible for one kit shipped free of charge to their home. Kits are available in two sizes for homes with one or more full bathrooms and contain varying quantities of shower heads, bathroom aerators, kitchen aerator and insulating pipe tape.

APPLIANCES AND DEVICES				
CUMULATIVE AS OF:	NUMBER OF PARTICIPANTS	GROSS SAVINGS (AT PLANT)		
		MWH ENERGY	PEAK SKW	PEAK WKW
December 31, 2019	1,311,635	78,693	25,278	21,285

[1] "Gross of Free Riders" means that the impacts associated with the EE programs have not been reduced for the impact of Free Riders. "At the Plant" means that the impacts associated with the EE programs have been increased to include line losses.

CUMULATIVE AS OF:	NUMBER OF PARTICIPANTS	GROSS SAVINGS (AT PLANT)		
		MWH ENERGY	PEAK SKW	PEAK WKW
December 31, 2019	46,842	25,717	3,626	1,356

RESIDENTIAL ENERGY ASSESSMENTS PROGRAM

The Residential Energy Assessments Program provides eligible customers with a free in-home energy assessment, performed by a Building Performance Institute (BPI) certified energy specialist and designed to help customers reduce energy usage and save money. The BPI certified energy specialist completes a 60 to 90-minute walk through assessment of a customer's home and analyzes energy usage to identify energy savings opportunities. The energy specialist discusses behavioral and equipment modifications that can save energy and money with the customer. The customer also receives a customized report that identifies actions the customer can take to increase their home's efficiency.

In addition to a customized report, customers receive an energy efficiency starter kit with a variety of measures that can be directly installed by the energy specialist. The kit includes measures such as energy efficient lighting, low flow shower head, low flow faucet aerators, outlet/switch gaskets, weather stripping and an energy saving tips booklet. Additional energy efficient bulbs are available to be installed by the auditor if needed.

RESIDENTIAL ENERGY ASSESSMENTS				
CUMULATIVE AS OF:	NUMBER OF PARTICIPANTS	GROSS SAVINGS (AT PLANT)		
		MWH ENERGY	PEAK SKW	PEAK WKW
December 31, 2019	144,853	31,026	3,787	2,939

RESIDENTIAL NEW CONSTRUCTION PROGRAM

The Residential New Construction Program provides incentives for new single family and multi-family residential dwellings (projects of three stories and less) that fall within the 2018 North Carolina Residential Building Code to meet or exceed the 2018 North Carolina Energy Conservation Code High Efficiency Residential Option (HERO). If a builder or developer constructing to the HERO standard elects to participate, the Program offers the homebuyer an incentive guaranteeing the heating and cooling consumption of the dwelling's total annual energy costs. Additionally, the Program incents the

installation of high-efficiency heating ventilating and air conditioning (HVAC) and heat pump water heating (HPWH) equipment in new single family, manufactured, and multi-family residential housing units.

New construction represents a unique opportunity for capturing cost effective EE savings by encouraging the investment in energy efficiency features that would otherwise be impractical or costlier to install at a later time.

RESIDENTIAL NEW CONSTRUCTION				
		GROSS SAVINGS (AT PLANT)		
CUMULATIVE AS OF:	NUMBER OF PARTICIPANTS	MWH ENERGY	PEAK SKW	PEAK WKW
December 31, 2019	39,880,246	60,788	23,231	21,201

NOTE: The participants and impacts are from both the Residential New Construction program and the previous Home Advantage program.

RESIDENTIAL SMART $AVER® EE PROGRAM (FORMERLY KNOWN AS THE HOME ENERGY IMPROVEMENT PROGRAM)

The Residential Smart $aver® EE Program offers DEP customers a variety of energy conservation measures designed to increase energy efficiency in existing residential dwellings. The Program utilizes a network of participating contractors to encourage the installation of: (1) high efficiency central air conditioning (AC) and heat pump systems with optional add on measures such as Quality Installation and Smart Thermostats, (2) attic insulation and sealing, (3) heat pump water heaters, and (4) high efficiency variable speed pool pumps.

The prescriptive menu of energy efficiency measures provided by the program allows customers the opportunity to participate based on the needs and characteristics of their individual homes. A referral channel provides free, trusted referrals to customers seeking reliable, qualified contractors for their energy saving home improvement needs.

