Curriculum Vitae -- Paul J. Alvarez MM, NPDP

Wired Group, PO Box 620756, Littleton, CO 80162. palvarez@wiredgroup.net 303-997-0317

Profile

After 15 years in Fortune 500 product development and product management, including P&L responsibility, Mr. Alvarez entered the utility industry by way of demand-side management rate and program development, marketing, and impact measurement for Xcel Energy in 2001. He has since designed renewable portfolio standard compliance and distributed generation rates and incentive programs. These experiences led to unique projects involving the measurement of grid modernization costs and benefits (energy, capacity, operating savings, revenue capture, reliability, environmental, and customer experience), which revealed the limitations of current utility regulatory and governance models. Mr. Alvarez currently serves as the President of the Wired Group, a boutique consultancy serving consumer and environmental advocates, regulators, associations, and suppliers.

Appearances and Research Projects in Regulatory Proceedings

Critique of Investment in Traditional Meters (Equipped with AMR). Testimony before the New Hampshire Public Utilities Commission recommending rejection of cost recovery. DE 19-057. December 20, 2019.

Critique of Smart Meter Benefits Claimed by Puget Sound Energy. Testimony before the Washington Utility and Telecom Commission recommending rejection of cost recovery pending demonstration of benefits in excess of costs. UE-190529 and UG-190530. November 22, 2019.

Critique of Smart Meter Benefits Claimed by Rockland Electric Company. Testimony before the New Jersey Board of Public Utilities on behalf of the Division of Consumer Advocate recommending rejection of cost recovery pending demonstration of benefits in excess of costs. ER19050552. October 11, 2019.

Critique of Grid Improvement Plan Proposed by Indianapolis Power and Light. Testimony before the Indiana Utility Regulatory Commission recommending reductions in the size of the plan ($1.2 billion) based on benefit-cost analyses of plan components. Cause 45264. October 7, 2019.

Investigation into Distribution Planning Processes. Comments to the Michigan Public Service Commission recommending a transparent, stakeholder-engaged distribution planning process. U-20147. September 11, 2019.

Investigation into Grid Modernization. Comments to the New Hampshire Public Utilities Commission recommending a transparent, stakeholder-engaged distribution planning process. IR 15-296. September 6, 2019.

Arguments to Reduce and Re-prioritize Grid Modernization Investments Proposed by Pacific Gas & Electric. Testimony before the California Public Utilities Commission. A.18-12-009. July 26, 2019.

Evaluation of Xcel Energy's Request for an Advance Determination of Prudence Regarding Natural Gas Generation Plant Purchase. Testimony before the North Dakota Public Service Commission. PU-18-403. May 28, 2019.

Critique of Smart Meter Replacement Program Implied by Proposed Duke Energy Ohio Global Settlement Agreement. Testimony before the Public Utilities Commission of Ohio on behalf of the Office of Consumer Counsel. Numerous cases including 17-0032-EL-AIR. June 25, 2018.

Support for Considering Duke Energy Grid Modernization Investments in a Distinct Proceeding. Testimony before the North Carolina Utilities Commission on behalf of the Environmental Defense Fund. E-2 Sub 1142, October 18, 2017 and E-7 Sub 1146, January 19, 2018.

Evaluation of Southern California Edison's Request to Invest $2.3 Billion in its Grid to Accommodate Distributed Energy Resources. Testimony before the California Public Utilities Commission on behalf of The Utility Reform Network. A16-09-001. May 2, 2017.

Evaluation of Kentucky Utilities/Louisville Gas & Electric Smart Meter Deployment Plan. Testimony before the Kentucky Public Service Commission on behalf of the Kentucky Attorney General in 2016-00370/2016-00371. March 3, 2017. Also in 2018-00005 May 18, 2018

Evaluation of National Grid's Massachusetts Smart Meter Deployment Plan. Testimony before the Massachusetts Department of Public Utilities on behalf of the Massachusetts Attorney General in 15-120. March 10, 2017. Also Unitil in 15-121 and Eversource in 15-122/123, March 10, 2017

Evaluation of Pacific Gas & Electric's Request to Invest $100 Million in Its Grid to Accommodate Distributed Energy Resources. Testimony before the California Public Utilities Commission on behalf of The Utility Reform Network, A15-09-001. April 29, 2016

Recommendations on Metropolitan Edison's Grid Modernization Plan. Testimony before the Pennsylvania Public Utilities Commission on behalf of the Environmental Defense Fund in R-2016-2547449. July 21, 2016.

Arguments to Consider Duke Energy's Smart Meter CPCN in the Context of a Rate Case. Testimony before the Kentucky Public Service Commission on behalf of the Attorney General in 2016-00152. July 18, 2016.

Evaluation of Westar Energy's Proposal To Mandate a Rate Specific to Distributed Generation-Owning Customers. Testimony before the Kansas Corporation Commission on Behalf of the Environmental Defense Fund, case 15-WSEE-115-RTS. July 9, 2015.

Regulatory Reform Proposal to Base a Significant Portion of Utility Compensation on Performance in the Public Interest. Testimony before the Maryland PSC on behalf of the Coalition for Utility Reform, case 9361. December 8, 2014.

Duke Energy Ohio Smart Grid Audit and Assessment. Primary research and report prepared for the Public Utilities Commission of Ohio case 10-2326-GE. June 30, 2011.

SmartGridCity™ Demonstration Project Evaluation Summary. Primary research and report prepared for Xcel Energy. Colorado Public Utilities Commission case 11A-1001E. October 21, 2011.

Books

Smart Grid Hype & Reality: A Systems Approach to Maximizing Customer Return on Utility Investment. Second edition. ISBN 978-0-615-88795-1. Wired Group Publishing. 360 pages. 2018.

Noteworthy Publications

The Rush to Modernize: An Editorial on Distribution Planning and Performance Measurement. With Sean Ericson and Dennis Stephens. Public Utilities Fortnightly. July 8, 2019. Pages 116+

Modernizing the Grid in the Public Interest: Getting a Smarter Grid at the Least Cost for South Carolina Customers. Whitepaper co-authored with Dennis Stephens for GridLab. January 31, 2019

Modernizing the Grid in the Public Interest: A Guide for Virginia Stakeholders. Whitepaper co-authored with Dennis Stephens for GridLab. October 5, 2018.

Measuring Distribution Performance? Benchmarking Warrants Your Attention. With Sean Ericson. Electricity Journal. Volume 31 (April, 2018), pages 1-6.

Busting Myths: Investor-Owned Utility Performance Can be Credibly Benchmarked. With Joel Leonard. Electricity Journal. Volume 30 (October, 2017), pages 45-48.

Price Cap Electric Ratemaking: Does it Merit Consideration? With Bill Steele. Electricity Journal. Volume 30, (October, 2017), pages 1-7.

Integrated Distribution Planning: An Idea Whose Time has Come. Public Utilities Fortnightly. November, 2014; also International Confederation of Energy Regulators Chronicle, 3rd Ed, March, 2015

Smart Grid Economic and Environmental Benefits: A Review and Synthesis of Research on Smart Grid Benefits and Costs. Secondary research report prepared for the Smart Grid Consumer Collaborative. October 8, 2013. Companion piece: Smart Grid Technical and Economic Concepts for Consumers.

Is This the Future? Simple Methods for Smart Grid Regulation. Smart Grid News. October 2, 2014.

A Better Way to Recover Smart Grid Costs. Smart Grid News. September 3, 2014.

Why Should We Switch to Performance-based Compensation? Smart Grid News. August 15, 2014.

The True Cost of Smart Grid Capabilities. Intelligent Utility. June 30, 2014.

Maximizing Customer Benefits: Performance Measurement and Action Steps for Smart Grid Investments. Public Utilities Fortnightly. January, 2012.

Buying Into Solar: Rewards, Challenges, and Options for Rate-Based Investments. Public Utilities Fortnightly. December, 2009.

Notable Presentations

NASUCA Annual Meeting. *Reinventing Distribution Planning in New Hampshire.* With D. Maurice Kreis, Executive Director, Office of Consumer Advocate. San Antonio, TX. November 19, 2019.

National Council on Electricity Policy Annual Meeting. Trainer on the economics of distribution grid interoperability and standard compliance; Presentation on communication network economics. Austin, TX. Sept 10-12, 2019.

NASUCA Annual Meeting. *Grid Modernization: Basic Technical Challenges Advocates Should Assert.* Orlando, FL. November 13, 2018.

Illinois Commerce Commission, NextGrid Working Group 7. *Using Peer Comparisons in Distributor Performance Evaluation.* Workshop 3 Presentation. Chicago, IL. July 30, 2018.

NARUC Committee on Electricity. *Using Peer Comparisons in Distributor Performance Evaluation.* Smart Money in Grid Modernization Panel Presentation. Scottsdale, AZ. July 16, 2018.

Public Utilities Commission of Ohio, Power Forward Proceeding Phase 2. *Getting a Smart Grid for FREE.* Columbus, Ohio. July 26, 2017.

NASUCA Mid-Year Meeting. *Using Performance Benchmarking to Gain Leverage in an "Infrastructure Oriented" Environment.* Denver, CO. June 6, 2017.

NARUC Committee on Energy Resources and the Environment. *How big data can lead to better decisions for utilities, customers, and regulators*. Washington DC. February 15, 2016.

