ACCEPTED FOR PROCESSING - 2022 May 17 12:30 PM - SCPSC - ND-2022-4-E - Page 1 of 10

T Cross-Reference

For the benefit of the North Carolina Utilities Commission (the "Commission"), Duke Energy Carolinas, LLC ("DEC") and Duke Energy Progress, LLC ("DEP" and, together with DEC, "Duke Energy" or the "Companies") provide Table T-1 below to identify where in the Carolinas Carbon Plan (the "Plan" or "Carbon Plan") the Companies have addressed specific Commission requirements or expectations set forth in various Commission orders. In addition, a glossary of terms is provided in Table T-2.

Table T-1: Commission Order Cross-Reference

Order Accepting Integrated Resource Plans, REPS Plans with Conditions and Providing Further Direction for Future Planning, Docket No. E-100, Sub 165 (November 19, 2021)	
Requirement	**Location**
DEC and DEP shall prepare their Carbon Plan for 2022 and their future IRPs to include no more than eight years of market-based forward natural gas prices before using fundamental forecast data for the remainder of the planning period, consistent with the Commission's Avoided Cost Order in Docket No. E-100, Sub 158.	Appendix E - Quantitative Analysis
The Commission concludes that the Companies should continue to refine their analyses of optimum coal plant retirement dates and incorporate the results of such refinement in their Carbon Plans and future IRPs by: • Leveraging the full capability of the EnCompass cost modeling and capacity expansion tools. If Duke continues to believe that the Sequential Peaker Method used for the 2020 IRPs is the most appropriate methodology for the Carbon Plan and for future IRPs, it shall nonetheless present an alternative coal unit retirement schedule using the capabilities of the EnCompass model to select the optimum retirement dates endogenously. The Commission notes that ultimately, the retirement dates for Duke's remaining coal generating plants must support achievement of a least cost	Appendix E - Quantitative Analysis

ACCEPTED FOR PROCESSING - 2022 May 17 12:30 PM - SCPSC - ND-2022-4-E - Page 2 of 10

Order Accepting Integrated Resource Plans, REPS Plans with Conditions and Providing Further Direction for Future Planning, Docket No. E-100, Sub 165 (November 19, 2021)	
path to compliance with the carbon emissions reductions mandated by S.L. 2021-165. • Updating assumptions as appropriate (such as ordered for natural gas forecasts in Section V.A. above). • Developing coal unit retirement dates necessary to achieve the 2030 carbon reduction target established in Section 1 of S.L. 2021-165.	
Technologies considered typically fall under the broad categories of advanced nuclear, advanced renewables, advanced transmission and distribution, biofuels, carbon capture utilization and sequestration, fuel cells, hydrogen, long duration energy storage, and supercritical CO_2 Brayton Cycle gas generating plants. All of these technologies could potentially help Duke meet future carbon reduction goals if they reach commercial status and are economically competitive. In light of the enactment of S.L. 2021-165, the Commission believes that it will be imperative that full consideration of the commercial viability and cost parameters of these technologies be given prominence in the Carbon Plan and in future IRPs. In particular, the Commission is interested in and would benefit from additional analysis of high-pressure Brayton cycle technologies employing supercritical CO_2 as the working fluid, which appear to be in early stages of commercialization and are showing some early promise as zero-emitting resources.	Appendix G - Grid Edge and Customer Programs Appendix H - Screening of Generation Alternatives Appendix I – Solar Appendix J - Wind Appendix K - Energy Storage Appendix L – Nuclear Appendix M – Natural Gas Appendix N – Fuel Supply Appendix O – Low-Carbon Fuels and Hydrogen
• Continue to follow the directive contained in the Commission's August 27, 2019, Order in Docket No. E-100 sub 157 that the IRPs contain an analysis of anticipated or likely grid impacts associated with each alternative resource portfolio modeled in the IRPs and continue to refine transmission network upgrade cost estimates for incremental resources to take into account the most recent system impact study results; • Determine the feasibility of providing a timeline for necessary critical transmission network upgrades required to enable interconnection of incremental resources identified in each alternative resource portfolio modeled in the IRPs; • Incorporate the results of the North Carolina Transmission Planning Cooperative (NCTPC) offshore wind study results and associated cost estimates; • Incorporate applicable results from the 2021 NCTPC Future Resource Scenario Study, as was referred to and discussed at the Second Technical Conference; • Refine import capability studies specifically for capacity purchase from PJM; and	Appendix P – Transmission System Planning and Grid Transformation