This program previously offered HVAC Audits and Room AC's, however, those measures were removed due to no longer being cost-effective.

The tables below show actual program performance for all current and past program measures.

RESIDENTIAL SERVICE – SMART $AVER				
		GROSS SAVINGS (AT PLANT)		
CUMULATIVE AS OF:	NUMBER OF PARTICIPANTS	MWH ENERGY	PEAK SKW	PEAK WKW
December 31, 2019	201,592	81,238	43,398	2,898

NON-RESIDENTIAL EE PROGRAMS

Non-Residential Smart $aver Energy Efficient Products and Assessment Program (formerly known as the Energy Efficiency for Business Program)

The Non-Residential Smart $aver Energy Efficient Products and Assessment Program provides incentives to DEP commercial and industrial customers to install high efficiency equipment in applications involving new construction and retrofits and to replace failed equipment.

Commercial and industrial customers can have significant energy consumption but may lack knowledge and understanding of the benefits of high efficiency alternatives. The Program provides financial incentives to help reduce the cost differential between standard and high efficiency equipment, offer a quicker return on investment, save money on customers' utility bills that can be reinvested in their business, and foster a cleaner environment. In addition, the Program encourages dealers and distributors (or market providers) to stock and provide these high efficiency alternatives to meet increased demand for the products.

The program provides incentives through prescriptive measures, custom measures and technical assistance.

- ***Prescriptive Measures***: Customers receive incentive payments after the installation of certain high efficiency equipment found on the list of pre-defined prescriptive measures, including lighting; heating, ventilating and air conditioning equipment; and refrigeration measures and equipment. The program will no longer offer A-Line bulb incentives after 2020.
- ***Custom Measures***: Custom measures are designed for customers with electrical energy saving projects involving more complicated or alternative technologies, whole-building projects, or those measures not included in the Prescriptive measure list. The intent of the Program is to encourage the implementation of energy efficiency projects that would not otherwise be completed without

the Company's technical or financial assistance. Unlike the Prescriptive portion of the program, all Custom measure incentives require pre-approval prior to the project implementation. The program will no longer offer A-Line bulb incentives after 2020.

- ***Energy Assessments and Design Assistance***: Incentives are available to assist customers with energy studies such as energy audits, retro commissioning, and system-specific energy audits for existing buildings and with design assistance such as energy modeling for new construction. Customers may use a contracted Duke Energy vendor to perform the work or they may select their own vendor. Additionally, the Program assists customers who identify measures that may qualify for Smart $aver Incentives with their applications. Pre-approval is required. In 2019, the program modified its approach to a Virtual Energy Assessment utilizing an energy modeling software to complete the assessment in 2-3 weeks at a lower cost.

NON-RESIDENTIAL SMART SAVER ENERGY EFFICIENCY PRODUCTS AND ASSESSMENT				
		GROSS SAVINGS (AT PLANT)		
CUMULATIVE AS OF:	NUMBER OF PARTICIPANTS	MWH ENERGY	PEAK SKW	PEAK WKW
December 31, 2019	76,167,085	759,203	137,149	49,442

* NOTE: Participants have different units of measure.

NON-RESIDENTIAL SMART $AVER PERFORMANCE INCENTIVE PROGRAM

The Non-Residential Smart $aver® Performance Incentive Program offers financial assistance to qualifying commercial, industrial and institutional customers to enhance their ability to adopt and install cost-effective electrical energy efficiency projects. The Program encourages the installation of new high efficiency equipment in new and existing nonresidential establishments as well as efficiency-related repair activities designed to maintain or enhance efficiency levels in currently installed equipment. Incentive payments are provided to offset a portion of the higher cost of energy efficient installations that are not eligible under the Smart $aver® EE Products and Assessment program. The Program requires pre-approval prior to project initiation.

The types of projects covered by the Program include projects with some combination of unknown building conditions or system constraints, or uncertain operating, occupancy, or production schedules. The intent of the Program is to broaden participation in non-residential efficiency programs by being able

NON-RESIDENTIAL SMART $AVER PERFORMANCE INCENTIVE				
		GROSS SAVINGS (AT PLANT)		
CUMULATIVE AS OF:	NUMBER OF PARTICIPANTS	MWH ENERGY	PEAK SKW	PEAK WKW
December 31, 2019	100	3,871	325	347

SMALL BUSINESS ENERGY SAVER PROGRAM

The Small Business Energy Saver Program reduces energy usage through the direct installation of energy efficiency measures within qualifying non-residential customer facilities. Program measures address major end-uses in lighting, refrigeration, and HVAC applications. The program is available to existing non-residential customers that are not opted-out of the Company's EE/DSM Rider and have an average annual demand of 180 kW or less per active account.