National Conference of Regulatory Attorneys 2014 Annual Meeting. *Smart Grid Hype & Reality.* Columbus, Ohio. June 16, 2014.

NASUCA 2013 Annual Conference. *A Review and Synthesis of Research on Smart Grid Benefits and Costs.* Orlando, FL. November 18, 2013.

NARUC Subcommittee on Energy Resources and the Environment. *The Distributed Generation (R)Evolution.*

Orlando, FL. November 17, 2013.

IEEE Power and Energy Society, ISGT 2013. *Distribution Performance Measures that Drive Customer Benefits.* Washington DC. February 26, 2013.

Great Lakes Smart Grid Symposium. *What Smart Grid Deployment Evaluations are Telling Us*. Chicago. September 26, 2012.

Mid-Atlantic Distributed Resource Initiative. *Smart Grid Deployment Evaluations: Findings and Implications for Regulators and Utilities.* Philadelphia. April 20, 2012

DistribuTECH 2012. *Lessons Learned: Utility and Regulator Perspectives.* Panel Moderator. January 25.

DistribuTECH 2012. *Optimizing the Value of Smart Grid Investments.* Half-day course. January 23.

NARUC Subcommittee on Electricity. *Maximizing Smart Grid Customer Benefits: Measurement and Other Implications for Investor-Owned Utilities and Regulators*. St. Louis, MO. November 13, 2011.

Canadian Electric Institute 2013 Annual Distribution Conference. *The (Smart Grid) Story So Far: Costs, Benefits, Risks, Best Practices, and Missed Opportunities.* Toronto, Canada. January 23, 2011.

Teaching

Post-graduate Adjunct Professor. University of Colorado, Global Energy Management Program. Course: Renewable Energy Commercialization -- Electric Technologies, Markets, and Policy.

Guest Lecturer. Michigan State University, Institute for Public Utilities. Courses: Performance Measurement of Distribution Utility Businesses; Introduction to Grid Modernization.

Education

Master's Degree in Management, 1991, Kellogg School of Management, Northwestern University. Concentrations: Finance, Accounting, Information Systems, and International Business.

Bachelor's Degree in Business Administration, 1984, Kelley School of Business, Indiana University. Concentrations: Finance, Marketing.

Certifications

New Product Development Professional. Product Development and Management Association. 2007.

Duke Energy Carolinas
Response to
NCJC Data Request
Data Request No. 5

Docket No. E-7, Sub 1214

Date of Request: January 16, 2020
Date of Response: January 27, 2020

[ ] **CONFIDENTIAL**

[X] **NOT CONFIDENTIAL**

Confidential Responses are provided pursuant to Confidentiality Agreement

The attached response to NCJC Data Request No. 5-3, was provided to me by the following individual(s): Karen Ann Ralph, Lead Planning & Regulatory Support Specialist, and was provided to NCJC under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Carolinas

Request:

5-3. Refer to Oliver testimony, Exhibit 10. Provide the estimated useful life for each of the assets listed below:
a. Page 47: Energy Storage Management System
b. Page 47: Energy Storage Projects
c. Page 51: Next Gen Cellular
d. Page 51: Mission Critical Voice
e. Page 51: POC
f. Page 51: BizWAN
g. Page 51: GridWAN
h. Page 51: Mission Critical Transport
i. Page 51: Towers/Shelters/Pow Sup
j. Page 51: Network Asset Systems
k. Page 51: Vehicle Area Network
l. Page 52: Hydraulic to Electric Reclosers
m. Page 52: Sys Intel and Monitoring
n. Page 52: Fuse Replacement
o. Page 52: UG Sys Automation
p. Page 81: Enterprise Applications
q. Page 82: Advanced Distribution Planning Tool
r. Page 83: DER Dispatch Tool
s. Page 84: Electric Transportation
t. Page 85: Power Electronics for Volt-VAR Control
u. Page 90: Substation Physical Security
v. Page 90: Windows-based unit change outs
w. Page 90: Device Entry Alert System
x. Page 90: Secure Access Device Management
y. Page 90: Line Device Protection

Response:
The list above are projects and not assets. This level of information is not available for the forecasted deferral. The depreciable lifespan of individual projects is not known prior to a project being placed in-service upon which time the capital cost for the project are unitized into the various plant FERC accounts based on the materials used. So, for the deferral estimate an estimated breakdown was made between Transmission, Distribution and General Plant spend. The average depreciation rate for each category was used.
• Distribution – 2.02% See Updated Depr Rates tab (meters were excluded from the average rate.) See Attachment CUCA 2-6 McManeus Grid Deferral Estimate

• Transmission– 2.23% See Updated Depr Rates tab. See Attachment CUCA 2-6 McManeus Grid Deferral Estimate

CUCA 2-6 McManeus
Grid Deferral Estimate

• Advanced DMS – 10% (10-year life)
• Communications– 10% (10-year life)
• Enterprise Application & Distributed Energy – 20% (5-year life)
All of this information was supplied under Public Staff DR 1.8

DUKE ENERGY CAROLINAS LLC
E7 Sub 1214
NORTH CAROLINA RETAIL GRID IMPROVEMENT

NC Retail ROEs Reported in E.S.-1 and Impacts of Potential Adjustments

Note: Adjustments are estimated at a high-level and may not be at the same level of precision as would be done in a rate case.

		Q1 2019			Q2 2019		
		Income for Common Equity (in $000)	Rate Base for Common Equity (in $000)	Return on Common Equity	Income for Common Equity (in $000)	Rate Base for Common Equity (in $000)	Return on Common Equity
	ES-1 Reference	*Sched 1, Line 11, Col f*	*Sched 1, Line 11, Col c*	*Income for C.E./Rate Base for C.E.*	*Sched 1, Line 11, Col f*	*Sched 1, Line 11, Col c*	*Income for C.E./Rate Base for C.E.*
1	**As Reported**	737,546	7,304,749	10.10%	777,069	7,516,016	10.34%
2	**Adjust Equity Ratio to Last Approved**	(606)	(16,818)	0.01%	(974)	(27,043)	0.02%
3	**Normalize Weather**	(56,047)		-0.77%	(47,756)		-0.64%
4	**Remove DSM/EE PPI Incentive**	(23,449)		-0.32%	(24,469)		-0.33%
5	**Adjust to End of Period Rate Base, including Interest Sync**	(13,307)	400,166	-0.64%	(8,459)	254,377	-0.42%
6	**Annualize Depreciation Expense, including adjustment to Reserve**	(41,746)	(28,321)	-0.51%	(37,160)	(25,210)	-0.45%
8	**Spread Severance Over 3 Years**	41,733		0.54%	41,755		0.54%
9	**Adjusted**	644,125	7,659,776	8.41%	700,006	7,718,141	9.07%
	Grid Improvement Plan Impacts without Deferral						
	2020 Revenue Requirements	(10,319)	132,246	-0.28%	(10,319)	132,246	-0.28%
	2021 Revenue Requirements	(27,165)	335,682	-0.67%	(27,165)	335,682	-0.69%
	2022 Revenue Requirements	(49,835)	584,120	-1.07%	(49,835)	584,120	-1.11%

DUKE ENERGY CAROLINAS LLC
E7 Sub 1214
NORTH CAROLINA RETAIL GRID IMPROVEMENT

DEC NC Summary Grid Impact

(000s)	2020	2021	2022
System CWIP Spend	442,845	580,407	702,957
NC Retail CWIP Spend	292,768	419,941	516,024
Cumulative In Service (Beg Feb 2020)	257,012	663,075	1,170,019
Accum Depr	(2,693)	(17,534)	(46,712)
Total Rate Base	254,318	645,541	1,123,307
O&M (Beg Jan 2020)	5,447	6,424	10,612
Depreciation (Beg Mar 2020)	2,693	14,840	29,178
Property Tax	-	666	1,717
Debt Return - Capital Asset	2,292	9,572	19,058
Debt Return - Deferred Balance	94	753	2,336
Equity Return - Capital Asset	7,033	29,377	58,488
Equity Return - Deferred Balance	288	2,311	7,171
Annual Deferral	17,847	63,943	128,561
Cumulative Balance Deferral Balance	17,847	81,790	210,351

DUKE ENERGY CAROLINAS, LLC
E7 Sub 1214
NORTH CAROLINA RETAIL GRID IMPROVEMENT PLAN MULTI YEAR RATE PLAN
For the period January, 2020 through December 31, 2022