ACCEPTED FOR PROCESSING - 2022 May 17 12:30 PM - SCPSC - ND-2022-4-E - Page 3 of 10

Order Accepting Integrated Resource Plans, REPS Plans with Conditions and Providing Further Direction for Future Planning, Docket No. E-100, Sub 165 (November 19, 2021)	
• Continue to assess costs, risks, and reliability aspects of potential off-system purchases.	
2022 Carbon Plan and future IRPs shall include consideration of key trends observed and emerging technology or program developments that may have a meaningful impact on future EE/DSM forecasts, regardless of the 10% threshold previously ordered by the Commission.	Appendix G - Grid Edge and Customer Programs

Order Requiring Filing of Carbon Plan and Establishing Procedural Deadlines, Docket No. E-100, Sub 179 (November 19, 2021)	
Requirement	**Location**
Duke shall file by April 1, 2022, a Carbon Plan that is consistent with the requirements of Section 1 of S.L. 2021-165 and, in addition, includes a statement addressing: (1) the methodology used to determine the baseline 2005 level of carbon dioxide emitted in North Carolina by their electric generating facilities: (2) the methodology used to calculate the reduction in carbon dioxide emitted from their electric generating facilities; and (3) the methodology used to quantify the reduction associated with any offset proposed and the methodology for verifying any such offset.	Appendix A - Carbon Baseline and Accounting

Order Regarding Data Inputs and Assumptions and Scheduling Additional Update on Stakeholder Process Sufficiency, Docket No. E-100, Sub 179 (March 22, 2022)	
Requirement	**Location**
The Commission directs Duke to identify a comprehensive list of inputs and assumptions that will be available for sharing prior to the filing of the Carbon Plan and the date on which these data sets will be available. The Commission further directs Duke to share these data sets with intervenors, upon request and subject to nondisclosure agreements as necessary, as soon as they are available.	Data provided to Intervenors who have executed a Confidentiality Agreement via secure FTP site
Additionally, in the interest of facilitating information sharing, the Commission encourages Duke to conduct additional technical working group sessions with stakeholders.	Appendix B – Carbon Plan Stakeholder Engagement
Finally, the Commission directs Duke to provide the complete Encompass input and output data files to intervenors who so request subject to any necessary confidentiality agreements, ideally	Data provided to Intervenors who have executed a Confidentiality Agreement via Data site

ACCEPTED FOR PROCESSING - 2022 May 17 12:30 PM - SCPSC - ND-2022-4-E - Page 4 of 10

Order Accepting Integrated Resource Plans, REPS Plans with Conditions and Providing Further Direction for Future Planning, Docket No. E-100, Sub 165 (November 19, 2021)	
contemporaneously with the filing but no later than five business days after the filing its initial Carbon Plan.	