Program participants receive a free, no-obligation energy assessment of their facility followed by a recommendation of energy efficiency measures to be installed in their facility along with the projected energy savings, costs of all materials and installation, and up-front incentive amount from Duke Energy Progress. The customer makes the final determination of which measures will be installed after receiving the results of the energy assessment. The Company-authorized vendor schedules the installation of the energy efficiency measures at a convenient time for the customer, and electrical subcontractors perform the work.

SMALL BUSINESS ENERGY SAVER				
		GROSS SAVINGS (AT PLANT)		
CUMULATIVE AS OF:	NUMBER OF PARTICIPANTS	MWH ENERGY	PEAK SKW	PEAK WKW
December 31, 2019	198,207,936	266,094	49,099	17,322

NOTE: Participants have different units of measure.

COMBINED RESIDENTIAL/NON-RESIDENTIAL CUSTOMER

ENERGY EFFICIENT LIGHTING PROGRAM

The Energy Efficient Lighting Program partners with lighting manufacturers and retailers across North and South Carolina to provide marked-down prices at the register to DEP customers purchasing energy efficient lighting products. Starting in 2017, the Program removed CFLs and only offers LEDs and energy-efficient fixtures.

As the program enters its eighth year, the DEP Energy Efficient Lighting Program will continue to encourage customers to adopt energy efficient lighting through incentives on a wide range of energy efficient lighting products. Customer education is imperative to ensure customers are purchasing the right bulb for the application in order to obtain high satisfaction with lighting products and subsequent purchases.

ENERGY EFFICIENT LIGHTING				
		GROSS SAVINGS (AT PLANT)		
CUMULATIVE AS OF:	NUMBER OF PARTICIPANTS	MWH ENERGY	PEAK SKW	PEAK WKW
December 31, 2019	34,575,395	1,798,852	285,602	18,845

DISTRIBUTION SYSTEM DEMAND RESPONSE PROGRAM (DSDR)

Duke Energy Progress' Distribution System Demand Response (DSDR) program manages the application and operation of voltage regulators (the Volt) and capacitors (the VAR) on the Duke Energy Progress distribution system. In general, the program tends to optimize the operation of these devices, resulting in a "flattening" of the voltage profile across an entire circuit, starting at the substation and continuing out to the farthest endpoint on that circuit. This flattening of the voltage profile is accomplished by automating the substation level voltage regulation and capacitors, line capacitors and line voltage regulators while integrating them into a single control system. This control system continuously monitors and operates the voltage regulators and capacitors to maintain the desired "flat" voltage profile. Once the system is operating with a relatively flat voltage profile across an entire circuit, the resulting circuit voltage at the substation can then be operated at a lower overall level. Lowering the circuit voltage at the substation, results in an immediate reduction of system loading during peak conditions.

VOLTAGE CONTROL ACTIVATIONS			
DATE	START TIME	END TIME	DURATION (H:MM)
7/16/2020	18:05	21:00	2:55
7/30/2020	18:00	21:00	3:00

DEMAND-SIDE MANAGEMENT PROGRAMS

RESIDENTIAL:

ENERGYWISE℠ HOME PROGRAM

The EnergyWise℠ Home Program allows DEP to install load control switches at the customer's premise to remotely control the following residential appliances:

- Central air conditioning or electric heat pumps
- Auxiliary strip heat on central electric heat pumps (Western Region only)
- Electric water heaters (Western Region only).

For each of the appliance options above, an initial one-time bill credit of $25 following the successful installation and testing of load control device(s) and an annual bill credit of $25 is provided to program participants in exchange for allowing the Company to control the listed appliances.

ENERGYWISE℠ HOME			
CUMULATIVE AS OF:	NUMBER OF PARTICIPANTS*	2019 CAPABILITY (MW@GEN)	
		SUMMER	WINTER
December 31, 2019	196,192	405	14.1

* Number of participants represents the number of measures under control.