Line No.	Calculation of North Carolina Retail Costs	2019 Dec	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 Jun	2020 Jul	2020 Aug	2020 Sep	2020 Oct	2020 Nov	2020 Dec	2021 Jan	2021 Feb	2021 Mar	2021 Apr	2021 May	2021 Jun	2021 Jul	2021 Aug	2021 Sep	2021 Oct	2021 Nov	2021 Dec	2022 Jan	2022 Feb	2022 Mar	2022 Apr	2022 May	2022 Jun	2022 Jul	2022 Aug	2022 Sep	2022 Oct	2022 Nov	2022 Dec
1	Plant-in-Service: [1]																																			
2	Distribution to Plant in Service	-	-	13,210,021	13,210,021	13,210,021	13,210,021	13,210,021	13,210,021	13,210,021	13,210,021	13,210,021	13,210,021	13,210,021	13,210,021	23,177,334	23,177,334	23,177,334	23,177,334	23,177,334	23,177,334	23,177,334	23,177,334	23,177,334	23,177,334	23,177,334	23,177,334	30,018,178	30,018,178	30,018,178	30,018,178	30,018,178	30,018,178	30,018,178	30,018,178	30,018,178	30,018,178
3	Transmission to Plant in Service	-	-	4,784,997	4,784,997	4,784,997	4,784,997	4,784,997	7,163,017	7,163,017	7,163,017	7,163,017	7,163,017	7,163,017	7,163,017	7,163,017	7,163,017	7,163,017	7,163,017	7,163,017	7,444,291	7,444,291	7,444,291	7,444,291	7,444,291	7,444,291	7,444,291	7,444,291	7,444,291	7,444,291	7,444,291	7,608,302	7,608,302	7,608,302	7,608,302	7,608,302	7,608,302
4	Advanced DMS Plant in Service	-	-	-	-	-	-	-	-	-	-	-	-	9,327,310	-	-	-	-	-	-	-	-	-	-	8,793,258	-	-	-	-	-	-	-	-	-	-	11,517,212
5	Communications Plant in Service	-	-	1,627,514	1,627,514	2,249,207	2,249,207	2,249,207	2,249,207	2,249,207	2,249,207	2,249,207	2,249,207	2,249,207	2,249,207	2,249,207	2,249,207	2,989,928	2,989,928	2,989,928	2,989,928	2,989,928	2,989,928	2,989,928	2,989,928	2,989,928	2,989,928	2,989,928	2,989,928	3,408,102	3,408,102	3,408,102	3,408,102	3,408,102	3,408,102	3,408,102	3,408,102
6	Enterprise Application & Distributed Energy Plant in Service	-	-	-	-	-	-	-	-	-	-	-	-	11,973,249	-	-	-	-	-	-	-	-	-	-	7,808,788	-	-	-	-	-	-	-	-	-	-	12,091,341
7	Cumulative Distribution investment (L2)	-	-	13,210,021	26,420,043	39,630,064	52,840,086	66,050,107	79,260,128	92,470,150	105,680,171	118,890,193	132,100,214	145,310,235	158,520,257	181,697,591	204,874,925	228,052,258	251,229,592	274,406,926	297,584,260	320,761,594	343,938,928	367,116,262	390,293,596	413,470,929	436,648,263	466,666,442	496,684,620	526,702,798	556,720,976	586,739,154	616,757,333	646,775,511	676,793,689	706,811,867	736,830,045	766,848,224
8	Cumulative Transmission investment (L3)	-	-	4,784,997	9,569,993	14,354,990	19,139,986	23,924,983	31,088,000	38,251,018	45,414,035	52,577,053	59,740,070	66,903,087	74,066,105	81,229,122	88,392,140	95,555,157	102,718,175	109,881,192	117,325,483	124,769,774	132,214,065	139,658,356	147,102,647	154,546,938	161,991,229	169,435,520	176,879,811	184,324,102	191,768,393	199,212,684	206,820,986	214,429,289	222,037,591	229,645,893	237,254,196	244,862,498
9	Cumulative Advanced DMS investment (L4)	-	-	-	-	-	-	-	-	-	-	-	-	9,327,310	9,327,310	9,327,310	9,327,310	9,327,310	9,327,310	9,327,310	9,327,310	9,327,310	9,327,310	9,327,310	9,327,310	18,120,568	18,120,568	18,120,568	18,120,568	18,120,568	18,120,568	18,120,568	18,120,568	18,120,568	18,120,568	18,120,568	29,637,780
10	Cumulative Communication investment (L5)	-	-	1,627,514	3,255,029	5,504,236	7,753,443	10,002,650	12,251,857	14,501,065	16,750,272	18,999,479	21,248,686	23,497,893	25,747,100	27,996,307	30,245,515	33,235,443	36,225,371	39,215,299	42,205,227	45,195,155	48,185,083	51,175,011	54,164,939	57,154,867	60,144,795	63,134,723	66,124,651	69,532,753	72,940,855	76,348,957	79,757,059	83,165,160	86,573,262	89,981,364	93,389,466	96,797,568
11	Cumulative Enterprise Application & Distributed Energy investment (L6)	-	-	-	-	-	-	-	-	-	-	-	-	11,973,249	11,973,249	11,973,249	11,973,249	11,973,249	11,973,249	11,973,249	11,973,249	11,973,249	11,973,249	11,973,249	11,973,249	19,782,037	19,782,037	19,782,037	19,782,037	19,782,037	19,782,037	19,782,037	19,782,037	19,782,037	19,782,037	19,782,037	31,873,378
12																																				
13	Accumulated depreciation & amortization:																																			
14	Distribution plant depreciation rate [2]	1.98%	1.98%	1.98%	1.98%	1.98%	1.98%	1.98%	1.98%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%
15	Transmission plant depreciation rate [2]	2.05%	2.05%	2.05%	2.05%	2.05%	2.05%	2.05%	2.05%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%
16	Advance DMS plant depreciation rate [2]	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
17	Communication plant depreciation rate [2]	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
18	Enterprise Application & Distributed Energy plant depreciation rate [2]	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
19	Distribution depreciation expense (L7 * L14)	-	-	-	21,797	43,593	65,390	87,186	108,983	133,421	155,658	177,895	200,132	222,369	244,606	266,842	305,858	344,873	383,888	422,903	461,918	500,934	539,949	578,964	617,979	656,994	696,009	735,025	785,555	836,086	886,616	937,147	987,678	1,038,208	1,088,739	1,139,269	1,189,800	1,240,331
20	Transmission depreciation expense (L8 * L15)	-	-	-	8,174	16,349	24,523	32,697	40,872	57,772	71,083	84,394	97,706	111,017	124,328	137,640	150,951	164,262	177,573	190,885	204,196	218,030	231,864	245,698	259,532	273,366	287,200	301,034	314,868	328,702	342,536	356,370	370,204	384,342	398,481	412,620	426,759	440,897
21	Advanced DMS depreciation expense (L9 * L16)	-	-	-	-	-	-	-	-	-	-	-	-	-	77,728	77,728	77,728	77,728	77,728	77,728	77,728	77,728	77,728	77,728	77,728	151,005	151,005	151,005	151,005	151,005	151,005	151,005	151,005	151,005	151,005	151,005	151,005
22	Communication depreciation expense (L10 * L17)	-	-	-	13,563	27,125	45,869	64,612	83,355	102,099	120,842	139,586	158,329	177,072	195,816	214,559	233,303	252,046	276,962	301,878	326,794	351,710	376,626	401,542	426,458	451,374	476,291	501,207	526,123	551,039	579,440	607,840	636,241	664,642	693,043	721,444	749,845	778,246
23	Enterprise Application & Distributed Energy depreciation expense (L11 * L18)	-	-	-	-	-	-	-	-	-	-	-	-	-	199,554	199,554	199,554	199,554	199,554	199,554	199,554	199,554	199,554	199,554	199,554	329,701	329,701	329,701	329,701	329,701	329,701	329,701	329,701	329,701	329,701	329,701
24	Distribution accumulated depreciation	-	-	-	(21,797)	(65,390)	(130,779)	(217,965)	(326,948)	(460,369)	(616,027)	(793,922)	(994,054)	(1,216,423)	(1,461,028)	(1,727,871)	(2,033,728)	(2,378,601)	(2,762,489)	(3,185,392)	(3,647,311)	(4,148,244)	(4,688,193)	(5,267,157)	(5,885,136)	(6,542,130)	(7,238,139)	(7,973,164)	(8,758,719)	(9,594,805)	(10,481,421)	(11,418,568)	(12,406,246)	(13,444,454)	(14,533,193)	(15,672,462)	(16,862,262)	(18,102,593)
25	Transmission accumulated depreciation	-	-	-	(8,174)	(24,523)	(49,046)	(81,744)	(122,616)	(180,387)	(251,471)	(335,865)	(433,571)	(544,588)	(668,916)	(806,555)	(957,506)	(1,121,768)	(1,299,342)	(1,490,226)	(1,694,422)	(1,912,452)	(2,144,316)	(2,390,014)	(2,649,545)	(2,922,911)	(3,210,111)	(3,511,145)	(3,826,012)	(4,154,714)	(4,497,249)	(4,853,619)	(5,223,823)	(5,608,165)	(6,006,646)	(6,419,266)	(6,846,025)	(7,286,922)
26	Advanced DMS accumulated depreciation	-	-	-	-	-	-	-	-	-	-	-	-	-	(77,728)	(155,455)	(233,183)	(310,910)	(388,638)	(466,366)	(544,093)	(621,821)	(699,548)	(777,276)	(855,003)	(932,731)	(1,083,736)	(1,234,741)	(1,385,745)	(1,536,750)	(1,687,755)	(1,838,759)	(1,989,764)	(2,140,769)	(2,291,774)	(2,442,778)	(2,593,783)	(2,744,788)
27	Communication accumulated depreciation	-	-	-	(13,563)	(40,688)	(86,556)	(151,169)	(234,524)	(336,623)	(457,465)	(597,051)	(755,380)	(932,452)	(1,128,268)	(1,342,827)	(1,576,129)	(1,828,175)	(2,105,137)	(2,407,015)	(2,733,810)	(3,085,520)	(3,462,146)	(3,863,689)	(4,290,147)	(4,741,521)	(5,217,812)	(5,719,019)	(6,245,141)	(6,796,180)	(7,375,620)	(7,983,460)	(8,619,701)	(9,284,344)	(9,977,387)	(10,698,830)	(11,448,675)	(12,226,921)
28	Enterprise Application & Distributed Energy accumulated depreciation	-	-	-	-	-	-	-	-	-	-	-	-	-	(199,554)	(399,108)	(598,662)	(798,217)	(997,771)	(1,197,325)	(1,396,879)	(1,596,433)	(1,795,987)	(1,995,542)	(2,195,096)	(2,394,650)	(2,724,350)	(3,054,051)	(3,383,752)	(3,713,452)	(4,043,153)	(4,372,854)	(4,702,554)	(5,032,255)	(5,361,955)	(5,691,656)	(6,021,357)	(6,351,057)