Table T-2: Glossary of Terms

GLOSSARY OF TERMS	
$/kW-year	Dollar per kilowatt-year
20 CP	Critical Events up to 20 times per year
2022 SP Program	2022 Solar Procurement Program
A-CAES	Advanced – compressed air energy storage
ACP	Atlantic Coast Pipeline
ADP	Advanced Distribution Planning
AEO	Annual Energy Outlook
AR	Advanced Reactor
ARDP	Advanced Reactor Demonstration Program
ATB	Annual Technology Baseline
ATC	Available Transfer Capability
BA	Balancing Authority
Bad Creek PH II	Bad Creek Hydroelectric Station Second Powerhouse
Base Case	Base Reliability Study
BOEM	Bureau of Ocean Energy Management
BTA	Built Transfer Agreement
BTM	Behind the Meter
BWR	Boiling Water Reactor
CAMD	Clean Air Markets Division of EPA
CAPP	Central Appalachian Coal
CAGR	Compound Annual Growth Rate
Carbon Plan	Carolinas Carbon Plan
Carbon Plan Solar Reference Cost	Assumed Prices of Solar Resources in the Carolinas Carbon Plan
CC	Combined Cycle
CC-F	2x1 F-Class Combined Cycle with Dual Fuel Capabilities
CC-J	2x1 J-Class Combined Cycle with Duct Firing
CCS	Carbon Capture and Sequestration (Carbon Capture and Storage)
CCUS	Carbon Capture, Utilization and Storage
CEMS	Continuous Emissions Monitoring Systems
CEP	Clean Energy Plan
CF	Capacity Factor

ACCEPTED FOR PROCESSING - 2022 May 17 12:30 PM - SCPSC - ND-2022-4-E - Page 5 of 10

GLOSSARY OF TERMS	
CFPP	Carbon Free Power Project
CHP	Combined Heat and Power
CO_2	Carbon Dioxide
CO_2 Tax	Federal Carbon Emissions Policy
CO_2e	Carbon Dioxide Equivalent
COL	Combined Operating License
COLA	Combined Operating License Application
COVID-19	Coronavirus Disease 2019
CPP	Critical Peak Pricing
CPRE	Competitive Procurement of Renewable Energy
CRRS	Climate and Resiliency Study
CT	Combustion Turbine
CTCA	Carolinas Transmission Coordination Arrangement
CVR	Conservation Voltage Reduction
DCA	Design Certification Application
DCFC	Direct Current Fast Charging
DEC	Duke Energy Carolinas, LLC
DEP	Duke Energy Progress, LLC
DEP-East (or DEP-E)	Duke Energy Progress' eastern Balancing Authority
DEP-West (or DEP-W)	Duke Energy Progress' western Balancing Authority
DER	Distributed Energy Resource
DESC	Dominion Energy South Carolina Inc. (formerly SCE&G)
DG Guidance Map	Distributed Generation Guidance Maps
DISIS	Definitive Interconnection System Impact Study
DMS	Distribution Management System
DoD	Depth of Discharge
DOE	Department of Energy
DR	Demand Response
DSDR	Distribution System Demand Response Program
DSM	Demand-Side Management
DSM	Distribution Management System
DUK	Name of the Duke Energy Carolinas Balancing Authority Area
ECAS	Enterprise Communication Advanced Systems
EE	Energy Efficiency
EE/DSM	Energy Efficiency/Demand Side Management
EFI	Energy Futures Initiative
eGRID	Emission and Generation Resource Integrated Database
EIA	Energy Information Administration

ACCEPTED FOR PROCESSING - 2022 May 17 12:30 PM - SCPSC - ND-2022-4-E - Page 6 of 10

GLOSSARY OF TERMS	
ELCC	Effective Load Carrying Capability
ElectriCities	ElectriCities of North Carolina, Inc.
EM&V	Evaluation, Measurement, and Verification
E&NR	Energy & Natural Resources
EnCompass	EnCompass Capacity Expansion and Production Cost Simulation Software
EO 246	Executive Order 246
EPA	Environmental Protection Agency
EPACT 2005	Energy Policy Act of 2005
EPC	Engineering, Procurement, and Construction
EPRI	Electric Power Research Institute
ESBWR	Economic Simplified Boiling Water Reactor
ESG	Environmental, Social and Corporate Governance
ESM	Earning Sharing Mechanism
ESP	Early Site Permit
ET	Electric Transportation
EUE	Expected Unserved Energy
EV	Electric Vehicles
EVSE	Electric Vehicle Service Equipment
FERC	Federal Energy Regulatory Commission
FSN	Final Sale Notice
FT	Firm Transportation
GE	General Electric
GfC	Gas for Climate
GHG	Greenhouse Gas
GIS	Geographic information system
GPI	Great Plains Institute
GSA	Green Source Advantage
GW	Gigawatt
GWh	Gigawatt-hour
HB 589	North Carolina House Bill 589
HB 951	Session Law 2021-165
Hydro	Hydroelectric Power
IA	Interconnection Agreement
IEA	International Energy Agency
IIJA	Infrastructure Investment Jobs Act
IHS Markit	Information Handling Services Markit
IMSR®	Integral Molten Salt Reactor