The following table shows Residential EnergyWise℠ Home Program activations that were for the general population from July 1, 2018 through December 31, 2019.

TABLE E-2

DEP BASE WITH CARBON POLICY TOTAL RENEWABLES

DEP BASE RENEWABLES - COMPLIANCE + NON-COMPLIANCE															
	MW NAMEPLATE					MW CONTRIBUTION TO SUMMER PEAK					MW CONTRIBUTION TO WINTER PEAK				
	SOLAR ONLY	SOLAR WITH STORAGE	BIOMASS / HYDRO	WIND	TOTAL	SOLAR ONLY	SOLAR WITH STORAGE	BIOMASS/ HYDRO	WIND	TOTAL	SOLAR ONLY	SOLAR WITH STORAGE	BIOMASS/ HYDRO	WIND	TOTAL
2021	2,888	0	284	0	3,171	1,011	0	284	0	1,294	29	0	284	0	312
2022	3,144	0	146	0	3,291	1,092	0	146	0	1,238	31	0	146	0	178
2023	3,430	0	135	0	3,565	1,134	0	135	0	1,270	34	0	135	0	169
2024	3,641	14	131	0	3,786	1,166	8	131	0	1,305	36	3	131	0	171
2025	3,850	13	131	0	3,995	1,190	8	131	0	1,329	39	3	131	0	173
2026	4,128	13	120	0	4,262	1,218	7	120	0	1,345	41	3	120	0	165
2027	4,184	88	120	0	4,392	1,223	48	120	0	1,391	42	22	120	0	184
2028	4,239	163	116	0	4,518	1,229	88	116	0	1,433	42	41	116	0	199
2029	4,294	237	60	0	4,591	1,234	128	60	0	1,422	43	59	60	0	162
2030	4,323	436	43	0	4,802	1,237	234	43	0	1,515	43	109	43	0	195
2031	4,352	634	43	0	5,029	1,240	340	43	0	1,623	44	158	43	0	245
2032	4,331	856	42	0	5,228	1,238	460	42	0	1,740	43	214	42	0	299
2033	4,311	1,076	42	150	5,579	1,236	581	42	12	1,870	43	269	42	53	406
2034	4,290	1,296	41	300	5,928	1,234	701	41	24	2,000	43	324	41	105	513
2035	4,270	1,514	41	450	6,276	1,232	822	41	36	2,131	43	379	41	158	620

Data presented on a year beginning basis.

Solar includes 0.5% per year degradation.

Capacity listed excludes REC Only Contracts.

Solar contribution to peak based on 2018 Astrapé analysis; solar with storage contribution to peak based on 2020 Astrapé ELLC study.

Corrected 11.06.2020

TABLE E-3

DEP HIGH RENEWABLES SENSITIVITY

DEP HIGH RENEWABLES - COMPLIANCE + NON-COMPLIANCE															
	MW NAMEPLATE					MW CONTRIBUTION TO SUMMER PEAK					MW CONTRIBUTION TO WINTER PEAK				
	SOLAR ONLY	SOLAR WITH STORAGE	BIOMASS / HYDRO	WIND	TOTAL	SOLAR ONLY	SOLAR WITH STORAGE	BIOMASS/ HYDRO	WIND	TOTAL	SOLAR ONLY	SOLAR WITH STORAGE	BIOMASS/ HYDRO	WIND	TOTAL
2021	2,888	0	284	0	3,171	1,011	0	284	0	1,294	29	0	284	0	312
2022	3,144	0	146	0	3,291	1,092	0	146	0	1,238	31	0	146	0	178
2023	3,430	0	135	0	3,565	1,134	0	135	0	1,270	34	0	135	0	169
2024	3,641	14	131	0	3,786	1,166	8	131	0	1,305	36	3	131	0	171
2025	3,850	13	131	0	3,995	1,190	8	131	0	1,329	39	3	131	0	173
2026	4,128	13	120	0	4,262	1,218	7	120	0	1,345	41	3	120	0	165
2027	4,109	229	120	0	4,458	1,216	125	120	0	1,461	41	57	120	0	218
2028	4,089	446	116	0	4,652	1,214	244	116	0	1,574	41	112	116	0	269
2029	4,070	677	60	0	4,807	1,212	372	60	0	1,644	41	169	60	0	270
2030	4,051	904	43	0	4,997	1,210	498	43	0	1,750	41	226	43	0	309
2031	4,031	1,138	43	60	5,272	1,208	629	43	14	1,894	40	285	43	37	405
2032	4,011	1,383	42	120	5,556	1,206	766	42	29	2,043	40	346	42	74	501
2033	3,992	1,647	42	180	5,861	1,204	914	42	43	2,203	40	412	42	111	604
2034	3,974	2,084	41	390	6,489	1,202	1,160	41	70	2,473	40	521	41	200	802
2035	3,955	2,533	41	615	7,144	1,201	1,413	41	100	2,754	40	633	41	299	1,013

Data presented on a year beginning basis.