DUKE ENERGY CAROLINAS, LLC
E7 Sub 1214
NORTH CAROLINA RETAIL GRID IMPROVEMENT PLAN MULTI YEAR RATE PLAN
For the period January, 2020 through December 31, 2022

Line No.	Calculation of North Carolina Retail Costs Description	2019 Dec	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 Jun	2020 Jul	2020 Aug	2020 Sep	2020 Oct	2020 Nov	2020 Dec	2021 Jan	2021 Feb	2021 Mar	2021 Apr	2021 May	2021 Jun	2021 Jul	2021 Aug	2021 Sep	2021 Oct	2021 Nov	2021 Dec	2022 Jan	2022 Feb	2022 Mar	2022 Apr	2022 May	2022 Jun	2022 Jul	2022 Aug	2022 Sep	2022 Oct	2022 Nov	2022 Dec
29																																					
30	Net electric plant																																				
31	Distribution (L7 + L24)	-	-	13,210,021	26,398,246	39,564,675	52,709,306	65,832,142	78,933,180	92,009,781	105,064,144	118,096,270	131,106,160	144,093,813	157,059,228	179,969,720	202,841,196	225,673,657	248,467,103	271,221,534	293,936,949	316,613,350	339,250,735	361,849,105	384,408,460	406,928,800	429,410,124	458,693,278	487,925,901	517,107,993	546,239,555	575,320,586	604,351,087	633,331,057	662,260,496	691,139,405	719,967,783	748,745,631
32	Transmission (L8 + L25)	-	-	4,784,997	9,561,819	14,330,467	19,090,940	23,843,239	30,965,385	38,070,630	45,162,565	52,241,188	59,306,499	66,358,500	73,397,189	80,422,567	87,434,634	94,433,389	101,418,833	108,390,966	115,631,061	122,857,322	130,069,749	137,268,343	144,453,102	151,624,027	158,781,118	165,924,376	173,053,799	180,169,388	187,271,144	194,359,065	201,597,164	208,821,124	216,030,945	223,226,627	230,408,171	237,575,576
33	Advanced DMS (L9 + L26)	-	-	-	-	-	-	-	-	-	-	-	-	9,327,310	9,249,583	9,171,855	9,094,128	9,016,400	8,938,672	8,860,945	8,783,217	8,705,490	8,627,762	8,550,035	8,472,307	17,187,837	17,036,832	16,885,828	16,734,823	16,583,818	16,432,813	16,281,809	16,130,804	15,979,799	15,828,794	15,677,790	15,526,785	26,892,992
34	Communication (L10 + L27)	-	-	1,627,514	3,241,466	5,463,548	7,666,887	9,851,482	12,017,333	14,164,442	16,292,807	18,402,428	20,493,306	22,565,441	24,618,833	26,653,481	28,669,385	31,407,267	34,120,233	36,808,283	39,471,417	42,109,635	44,722,937	47,311,322	49,874,792	52,413,345	54,926,983	57,415,704	59,879,510	62,736,573	65,565,235	68,365,496	71,137,357	73,880,817	76,595,876	79,282,534	81,940,791	84,570,647
35	Enterprise Application & Distributed Energy (L11 + L28)	-	-	-	-	-	-	-	-	-	-	-	-	11,973,249	11,773,695	11,574,141	11,374,587	11,175,032	10,975,478	10,775,924	10,576,370	10,376,816	10,177,262	9,977,708	9,778,153	17,387,387	17,057,687	16,727,986	16,398,285	16,068,585	15,738,884	15,409,184	15,079,483	14,749,782	14,420,082	14,090,381	13,760,680	25,522,321
36	Average rate base - Distribution	-	-	6,605,011	19,804,134	32,981,460	46,136,990	59,270,724	72,382,661	85,471,480	98,536,962	111,580,207	124,601,215	137,599,986	150,576,521	168,514,474	191,405,458	214,257,427	237,070,380	259,844,319	282,579,242	305,275,150	327,932,042	350,549,920	373,128,782	395,668,630	418,169,462	444,051,701	473,309,589	502,516,947	531,673,774	560,780,071	589,835,836	618,841,072	647,795,776	676,699,951	705,553,594	734,356,707
37	Average rate base - Transmission	-	-	2,392,498	7,173,408	11,946,143	16,710,703	21,467,090	27,404,312	34,518,007	41,616,597	48,701,876	55,773,843	62,832,500	69,877,844	76,909,878	83,928,600	90,934,011	97,926,111	104,904,900	112,011,014	119,244,192	126,463,536	133,669,046	140,860,722	148,038,564	155,202,573	162,352,747	169,489,087	176,611,594	183,720,266	190,815,104	197,978,114	205,209,144	212,426,034	219,628,786	226,817,399	233,991,874
38	Average rate base - Advanced DMS	-	-	-	-	-	-	-	-	-	-	-	-	4,663,655	9,288,447	9,210,719	9,132,991	9,055,264	8,977,536	8,899,809	8,822,081	8,744,354	8,666,626	8,588,898	8,511,171	12,830,072	17,112,335	16,961,330	16,810,325	16,659,320	16,508,316	16,357,311	16,206,306	16,055,302	15,904,297	15,753,292	15,602,287	21,209,888
39	Average rate base - Communication	-	-	813,757	2,434,490	4,352,507	6,565,217	8,759,184	10,934,408	13,090,888	15,228,624	17,347,618	19,447,867	21,529,374	23,592,137	25,636,157	27,661,433	30,038,326	32,763,750	35,464,258	38,139,850	40,790,526	43,416,286	46,017,129	48,593,057	51,144,069	53,670,164	56,171,344	58,647,607	61,308,041	64,150,904	66,965,366	69,751,427	72,509,087	75,238,346	77,939,205	80,611,662	83,255,719
40	Average rate base - Enterprise Application & Distributed Energy	-	-	-	-	-	-	-	-	-	-	-	-	5,986,625	11,873,472	11,673,918	11,474,364	11,274,809	11,075,255	10,875,701	10,676,147	10,476,593	10,277,039	10,077,485	9,877,930	13,582,770	17,222,537	16,892,836	16,563,136	16,233,435	15,903,734	15,574,034	15,244,333	14,914,633	14,584,932	14,255,231	13,925,531	19,641,501
41																																					
42	Return on rate base:																																				
43	Long-term debt	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%	2.188%
44	Members' equity	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%	6.716%
45	Distribution Debt return on rate base (L36 x L43 / 12)		-	12,045	36,117	60,148	84,139	108,091	132,003	155,873	179,701	203,487	227,234	250,939	274,605	307,318	349,064	390,739	432,342	473,875	515,336	556,726	598,046	639,294	680,470	721,576	762,610	809,812	863,169	916,434	969,607	1,022,688	1,075,676	1,128,573	1,181,377	1,234,089	1,286,709	1,339,237
46	Transmission Debt return on rate base (L37 x L43 / 12)		-	4,363	13,082	21,786	30,475	39,149	49,977	62,950	75,896	88,817	101,714	114,587	127,435	140,260	153,060	165,835	178,587	191,314	204,273	217,464	230,630	243,771	256,886	269,976	283,041	296,081	309,095	322,084	335,048	347,987	361,050	374,237	387,399	400,534	413,644	426,728
47	Advance DMS Debt return on rate base (L38 x L43 / 12)		-	-	-	-	-	-	-	-	-	-	-	8,505	16,939	16,797	16,656	16,514	16,372	16,230	16,089	15,947	15,805	15,663	15,522	23,398	31,208	30,932	30,657	30,381	30,106	29,831	29,555	29,280	29,004	28,729	28,454	38,680
48	Communication Debt return on rate base (L39 x L43 / 12)		-	1,484	4,440	7,938	11,973	15,974	19,941	23,874	27,772	31,637	35,467	39,263	43,025	46,752	50,446	54,781	59,751	64,676	69,555	74,389	79,178	83,921	88,619	93,271	97,878	102,439	106,955	111,807	116,991	122,124	127,205	132,234	137,211	142,137	147,010	151,832
49	Enterprise Application & Distributed Energy Debt return on rate base (L40 x L43 / 12)		-	-	-	-	-	-	-	-	-	-	-	10,918	21,654	21,290	20,926	20,562	20,198	19,834	19,470	19,106	18,742	18,378	18,014	24,771	31,409	30,807	30,206	29,605	29,003	28,402	27,801	27,200	26,598	25,997	25,396	35,820