ACCEPTED FOR PROCESSING - 2022 May 17 12:30 PM - SCPSC - ND-2022-4-E - Page 7 of 10

GLOSSARY OF TERMS	
INL	Idaho National Laboratory
IPI	Industrial Production Index
IPRTF	Interconnection Process Reform Task Force
IRP	Integrated Resource Plan
ISOP	Integrated System and Operations Planning
ITC	Federal Investment Tax Credit
IVVC	Integrated Volt-Var Control
kV	Kilovolt
kW	Kilowatt
kW-AC	Kilowatts-Alternating Current
kWh	Kilowatt-hour
LCOE	Levelized Cost of Energy
LGIP	Large Generator Interconnection Procedure
LGS	Large General Service
Li-ion	Lithium Ion
LIAC	Low-Income Affordability Collaborative
LNG	Liquefied Natural Gas
Local Transmission Plan	NCTPC Coordinated Local Transmission Plan
LOLE	Loss of Load Expectation
LOLP	Loss of Load Probability
LOLH	Loss of Load Hours
LROL	Lowest Reliability Operating Limit
LSE	Load-serving entities
LWA	Limited work authorization
MCFR	Molten Chloride Fast Reactor
MISO	Midcontinent Independent Operator
MPS	Market Potential Study
Moodys	Moody's Investors Service
MT	Million tons
MUR	Measurement Uncertainty Recapture
MW	Megawatt
MWe	Megawatt electric
MWh	Megawatt-hour
MYRP	Multi-year Rate Plan
NAPP	Northern Appalachian Coal
NC DEQ	North Carolina Department of Environmental Quality
NC DOT	North Carolina Department of Transportation

ACCEPTED FOR PROCESSING - 2022 May 17 12:30 PM - SCPSC - ND-2022-4-E - Page 8 of 10

GLOSSARY OF TERMS	
NCEMC	North Carolina Electric Membership Corporation
NCTPC	North Carolina Transmission Planning Collaborative
NCUC	North Carolina Utilities Commission
NEM	Net Energy Metering
NEMS	National Energy Modeling Systems
NERC	North American Electric Reliability Corporation
NERP	North Carolina Energy Regulatory Process
NITS	Network Integrated Transmission Service
NO_x	Nitrous Oxide
NRC	Nuclear Regulatory Commission
NREL	National Renewable Energy Laboratory
NTS	Non-traditional Solutions
O&M	Operating and Maintenance
OASIS	Open Access Same-Time Information System
OATT	Open Access Transmission Tariff
OEM	Original Equipment Manufacturer
OPG	Ontario Power Generation
OSC	Oversight/Steering Committee
OSW	Offshore Wind
P1 or Portfolio 1	Plan option achieving 70% CO_2 emissions reductions by 2030
P2 or Portfolio 2	Plan option achieving 70% CO_2 emissions reductions by 2032 utilizing offshore wind
P3 or Portfolio 3	Plan option achieving 70% CO_2 emissions reductions by 2034 utilizing nuclear small modular reactor
P4 or Portfolio 4	Plan option achieving 70% CO_2 emissions reductions by 2034 utilizing offshore wind and nuclear small modular reactor
$P1_A$ or Portfolio 1_A	Plan option achieving 70% CO_2 emissions reductions by 2030 with alternate fuel supply case
$P2_A$ or Portfolio 2_A	Plan option achieving 70% CO_2 emissions reductions by 2032 with alternate fuel supply case and utilizing offshore wind
$P3_A$ or Portfolio 3_A	Plan option achieving 70% CO_2 emissions reductions by 2034 with alternate fuel supply case and utilizing nuclear small modular reactor
$P4_A$ or Portfolio 4_A	Plan option achieving 70% CO_2 emissions reductions by 2034 with alternate fuel supply case and utilizing offshore wind and nuclear small modular reactor
PBR	Performance-based Regulation
Peakers	Simple Cycle Combustion Turbines
PIM	Performance Incentive Mechanism
PJM	PJM Interconnection, LLC