Solar includes 0.5% per year degradation.

Capacity listed excludes REC Only Contracts.

Solar contribution to peak based on 2018 Astrapé analysis; solar with storage contribution to peak based on 2020 Astrapé ELLC study.

TABLE E-4

DEP LOW RENEWABLES SENSITIVITY

DEP LOW RENEWABLES - COMPLIANCE + NON-COMPLIANCE															
	MW NAMEPLATE					MW CONTRIBUTION TO SUMMER PEAK					MW CONTRIBUTION TO WINTER PEAK				
	SOLAR ONLY	SOLAR WITH STORAGE	BIOMASS / HYDRO	WIND	TOTAL	SOLAR ONLY	SOLAR WITH STORAGE	BIOMASS/ HYDRO	WIND	TOTAL	SOLAR ONLY	SOLAR WITH STORAGE	BIOMASS/ HYDRO	WIND	TOTAL
2021	2,888	0	284	0	3,171	1,011	0	284	0	1,294	29	0	284	0	312
2022	3,144	0	146	0	3,291	1,092	0	146	0	1,238	31	0	146	0	178
2023	3,430	0	135	0	3,565	1,134	0	135	0	1,270	34	0	135	0	169
2024	3,641	14	131	0	3,786	1,166	8	131	0	1,305	36	3	131	0	171
2025	3,850	13	131	0	3,995	1,190	8	131	0	1,329	39	3	131	0	173
2026	4,128	13	120	0	4,262	1,218	7	120	0	1,345	41	3	120	0	165
2027	4,109	13	120	0	4,242	1,216	7	120	0	1,343	41	3	120	0	164
2028	4,089	13	116	0	4,219	1,214	7	116	0	1,337	41	3	116	0	160
2029	4,070	163	60	0	4,293	1,212	90	60	0	1,361	41	41	60	0	141
2030	4,051	312	43	0	4,406	1,210	172	43	0	1,425	41	78	43	0	161
2031	4,031	461	43	0	4,534	1,208	254	43	0	1,505	40	115	43	0	198
2032	4,011	609	42	150	4,811	1,206	336	42	12	1,596	40	152	42	53	286
2033	3,992	756	42	300	5,090	1,204	419	42	24	1,689	40	189	42	105	375
2034	3,974	902	41	450	5,367	1,202	501	41	36	1,781	40	225	41	158	464
2035	3,955	1,047	41	600	5,644	1,201	584	41	48	1,874	40	262	41	210	553

Data presented on a year beginning basis.

Solar includes 0.5% per year degradation.

Capacity listed excludes REC Only Contracts.

Solar contribution to peak based on 2018 Astrapé analysis; solar with storage contribution to peak based on 2020 Astrapé ELLC study.

Corrected 11.06.2020

customers is maximized when the utility maintains dispatch rights for the battery asset. For these reasons, the Company relied on the ELCC results modeled under Economic Arbitrage conditions.

- Only 4-hour and 6-hour storage considered for standalone storage – Under all dispatch options, the value of 2-hour storage quickly diminishes as their penetration increases on the system. As shown in Appendix B of the Resource Adequacy report (Attachment III to the IRP), even though most of the LOLH occurs in the hour beginning 7AM, DEP has LOLH over a range of hours in the morning and evening which limits the value that 2-hour storage can provide to the system. Additionally, two-hour storage generally performs the same function as DSM programs that, not only reduce winter peak demand, but also tend to flatten demand by shifting energy from the peak hour to hours just beyond the peak. This flattening of peak demand is one of the main drivers for rapid degradation in capacity value of 2-hours storage. As the Company seeks to expand winter DSM programs, the value of two-hour storage will likely diminish.