50	Distribution Equity return on rate base (L36 x L44 / 12)		-	36,968	110,842	184,594	258,224	331,732	405,118	478,375	551,501	624,502	697,379	770,132	842,760	943,157	1,071,275	1,199,175	1,326,857	1,454,320	1,581,565	1,708,592	1,835,400	1,961,990	2,088,361	2,214,514	2,340,449	2,485,309	2,649,062	2,812,532	2,975,720	3,138,625	3,301,247	3,463,586	3,625,642	3,787,416	3,948,906	4,110,114
51	Transmission Equity return on rate base (L37 x L44 / 12)		-	13,391	40,149	66,861	93,528	120,149	153,379	193,194	232,924	272,579	312,160	351,667	391,099	430,456	469,739	508,948	548,082	587,141	626,913	667,397	707,803	748,131	788,382	828,556	868,652	908,671	948,612	988,476	1,028,262	1,067,971	1,108,062	1,148,533	1,188,925	1,229,238	1,269,472	1,309,627
52	Advance DMS Equity return on rate base (L38 x L44 / 12)		-	-	-	-	-	-	-	-	-	-	-	26,102	51,986	51,551	51,116	50,681	50,246	49,811	49,376	48,941	48,506	48,071	47,636	71,809	95,776	94,931	94,086	93,240	92,395	91,550	90,705	89,860	89,015	88,169	87,324	118,709
53	Communication Equity return on rate base (L39 x L44 / 12)		-	4,555	13,626	24,361	36,745	49,024	61,199	73,268	85,233	97,093	108,848	120,498	132,043	143,483	154,818	168,121	183,375	198,490	213,465	228,300	242,996	257,553	271,970	286,248	300,386	314,385	328,244	343,134	359,046	374,798	390,391	405,825	421,101	436,217	451,175	465,973
54	Enterprise Application & Distributed Energy Equity return on rate base (L40 x L44 / 12)		-	-	-	-	-	-	-	-	-	-	-	33,506	66,455	65,338	64,221	63,104	61,987	60,870	59,753	58,636	57,519	56,403	55,286	76,021	96,393	94,547	92,702	90,857	89,011	87,166	85,321	83,476	81,630	79,785	77,940	109,931
55																																					
56	Other operation and maintenance expense: [3]																																				
57	Distribution O&M		233,836	233,836	233,836	233,836	233,836	233,836	233,836	233,836	233,836	233,836	233,836	233,836	335,959	335,959	335,959	335,959	335,959	335,959	335,959	335,959	335,959	335,959	335,959	504,761	504,761	504,761	504,761	504,761	504,761	504,761	504,761	504,761	504,761	504,761	504,761
58	Transmission O&M		70,729	70,729	70,729	70,729	70,729	70,729	70,729	70,729	70,729	70,729	70,729	70,729	76,467	76,467	76,467	76,467	76,467	76,467	76,467	76,467	76,467	76,467	76,467	76,467	76,467	76,467	76,467	70,019	70,019	70,019	70,019	70,019	70,019	70,019	70,019
59	General Plant O&M		557,355	557,355	557,355	557,355	557,355	557,355	557,355	557,355	557,355	557,355	557,355	557,355	530,911	530,911	530,911	530,911	530,911	530,911	530,911	530,911	530,911	530,911	530,911	717,527	717,527	717,527	717,527	717,527	717,527	717,527	717,527	717,527	717,527	717,527	717,527
60	Total O&M	-	861,921	861,921	861,921	861,921	861,921	861,921	861,921	861,921	861,921	861,921	861,921	861,921	943,337	943,337	943,337	943,337	943,337	943,337	943,337	943,337	943,337	943,337	943,337	1,292,307	1,292,307	1,292,307	1,292,307	1,292,307	1,292,307	1,292,307	1,292,307	1,292,307	1,292,307	1,292,307	1,292,307
61																																					
62	2018 Grid O&M Threshhold	Annual Threshold																																			
63	Distribution	(174,727)	59,109	233,836	233,836	233,836	233,836	233,836	233,836	233,836	233,836	233,836	233,836	233,836	161,232	335,959	335,959	335,959	335,959	335,959	335,959	335,959	335,959	335,959	335,959	335,959	330,033	504,761	504,761	504,761	504,761	504,761	504,761	504,761	504,761	504,761	504,761
64	Transmission		70,729	70,729	70,729	70,729	70,729	70,729	70,729	70,729	70,729	70,729	70,729	70,729	76,467	76,467	76,467	76,467	76,467	76,467	76,467	76,467	76,467	76,467	76,467	76,467	70,019	70,019	70,019	70,019	70,019	70,019	70,019	70,019	70,019	70,019	70,019
65	General Plant	(4,721,392)	(4,164,037)	(3,606,682)	(3,049,327)	(2,491,972)	(1,934,617)	(1,377,262)	(819,907)	(262,552)	294,803	557,355	557,355	557,355	(4,190,481)	(3,659,570)	(3,128,660)	(2,597,749)	(2,066,838)	(1,535,927)	(1,005,017)	(474,106)	56,805	530,911	530,911	530,911	(4,003,865)	(3,286,337)	(2,568,810)	(1,851,283)	(1,133,756)	(416,228)	301,299	717,527	717,527	717,527	717,527	717,527
66																																					
67	Depreciation and amortization:																																				
68	Distribution depreciation expense (L19)	-	-	-	21,797	43,593	65,390	87,186	108,983	133,421	155,658	177,895	200,132	222,369	244,606	266,842	305,858	344,873	383,888	422,903	461,918	500,934	539,949	578,964	617,979	656,994	696,009	735,025	785,555	836,086	886,616	937,147	987,678	1,038,208	1,088,739	1,139,269	1,189,800	1,240,331
69	Transmission depreciation expense (L20)	-	-	-	8,174	16,349	24,523	32,697	40,872	57,772	71,083	84,394	97,706	111,017	124,328	137,640	150,951	164,262	177,573	190,885	204,196	218,030	231,864	245,698	259,532	273,366	287,200	301,034	314,868	328,702	342,536	356,370	370,204	384,342	398,481	412,620	426,759	440,897
70	General plant depreciation expense (sum (L21:23))	-	-	-	13,563	27,125	45,869	64,612	83,355	102,099	120,842	139,586	158,329	177,072	473,098	491,841	510,584	529,328	554,244	579,160	604,076	628,992	653,908	678,824	703,740	728,656	956,996	981,912	1,006,828	1,031,744	1,060,145	1,088,546	1,116,947	1,145,348	1,173,748	1,202,149	1,230,550	1,258,951
71	Total Depreciation	-	-	-	43,534	87,067	135,781	184,496	233,210	293,292	347,583	401,875	456,167	510,458	842,031	896,323	967,393	1,038,463	1,115,705	1,192,948	1,270,190	1,347,955	1,425,721	1,503,486	1,581,251	1,659,016	1,940,205	2,017,970	2,107,251	2,196,532	2,289,297	2,382,062	2,474,828	2,567,898	2,660,968	2,754,038	2,847,109	2,940,179
72																																					
73	General taxes:																																				
74	Property tax rate - Combined North Carolina and South Carolina	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%
75																																					
76	Distribution property tax expense		-	-	-	-	-	-	-	-	-	-	-	-	31,364	31,364	31,364	31,364	31,364	31,364	31,364	31,364	31,364	31,364	31,364	31,364	89,245	89,245	89,245	89,245	89,245	89,245	89,245	89,245	89,245	89,245	89,245	89,245
77	Transmission property tax expense		-	-	-	-	-	-	-	-	-	-	-	-	14,441	14,441	14,441	14,441	14,441	14,441	14,441	14,441	14,441	14,441	14,441	14,441	33,358	33,358	33,358	33,358	33,358	33,358	33,358	33,358	33,358	33,358	33,358	33,358
78	General Plant property tax expense		-	-	-	-	-	-	-	-	-	-	-	-	9,669	9,669	9,669	9,669	9,669	9,669	9,669	9,669	9,669	9,669	9,669	9,669	20,518	20,518	20,518	20,518	20,518	20,518	20,518	20,518	20,518	20,518	20,518	20,518
79	Impact to general taxes (Sum (L76:L78))		-	-	-	-	-	-	-	-	-	-	-	-	55,475	55,475	55,475	55,475	55,475	55,475	55,475	55,475	55,475	55,475	55,475	55,475	143,121	143,121	143,121	143,121	143,121	143,121	143,121	143,121	143,121	143,121	143,121	143,121

DUKE ENERGY CAROLINAS, LLC
E7 Sub 1214
NORTH CAROLINA RETAIL GRID IMPROVEMENT PLAN MULTI YEAR RATE PLAN
For the period January, 2020 through December 31, 2022