ACCEPTED FOR PROCESSING - 2022 May 17 12:30 PM - SCPSC - ND-2022-4-E - Page 9 of 10

GLOSSARY OF TERMS	
PPA	Purchase Power Agreement
PSCSC	Public Service Commission of South Carolina
PSH	Pumped Storage Hydro
PTR	Peak Time Rebate
PURPA	Public Utility Regulatory Policies Act
PV	Photovoltaic
PVRR	Present Value Revenue Requirement
PWG	Planning Working Group
PWR	Pressurized Water Reactor
Queue Reform	Pursued Implementation of New Interconnection Procedures
RCP	Representative Concentration Pathway
REC	Renewable Energy Certificate
RFI	Request for Information
RFP	Request for Proposal
RNG	Renewable natural gas
Rolled Off	Subtracted
ROW	Right-of-way
RPS	Renewable Portfolio Standard
RTO	Regional Transmission Organization
S&P	Standard and Poor
SDA	Standard Design Approval
SAE	Statistical Adjusted End-Use Model
SAP	Site Assessment Plan
SC-GHG	Social Cost of GHG
SEC	Securities and Exchange Commission
sCO2	Supercritical CO_2
SEER	Seasonal Energy Efficiency Ratio
SEPA	Southeastern Power Administration
SERC	Southeastern Reliability Corporation
SERTP	Southeastern Regional Transmission Planning
SERVM	Strategic Energy Risk Valuation Model
SHEA	Southeast Hydrogen Energy Alliance
SLR	Subsequent License Renewal
SMR	Small Modular Reactor
SO_2	Sulfur Dioxide
SOG	Self-Optimizing Grid
SP	Solar Procurement
SPS	Solar paired with storage or solar plus storage

ACCEPTED FOR PROCESSING - 2022 May 17 12:30 PM - SCPSC - ND-2022-4-E - Page 10 of 10

GLOSSARY OF TERMS	
T&D	Transmission & Distribution
TA	Trade Allies
TAG	Transmission Advisory Group
TAG®	Technology Assessment Guide
TE	Transportation Electrification
Tierra	Tierra Consulting
TOP	Transmission Operator
TOU	Time of Use
TP	Transmission Planner
TPL	Transmission Planning
TRISO	Tri-structural Isotropic
The Carolinas	North Carolina and South Carolina
The Commission	North Carolina Utilities Commission
The Company	Duke Energy
The Plan	Carolinas Carbon Plan
The State	North Carolina
TRM	Transmission Reliability Margin
TSP	Transmission Service Provider
TVA	Tennessee Valley Authority
TW	Terawatt
TWh	Terawatt-hour
TWG	Technical Working Group
UCT	Utility Cost Test
UEE	Utility Energy Efficiency
ULSD	Ultra-Low Sulfur Diesel
USFWS	U.S. Fish and Wildlife Service
VACAR	Virginia/Carolinas Subregion of Southeastern Reliability Corporation
VAST	Vehicle Analytics and Simulation Tool
WEA	Wind Energy Area
Winter Peak Study	Winter Peak Demand Reduction Potential Study by Tierra and Dunsky, Dec. 2020, as filed Jan. 19, 2022, in NCUC Docket No. E-100, Sub 165
ZELFR	Zero-Emitting Load Following Resource