While the above results show the average capacity value attributed to varying levels of storage on the DEP system, the incremental value of adding 800 MW blocks of storage can be calculated from the results. The incremental values are useful when determining the capacity value of the next block of energy storage, particularly when evaluating replacing a CT with a 4-hour battery as discussed in Appendix A and the economic coal retirement discussion Chapter 11. The incremental capacity value of storage assumed in the IRP is shown in the following table.

DEP QF INTERCONNECTION QUEUE

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APPENDIX K: DEP QF INTERCONNECTION QUEUE

Qualified Facilities contribute to the current and future resource mix of the Company. QFs that are under contract are captured as designated resources in the base resource plan. QFs that are not yet under contract but in the interconnection queue may contribute to the undesignated additions identified in the resource plans. It is not possible to precisely estimate how much of the interconnection queue will come to fruition; however, the current queue clearly supports solar generation's central role in DEP's NC REPS compliance plan and HB 589.

Below is a summary of the interconnection queue as of July 31, 2020:

TABLE K-1
DEP QF INTERCONNECTION QUEUE

UTILITY	FACILITY STATE	ENERGY SOURCE TYPE	NUMBER OF PENDING PROJECTS	PENDING CAPACITY (MW AC)
DEP	NC	Battery	5	153
		Solar	188	4,612
	NC Total		193	4,765
	SC	Solar	140	2,332
	SC Total		140	2,332
	DEP Total		333	7,097

NOTE: (1) Above table includes all QF projects that are in various phases of the interconnection queue and not yet generating energy.

(2) Table does not include net metering interconnection requests.

WESTERN CAROLINAS MODERNIZATION PLAN (WCMP)

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GLOSSARY OF TERMS

10 CFR	Title 10 of the Code of Federal Regulations
AC or A/C	Alternating Current
ACE	Affordable Clean Energy
ACP	Atlantic Coast Pipeline
ACT 62	South Carolina Act 62
ADP	Advanced Distribution Planning
AEO	Annual Energy Outlook
AGC	Automatic Generator Control
AMI	Advanced Metering Infrastructure
APS	Arizona Public Service Electric
ARP	Acid Rain Program
ARPA-E	Advanced Resource Projects Agency-Energy
ASOS	National Weather Service Automated Surface Observing System
BHPCC	Blue Horizons Project Community Council (DEP)
BCFD	Billion Cubic Feet Per Day
BFB	Bubbling Fluidized Bed
BOEM	Bureau of Ocean Energy Management
BYOT	Bring Your Own Thermostat
CAES	Compressed Air Energy Storage
CAIR	Clean Air Interstate Rule
CAMA	North Carolina Coal Ash Management Act of 2014
CAMR	Clean Air Mercury Rule
CAPP	Central Appalachian Coal
CC	Combined Cycle
CCR	Coal Combustion Residuals Rule
CCS	Carbon Capture and Sequestration (Carbon Capture and Storage)
CCUS	Carbon Capture, Utilization and Storage
CECPCN	Certificate of Environmental Compatibility and Public Convenience and Necessity (SC)
CEP	Comprehensive Energy Planning
CES	Clean Electricity Standard
CFL	Compact Fluorescent Light bulbs
CHP	Combined Heat and Power

GLOSSARY OF TERMS (CONT.)

CO_2	Carbon Dioxide
COD	Commercial Operation Date
COL	Combined Construction and Operating License
COVID-19	Coronavirus 2019
COWICS	Carolinas Offshore Wind Integration Case Study
CPCN	Certificate of Public Convenience and Necessity (NC)
CPP	Clean Power Plan
CPRE	Competitive Procurement of Renewable Energy
CSAPR	Cross State Air Pollution Rule
CT	Combustion Turbine
CVR	Conservation Voltage Reduction
CWA	Clean Water Act
DC	Direct Current
DCA	Design Certification Application
DEC	Duke Energy Carolinas
DEF	Duke Energy Florida
DEI	Duke Energy Indiana
DEK	Duke Energy Kentucky
DEP	Duke Energy Progress
DER	Distributed Energy Resource
DER	Duke Energy Renewables
DESC	Dominion Energy South Carolina, Inc. (formerly SCE&G)
DIY	Do It Yourself
DMS	Distribution Management System
DoD	Depth of Discharge
DOE	Department of Energy
DOJ	Department of Justice
DOM	Dominion Zone within PJM RTO
DR	Demand Response
DSCADA	Distribution Supervisory Control and Data Acquisition
DSDR	Distribution System Demand Response Program
DSM	Demand-Side Management

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GLOSSARY OF TERMS (CONT.)