Line No.	Calculation of North Carolina Retail Costs Description	2019 Dec	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 Jun	2020 Jul	2020 Aug	2020 Sep	2020 Oct	2020 Nov	2020 Dec	2021 Jan	2021 Feb	2021 Mar	2021 Apr	2021 May	2021 Jun	2021 Jul	2021 Aug	2021 Sep	2021 Oct	2021 Nov	2021 Dec	2022 Jan	2022 Feb	2022 Mar	2022 Apr	2022 May	2022 Jun	2022 Jul	2022 Aug	2022 Sep	2022 Oct	2022 Nov	2022 Dec
80																																					
81	Total impact to operating income:																																				
82	Distribution (if L63>0 Then L63 + L68 + L76 else + L68 + L76)	-	59,109	233,836	255,633	277,429	299,226	321,022	342,819	367,257	389,494	411,731	433,968	456,205	437,202	634,166	673,181	712,196	751,212	790,227	829,242	868,257	907,272	946,287	985,303	1,024,318	1,115,288	1,329,031	1,379,561	1,430,092	1,480,622	1,531,153	1,581,684	1,632,214	1,682,745	1,733,275	1,783,806	1,834,337
83	Transmission (if L64>0 Then L64 + L69 + L77 else + L69 + L77)	-	70,729	70,729	78,904	87,078	95,252	103,427	111,601	128,501	141,812	155,124	168,435	181,746	215,236	228,547	241,858	255,170	268,481	281,792	295,103	308,937	322,771	336,605	350,439	364,273	390,577	404,411	418,245	432,079	445,913	459,747	473,581	487,719	501,858	515,997	530,136	544,275
84	General Plant (if L65>0 Then L65 + L70 + L78 else + L70 + L78)	-	-	-	13,563	27,125	45,869	64,612	83,355	102,099	415,645	696,941	715,684	734,427	482,767	501,510	520,254	538,997	563,913	588,829	613,745	638,661	720,382	1,219,404	1,244,320	1,269,236	977,514	1,002,430	1,027,346	1,052,262	1,080,663	1,109,063	1,438,763	1,883,392	1,911,793	1,940,194	1,968,595	1,996,996
85																																					
86	Total impact to operating income:																																				
87	Distribution impact to operating income (L45 + L50 + L82)	-	59,109	282,849	402,591	522,171	641,589	760,845	879,940	1,001,505	1,120,696	1,239,721	1,358,581	1,477,276	1,554,567	1,884,641	2,093,520	2,302,110	2,510,411	2,718,422	2,926,143	3,133,575	3,340,718	3,547,571	3,754,134	3,960,408	4,218,347	4,624,151	4,891,792	5,159,058	5,425,949	5,692,465	5,958,607	6,224,373	6,489,764	6,754,780	7,019,422	7,283,688
88	Transmission impact to operating income (L46 + L51 + L83)	-	70,729	88,483	132,135	175,725	219,256	262,725	314,957	384,645	450,632	516,520	582,309	648,000	733,770	799,263	864,657	929,953	995,149	1,060,247	1,126,290	1,193,798	1,261,204	1,328,507	1,395,707	1,462,805	1,542,270	1,609,162	1,675,952	1,742,639	1,809,223	1,875,705	1,942,693	2,010,490	2,078,182	2,145,770	2,213,252	2,280,630
89	General plant impact to operating income (sum(L47:49) + sum(L52:54) + L84)	-	-	6,039	31,628	59,423	94,586	129,610	164,495	199,241	528,651	825,670	859,998	973,219	814,868	846,722	878,436	912,760	955,843	998,740	1,041,453	1,083,981	1,183,129	1,699,393	1,741,367	1,844,754	1,630,562	1,670,471	1,710,195	1,751,286	1,797,216	1,842,934	2,189,741	2,651,267	2,696,353	2,741,229	2,785,894	2,917,942
90	Total	-	129,838	377,371	566,353	757,320	955,431	1,153,181	1,359,392	1,585,391	2,099,978	2,581,911	2,800,889	3,098,495	3,103,205	3,530,625	3,836,614	4,144,823	4,461,403	4,777,409	5,093,887	5,411,355	5,785,051	6,575,471	6,891,208	7,267,967	7,391,179	7,903,784	8,277,939	8,652,983	9,032,388	9,411,105	10,091,040	10,886,129	11,264,299	11,641,779	12,018,567	12,482,260
91	Distribution Cumulative impact to operating income	-	59,109	342,126	745,859	1,271,127	1,918,461	2,688,394	3,581,461	4,600,835	5,744,851	7,014,061	8,409,011	9,930,253	11,537,101	13,482,942	15,647,791	18,032,950	20,639,383	23,468,059	26,519,954	29,796,049	33,297,330	37,024,791	40,979,427	45,162,243	49,626,204	54,520,624	59,709,371	65,194,135	70,976,227	77,056,963	83,437,669	90,119,677	97,104,327	104,392,966	111,986,949	119,887,639
92	Transmission Cumulative impact to operating income	-	70,729	159,414	292,203	469,215	690,639	956,669	1,276,320	1,667,329	2,126,350	2,653,683	3,249,617	3,914,444	4,668,636	5,492,366	6,385,990	7,349,806	8,384,115	9,489,220	10,666,468	11,917,732	13,243,328	14,643,574	16,118,793	17,669,311	19,307,921	21,022,517	22,813,466	24,681,098	26,625,748	28,647,751	30,748,054	32,927,909	35,187,663	37,527,664	39,948,266	42,449,821
93	General Plant Cumulative impact to operating income	-	-	6,039	37,684	97,231	192,202	322,636	488,598	690,150	1,222,159	2,053,277	2,922,606	3,910,003	4,744,342	5,615,732	6,523,701	7,471,069	8,466,810	9,510,990	10,603,700	11,745,031	12,991,882	14,761,807	16,582,303	18,516,422	20,247,056	22,028,052	23,858,789	25,740,917	27,679,562	29,674,823	32,028,108	34,855,319	37,742,383	40,690,617	43,700,157	46,858,736
94																																					
95	Balance for return																																				
96	Distribution Balance for Return ((L87 + L103 + L106) + Current Month L87 /2)	-	29,555	200,702	544,563	1,010,042	1,597,667	2,307,971	3,141,491	4,100,082	5,184,504	6,394,200	7,729,721	9,191,615	10,759,817	12,540,621	14,601,031	16,881,895	19,384,177	22,108,848	25,056,882	28,229,261	31,626,972	35,251,005	39,102,360	43,182,039	47,517,030	52,208,549	57,263,475	62,614,606	68,263,252	74,210,731	80,458,366	87,007,491	93,859,445	101,015,576	108,477,238	116,245,795
97	Transmission Balance for Return ((L88 + L104 + L107) + Current Month L88 /2)	-	35,365	115,172	226,136	381,352	581,012	825,307	1,118,842	1,475,006	1,901,034	2,395,423	2,958,462	3,590,444	4,301,751	5,092,735	5,953,661	6,884,830	7,886,541	8,959,096	10,103,323	11,320,833	12,612,726	13,979,320	15,420,940	16,937,908	18,536,786	20,217,936	21,975,490	23,809,779	25,721,136	27,709,898	29,776,707	31,922,664	34,148,572	36,454,780	38,841,640	41,309,506
98	General Plant Balance for Return ((L89 + L105 + L108) + Current Month L89 /2)	-	-	3,019	21,870	67,520	144,909	257,831	406,350	590,529	957,834	1,640,442	2,492,607	3,423,393	4,336,908	5,192,371	6,084,483	7,014,689	7,988,889	9,011,620	10,082,973	11,203,041	12,400,317	13,912,110	15,711,620	17,594,045	19,431,775	21,192,817	23,003,692	24,865,274	26,780,955	28,753,356	30,933,238	33,529,685	36,394,207	39,320,003	42,307,210	45,399,765
99																																					
100	Return on Deferred Balance																																				
101	After Tax Long-term debt	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%	1.677%
102	After Tax Members' equity	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%	5.148%
103	Distribution Debt return on rate base (L96 x L101 / 12)	-	41	281	761	1,412	2,233	3,226	4,391	5,731	7,247	8,938	10,805	12,849	15,041	17,530	20,410	23,598	27,096	30,905	35,026	39,460	44,210	49,276	54,659	60,362	66,422	72,980	80,046	87,526	95,422	103,736	112,469	121,624	131,202	141,205	151,635	162,494
104	Transmission Debt return on rate base (L97 x L101 / 12)	-	49	161	316	533	812	1,154	1,564	2,062	2,657	3,348	4,135	5,019	6,013	7,119	8,322	9,624	11,024	12,523	14,123	15,825	17,631	19,541	21,556	23,677	25,912	28,262	30,718	33,283	35,954	38,734	41,623	44,623	47,735	50,958	54,295	57,745
105	General Plant Debt return on rate base (L98 x L101 / 12)	-	-	4	31	94	203	360	568	825	1,339	2,293	3,484	4,785	6,062	7,258	8,505	9,805	11,167	12,597	14,094	15,660	17,334	19,447	21,963	24,594	27,163	29,624	32,156	34,758	37,436	40,193	43,240	46,870	50,874	54,964	59,139	63,462
106	Distribution Equity return on rate base (L96 x L101 / 12)	-	127	861	2,336	4,333	6,854	9,901	13,477	17,589	22,242	27,431	33,161	39,432	46,160	53,799	62,638	72,423	83,158	94,847	107,494	121,104	135,680	151,227	167,749	185,251	203,848	223,975	245,660	268,617	292,849	318,364	345,166	373,262	402,657	433,357	465,367	498,694
107	Transmission Equity return on rate base (L97 x L101 / 12)	-	152	494	970	1,636	2,493	3,541	4,800	6,328	8,155	10,276	12,692	15,403	18,455	21,848	25,541	29,536	33,833	38,435	43,343	48,566	54,109	59,971	66,156	72,664	79,523	86,735	94,275	102,144	110,344	118,875	127,742	136,948	146,497	156,391	166,631	177,218
108	General Plant Equity return on rate base (L98 x L101 / 12)	-	-	13	94	290	622	1,106	1,743	2,533	4,109	7,037	10,693	14,686	18,605	22,275	26,102	30,093	34,272	38,660	43,256	48,061	53,197	59,683	67,403	75,478	83,362	90,917	98,686	106,672	114,890	123,352	132,704	143,842	156,131	168,683	181,498	194,765
109	Total	-	369	1,814	4,508	8,298	13,216	19,288	26,543	35,069	45,750	59,325	74,970	92,174	110,336	129,829	151,520	175,080	200,551	227,967	257,336	288,676	322,160	359,145	399,486	442,026	486,229	532,493	581,541	632,999	686,895	743,254	802,944	867,169	935,095	1,005,557	1,078,565	1,154,378
110																																					
111	Total																																				
112	Distribution deferral (L87 + L103 + L106)	-	59,277	283,991	405,688	527,916	650,676	773,973	897,808	1,024,826	1,150,184	1,276,090	1,402,547	1,529,557	1,615,767	1,955,970	2,176,569	2,398,132	2,620,665	2,844,174	3,068,663	3,294,139	3,520,607	3,748,073	3,976,542	4,206,021	4,488,617	4,921,105	5,217,498	5,515,201	5,814,220	6,114,565	6,416,242	6,719,258	7,023,623	7,329,342	7,636,424	7,944,877
113	Transmission deferral (L88 + L104 + L107)	-	70,930	89,138	133,421	177,894	222,560	267,419	321,321	393,034	461,444	530,145	599,136	668,422	758,238	828,230	898,521	969,112	1,040,007	1,111,205	1,183,756	1,258,189	1,332,943	1,408,019	1,483,419	1,559,145	1,647,704	1,724,159	1,800,945	1,878,065	1,955,521	2,033,315	2,112,058	2,192,061	2,272,414	2,353,119	2,434,178	2,515,592
114	General Plant deferral (L89 + L105 + L108)	-	-	6,056	31,752	59,807	95,411	131,077	166,806	202,600	534,099	835,001	874,176	992,691	839,536	876,255	913,044	952,658	1,001,282	1,049,997	1,098,804	1,147,703	1,253,660	1,778,523	1,830,732	1,944,826	1,741,087	1,791,013	1,841,037	1,892,716	1,949,542	2,006,479	2,365,685	2,841,978	2,903,358	2,964,875	3,026,531	3,176,169
115	Total Sum (L112:L114)	-	130,208	379,185	570,861	765,618	968,647	1,172,469	1,385,936	1,620,460	2,145,727	2,641,235	2,875,859	3,190,669	3,213,540	3,660,455	3,988,133	4,319,903	4,661,954	5,005,376	5,351,223	5,700,031	6,107,211	6,934,616	7,290,694	7,709,992	7,877,408	8,436,277	8,859,480	9,285,982	9,719,283	10,154,359	10,893,985	11,753,298	12,199,395	12,647,336	13,097,132	13,636,638
116																																					

[1] Based on lag time assumptions noted on Page 6
[2] Per accounting.
[3] From page 6.

	Summary																																				
	O&M	-	129,838	304,566	304,566	304,566	304,566	304,566	304,566	304,566	599,369	861,921	861,921	861,921	237,699	412,426	412,426	412,426	412,426	412,426	412,426	412,426	469,231	943,337	943,337	943,337	400,052	574,780	574,780	574,780	574,780	574,780	876,078	1,292,307	1,292,307	1,292,307	1,292,307	1,292,307
	Depreciation	-	-	-	43,534	87,067	135,781	184,496	233,210	293,292	347,583	401,875	456,167	510,458	842,031	896,323	967,393	1,038,463	1,115,705	1,192,948	1,270,190	1,347,955	1,425,721	1,503,486	1,581,251	1,659,016	1,940,205	2,017,970	2,107,251	2,196,532	2,289,297	2,382,062	2,474,828	2,567,898	2,660,968	2,754,038	2,847,109	2,940,179
	Property Tax	-	-	-	-	-	-	-	-	-	-	-	-	-	55,475	55,475	55,475	55,475	55,475	55,475	55,475	55,475	55,475	55,475	55,475	55,475	55,475	143,121	143,121	143,121	143,121	143,121	143,121	143,121	143,121	143,121	143,121	143,121
	Debt Return - Capital Asset	-	-	17,893	53,638	89,872	126,587	163,215	201,921	242,697	283,369	323,941	364,415	424,212	483,657	532,417	590,150	648,430	707,250	765,929	824,723	883,633	942,401	1,001,027	1,059,511	1,132,992	1,206,145	1,270,071	1,340,082	1,410,311	1,480,756	1,551,031	1,621,287	1,691,524	1,761,590	1,831,486	1,901,213	1,992,298
	Debt Return - Deferred Balance	-	91	446	1,108	2,039	3,248	4,740	6,523	8,619	11,243	14,580	18,425	22,653	27,116	31,907	37,238	43,028	49,288	56,025	63,243	70,945	79,174	88,264	98,178	108,633	119,496	130,866	142,920	155,566	168,812	182,663	197,332	213,116	229,810	247,127	265,069	283,701
	Equity Return - Capital Asset	-	-	54,913	164,616	275,815	388,496	500,905	619,695	744,836	869,657	994,174	1,118,387	1,301,905	1,484,343	1,633,985	1,811,170	1,990,030	2,170,547	2,350,632	2,531,073	2,711,866	2,892,224	3,072,147	3,251,635	3,477,147	3,701,655	3,897,842	4,112,706	4,328,240	4,544,435	4,760,110	4,975,726	5,191,280	5,406,313	5,620,826	5,834,817	6,114,355
	Equity Return - Deferred Balance	-	279	1,368	3,400	6,259	9,968	14,548	20,020	26,451	34,506	44,745	56,546	69,521	83,219	97,922	114,282	132,052	151,264	171,941	194,093	217,731	242,986	270,881	301,308	333,393	366,733	401,627	438,621	477,433	518,083	560,591	605,612	654,053	705,286	758,431	813,496	870,677
		-	130,208	379,185	570,861	765,618	968,647	1,172,469	1,385,936	1,620,460	2,145,727	2,641,235	2,875,859	3,190,669	3,213,540	3,660,455	3,988,133	4,319,903	4,661,954	5,005,376	5,351,223	5,700,031	6,107,211	6,934,616	7,290,694	7,709,992	7,877,408	8,436,277	8,859,480	9,285,982	9,719,283	10,154,359	10,893,985	11,753,298	12,199,395	12,647,336	13,097,132	13,636,638

DUKE ENERGY CAROLINAS LLC
E7 Sub 1214
NORTH CAROLINA RETAIL GRID IMPROVEMENT
2018 Test Year O&M

2018 O&M is a part of the rate case test period O&M. Therefore the amount elegible for deferral would be the O&M incurred above the amount included in the 2018 test period.

2018 O&M incurred	**2018**		**NC Retail**
Self Optimizing Grid	113,457	0.762817	86,547
Targeted Undergrounding	103,146	0.762817	78,682
Hardening & Resiliency	2,939	0.762817	2,242
Customer Delivery Hardening & Resiliency	9,513	0.762817	7,257
Enterprise Applications	4,596,836	0.747926	3,438,093
Advanced DMS	851,514	0.747926	636,869
Communications	864,296	0.747926	646,429
Transmission	-		-
Total	6,541,701		4,896,119

Distribution	174,727
Transmission	-
General	4,721,392

DUKE ENERGY CAROLINAS LLC
E7 Sub 1214
NORTH CAROLINA RETAIL GRID IMPROVEMENT
Capital Spend and Installation O&M Estimates
Dollars in Millions

Calculation of NC Retail Costs

DEC Total Capital Spend				
Strategic Category [1]	**2020**	**2021**	**2022**	**5-year Total**
Advanced DMS	$ 12	$ 12	$ 15	$ 40
AMI	$ -	$ -	$ -	-
Communication	$ 36	$ 48	$ 55	139
Enterprise Applications	$ 12	$ 10	$ 15	37
Hardening/Resiliency	$ 47	$ 26	$ 79	152
Self Optimizing Grid	$ 156	$ 290	$ 333	779
Targeted Underground	$ 14	$ 20	$ 45	79
Distributed Energy	$ 4	$ 1	$ 1	6
Transmission	$ 161	$ 174	$ 159	494
Other	$ -	$ -	$ -	-
				-
Total P/F Capital	**$ 443**	**$ 580**	**$ 703**	**$ 1,726**