EC or Rider EC	Receiving Credits under Economic Development Rates and/or Self-Generation deferral rate
EE	Energy Efficiency
EGU	Electric Generating Unit
EIA	Energy Information Administration
EITF	Energy Innovation Task Force
ELCC	Effective Load Carrying Capability
ELG Rule	Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category
EPA	Environmental Protection Agency
EPC	Engineering, Procurement, and Construction Contractors
EPRI	Electric Power Research Institute
ER or Rider ER	Receiving Credits under Economic Re-Development Rates
ESG	Environmental, Social and Corporate Governance
ET	Electric Transportation
EVs	Electric Vehicles
FERC	Federal Energy Regulatory Commission
FGD	Flue Gas Desulfurization
FIP	Federal Implementation Plan
FLG	Federal Loan Guarantee
FPS	Feet Per Second
FRCC	Florida Reliability Coordinating Council, Inc.
FSO	Fuels and System Optimization
FT Solar	Fixed-tilt Solar
GALL-SLR	Generic Aging Lessons Learned for Subsequent License Renewal
GA-AL-SC	Georgia-Alabama-South Carolina
GHG	Greenhouse Gas
GIP	Grid Improvement Plan
GTI	Gas Technology Institute
GW	Gigawatt
GWh	Gigawatt-hour
HAP	Hazardous Air Pollutants
HB 589	North Carolina House Bill 589
HRSG	Heat Recovery Steam Generator

GLOSSARY OF TERMS (CONT.)

HVAC	Heating, Ventilation and Air Conditioning
IA	Interconnection Agreement
IESO	Independent Electricity System Operator
IGCC	Integrated Gasification Combined Cycle
ILB	Illinois Basin
ILR	Inverter Load Ratios
IPI	Industrial Production Index
IRP	Integrated Resource Plan
IS	Interruptible Service
ISO-NE	ISO New England, Inc.
ISOP	Integrated Systems and Operations Planning
IT	Information Technologies
ITC	Federal Investment Tax Credit
IVVC	Integrated Volt-Var Control
JDA	Joint Dispatch Agreement
kW	Kilowatt
kWh	Kilowatt-hour
LCOE	Levelized Cost of Energy
LCR Table	Load, Capacity, and Reserves Table
LED	Light Emitting Diodes
LEED	Leadership in Energy and Environmental Design
LEO	Legally Enforceable Obligation
LFE	Load Forecast Error
Li-ION	Lithium Ion
LNG	Liquified Natural Gas
LOLE	Loss of Load Expectation
LOLH	Loss of Load Hours
M&V	Measurement and Verification
MACT	Maximum Achievable Control Technology
MATS	Mercury and Air Toxics Standard
MGD	Million Gallons Per Day
MISO	Midcontinent Independent Operator

GLOSSARY OF TERMS (CONT.)

MPS	Market Potential Study
MMBtu	Million British Thermal Units
MW	Megawatt
MW AC	Megawatt-Alternating Current
MW DC	Megawatt-Direct Current
MWh	Megawatt-hour
MWh AC	Megawatt-hour-Alternating Current
MWh DC	Megawatt-hour-Direct Current
MyHER	My Home Energy Report
NAAQS	National Ambient Air Quality Standards
NAPP	Northern Appalachian Coal
NC	North Carolina
NC HB 589	North Carolina House Bill 589
NC REPS or REPS	North Carolina Renewable Energy and Energy Efficiency Portfolio Standard
NCCSA	North Carolina Clean Smokestacks Act
NCDAQ	North Carolina Division of Air Quality
NCDEQ	North Carolina Division of Environmental Quality
NCEMC	North Carolina Electric Membership Corporation
NCMPA1	North Carolina Municipal Power Agency #1
NC REPS	North Carolina Renewable Energy and Energy Efficiency Portfolio Standard
NCTPC	NC Transmission Planning Collaborative
NCUC	North Carolina Utilities Commission
NEM	Net Energy Metering
NEMS	National Energy Modeling Systems
NERC	North American Electric Reliability Corporation
NERC RAPA	Reliability and Performance Analysis
NES	Neighborhood Energy Saver
NESHAP	National Emission Standards for Hazardous Air Pollutants
NET CONE	Net Cost of New Entry
NGCC	Natural Gas Combined Cycle
NOx	Nitrogen Oxide
NPDES	National Pollutant Discharge Elimination System

GLOSSARY OF TERMS (CONT.)

NRC	Nuclear Regulatory Commission
NREL	National Renewable Energy Laboratory
NSPS	New Source Performance Standard
NUG	Non-Utility Generator
NUREG	Nuclear Regulatory Commission Regulation
NYISO	New York Independent System Operator
NYMEX	New York Mercantile Exchange
O&M	Operating and Maintenance
OATT	Open Access Transmission Tariff
PC	Participant Cost Test
PD	Power Delivery
PERFORM	Performance-based Energy Resource Feedback, Optimization and Risk Management
PEV	Plug-In Electric Vehicles
PHS	Pumped Hydro Storage
PJM	PJM Interconnection, LLC
PMPA	Piedmont Municipal Power Agency
PPA	Purchase Power Agreement
PPB	Parts Per Billion
PRB	Powder River Basin
PROSYM	Production Cost Model
PSCSC	Public Service Commission of South Carolina
PSD	Prevention of Significant Deterioration
PSH	Pumped Storage Hydro
PURPA	Public Utility Regulatory Policies Act
PV	Photovoltaic
PVDG	Solar Photovoltaic Distributed Generation Program
PVRR	Present Value Revenue Requirement
QF	Qualifying Facility
RCRA	Resource Conservation Recovery Act
REC	Renewable Energy Certificate
REPS or NC REPS	Renewable Energy and Energy Efficiency Portfolio Standard

GLOSSARY OF TERMS (CONT.)

RFP	Request for Proposal
RICE	Reciprocating Internal Combustion Engines
RIM	Rate Impact Measure
RPS	Renewable Portfolio Standard
RRP	Refrigerator Replacement Program
RTO	Regional Transmission Organization
RTR	Residential Risk and Technology Review
SAE	Statistical Adjusted End-Use Model
SAT Solar	Single-Axis Tracking Solar
SB 3 or NC SB 3	North Carolina Senate Bill 3
SC	South Carolina
SC Act 62	South Carolina Energy Freedom Act of 2018
SC DER or SC ACT 236	South Carolina Distributed Energy Resource Program
SC DER	South Carolina Distributed Energy Resources
SCR	Selective Catalytic Reduction
SEER	Seasonal Energy Efficiency Ratio
SEIA	Solar Energy Industries Association
SEPA (Ch. 15)	Smart Electric Power Alliance
SEPA (Ch. 2)	Southeastern Power Administration
SERC	SERC Reliability Corporation
SERVM	Strategic Energy Risk Valuation Model
SG	Standby Generation or Standby Generator Control
SIP	State Implementation Plan
SISC	Solar Integration Services Charge
SLR	Subsequent License Renewal
SMR	Small Modular Reactor
SO	System Optimizer
SO_2	Sulfur Dioxide
SOC	State of Charge
SOG	Self-Optimizing Grid
SPM	Sequential Peaker Method

GLOSSARY OF TERMS (CONT.)

SRP – SLR	Standard Review Plan for the Review of Subsequent License Renewal
STAP	Short-Term Action Plan
STEO	Short-Term Energy Outlook
SVC	Static Var Compressors
T&D	Transmission & Distribution
TAG	Technology Assessment Guide
TCFD	Trillion Cubic Feet per Day
Transco	Transcontinental Pipeline
The Company	Duke Energy Progress
The Plan	Duke Energy Progress Annual Plan
TRC	Total Resource Cost
TVA	Tennessee Valley Authority
UCT	Utility Cost Test
UEE	Utility Energy Efficiency
UNC	University of North Carolina
USCPC	Ultra-Supercritical Pulverized Coal
VACAR	Virginia/Carolinas
VAR	Volt Ampere Reactive
VCEA	Virginia Clean Economy Act
VVO	Volt-Var Optimization
WCMP	Western Carolinas Modernization Project (DEP)
WERP	Weatherization and Equipment Replacement Program
WIIN	Water Infrastructure Improvement for the Nation Act
ZELFR	Zero – Emitting Load Following Resource