DEC Total Installation O&M Spend				
Strategic Category [1]	**2020**	**2021**	**2022**	**5-year Total**
Advanced DMS	$ 1	$ 1	$ 2	$ 4
AMI	-	-	-	-
Communication	2	3	4	9
Enterprise Applications	5	4	6	15
Hardening/Resiliency	2	1	3	5
Self Optimizing Grid	2	4	5	11
Targeted Underground	0	0	0	1
Distributed Energy	0	0	0	0
Transmission	2	2	2	5
Other	-	-	-	-
				-
Total O&M	**$ 14**	**$ 15**	**$ 21**	**$ 50**

	DEC Total Capital Spend				NC Retail
SYSTEM	**2020**	**2021**	**2022**	**3-year Total**	**Allocation [2]**
ADMS	12.5	11.8	15.4	39.6	74.79%
Communication	36.1	48.0	54.7	138.7	74.79%
Enterprise Appliaction	12.0	9.9	15.2	37.1	74.79%
Distributed Energy	4.0	0.5	1.0	5.5	74.79%
Distribution NC	158.5	278.1	360.2	796.9	Direct
Distribution SC	56.5	62.5	83.1	202.2	
Transmission	163.2	169.6	173.4	506.2	52.66%
TOTAL	442.8	580.4	703.0	1,726.2	

	DEC Total Installation O&M Spend				NC Retail
SYSTEM	**2020**	**2021**	**2022**	**3-year Total**	**Allocation [2]**
ADMS	1.3	1.2	1.6	4.1	74.79%
Communication	2.4	3.2	3.6	9.2	74.79%
Enterprise Appliaction	4.9	4.1	6.2	15.2	74.79%
Distributed Energy	0.3	0.1	0.1	0.5	74.79%
Distribution NC	2.8	4.0	6.1	12.9	Direct
Distribution SC	1.0	1.0	1.5	3.5	
Transmission	1.6	1.7	1.6	4.9	52.66%
TOTAL	14.4	15.3	20.7	50.3	

DUKE ENERGY CAROLINAS LLC
E7 Sub 1214
NORTH CAROLINA RETAIL GRID IMPROVEMENT
Capital Spend and Installation O&M Estimates
Dollars in Millions

Calculation of NC Retail Costs

DEC NC Retail Capital Spend				
DEC NC Retail	**2020**	**2021**	**2022**	**3-year Total**
ADMS	9.3	8.8	11.5	29.6
Communication	27.0	35.9	40.9	103.8
Enterprise Appliaction	9.0	7.4	11.3	27.8
Distributed Energy	3.0	0.4	0.8	4.1
Distribution NC	158.5	278.1	360.2	796.9
Distribution SC				-
Transmission	86.0	89.3	91.3	266.6
TOTAL	292.8	419.9	516.0	1,228.7

DEC NC Retail Installation O&M Spend				
DEC NC Retail	**2020**	**2021**	**2022**	**3-year Total**
ADMS	1.0	0.9	1.2	3.1
Communication	1.8	2.4	2.7	6.9
Enterprise Appliaction	3.7	3.0	4.6	11.4
Distributed Energy	0.2	0.0	0.1	0.3
Distribution NC	2.8	4.0	6.1	12.9
Distribution SC				-
Transmission	0.8	0.9	0.8	2.6
TOTAL	10.3	11.3	15.5	37.2

Plant in Service Assumptions [1]	
Distribution	1 month
Transmission	6 months
Communication	3 months
Advanced DMS & Enterprise Application	Annually in December

[1] System numbers and Plant in Service assumptions from Witness Oliver
[2] Allocation factors from the Cost of service study.

DUKE ENERGY CAROLINAS, LLC
North CAROLINA RETAIL GRID IMPROVEMENT

Mcmaneus
Calculation of NC Retail Costs

Weighted Average Cost of Capital based on docket E-7 Sub 1146

Line No.	Description	Capital Structure	Cost/ Return	Weighted Cost/Return	Income Taxes Factor	After Tax Return	Income Taxes Factor	Revenue Requirement Excluding Gross Reciept Tax and Regulatory Fee	Combined Gross Receipts Tax and Regulatory Fee Factor	Revenue Requirement Including Gross Reciept Tax and Regulatory Fee
1		(a)	(b)	(c)						
2										
3	Long-term debt	48.0000% [1]	4.56% [2]	2.1884%	0.7664970	1.67742%	1.00000	2.18843%	99.62023%	2.19677%
4	Members' equity	52.0000% [1]	9.90% [2]	5.1480%	1.0000000	5.14800%	0.76650	6.71627%	99.62023%	6.74187%
5	Total (L3 + L4)	100.0000%		7.3364%		6.8254%		8.9047%		8.9386%
6										
7	Gross revenue				1.0000000					
8	State income tax rate (L36)				0.0297500					
9	Remainder (L14 - L15)				0.9702500					
10	Federal income tax rate				0.2100000					
11	Federal income tax (L16 x L17)				0.2037525					
12	State income tax rate (L36)				0.0297500					
13	Combined income tax rate (L18 + L19)				0.2335030					
14	1 minus combined income tax rate (1 - L20)				0.7664970					
15										
	Gross revenue				1.0000000					
	uncollectibles rate				0.0025010					
	Balance				0.9974990					
	Regulatory fee rate				0.0012967					
	Combined gross receipts tax and regulatory fee rate (L23 - L24 - L25)				0.9962023					
	State income tax (L15 x L26)				0.0296370					
	Balance (L26 - L27)				0.9665653					
	Federal income tax (L17 x L28)				0.2029787					
	Retention factor (L28 - L29)				0.7635866					
	State income tax rate									
	NC	0.0250000	67%	0.0167500						
	SC	0.0500000	26%	0.0130000						
				0.0297500						
					0.2364134					

DUKE ENERGY CAROLINAS, INC.
E7 Sub 1214

NC RETAIL COST OF SERVICE - PER BOOK - 1CP ALLOCATORS

For the test year ending December 31, 201[illegible]
Dollars in Thousand

TOTAL

	Code	ITEM	Customer Class ALLOCATOR	TOTSYS TOTAL SYSTEM Total Company 1	TOT_RETAIL NC Retail 2	NCRS-1 3	NCRT 4	NCRE 5	Residential 6	NCSGS 7	NCLGS 8	GS 9	NCOL 10	NCNL 11	NCSL 12	NCPL 13	Lighting 14	NCTS 15	NCI 16	NCOPTVGSS 17	NCOPTGSM 18
DISTRIBUTION PLANT																					
360 DISTR PLANT-LAND & LAND RIGHTS-EXTRA FAC	TRUE	Not Ap	Not Applicable	409	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
360 DISTR PLANT-LAND & LAND RIGHTS-NCP	TRUE	All -	All - NCP Sub	51,784	51,784	15,718	57	15,373	31,148	4,530	3,610	8,141	317	0	26	160	503	4	1,724	3,202	483
360 DISTR PLANT-LAND & LAND RIGHTS-SCRDW	TRUE	Not Ap	Not Applicable	11,602	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
360 DISTR PLANT-LAND & RIGHTS-CONTRA AFUDC-SCR	TRUE	Not Ap	Not Applicable	(13)	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
361 DISTR PLANT-STRUCT & IMPROV-CONTRA AFUDC-SCR	TRUE	Not Ap	Not Applicable	(4)	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
361 DISTR PLANT-STRUCTURES & IMPROVEMENTS-EXTRA FAC	TRUE	Not Ap	Not Applicable	2,786	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
361 DISTR PLANT-STRUCTURES & IMPROVEMENTS-NCP	TRUE	All -	All - NCP Sub	76,311	76,311	23,163	85	22,654	45,901	6,676	5,320	11,996	468	0	38	235	742	6	2,541	4,719	712
361 DISTR PLANT-STRUCTURES & IMPROVEMENTS-SCRDW	TRUE	Not Ap	Not Applicable	33,735	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
362 DISTR PLANT-STATION EQUIPMENT-CONTRA AFUDC-SCR	TRUE	Not Ap	Not Applicable	(76)	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
362 DISTR PLANT-STATION EQUIPMENT-EXTRA FAC	TRUE	Direct	Direct Assign	92,566	43,025	0	0	0	0	79	2,168	2,247	0	0	0	0	0	0	5,720	1,186	2,482
362 DISTR PLANT-STATION EQUIP-NCP	TRUE	All -	All - NCP Sub	931,944	931,944	282,875	1,032	276,658	560,565	81,529	64,974	146,502	5,714	4	467	2,873	9,057	68	31,032	57,634	8,701
362 DISTR PLANT-STATION EQUIP-SCRDW	TRUE	Not Ap	Not Applicable	352,213	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
364 DISTR PLANT-POLES-CONTRA AFUDC-SCR	TRUE	Not Ap	Not Applicable	(93)	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
364 DISTR PLANT-POLES-EXTRA FAC	TRUE	Direct	Direct Assign	146,447	105,375	0	0	0	0	8	236	244	101,822	65	0	0	101,887	0	610	128	268
364 DISTR PLANT-POLES-PRI CUST-MIN SYS-NCP	TRUE	All -	All - Cust Num Pri x OL	460,388	460,388	230,507	441	164,816	395,764	54,731	2,066	56,797	0	2	326	1,416	1,743	1,332	835	3,583	30
364 DISTR PLANT-POLES-PRI CUST-MIN SYS-SCRDW	TRUE	Not Ap	Not Applicable	165,594	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
364 DISTR PLANT-POLES-PRIMARY DMND-NCP	TRUE	All -	All - NCP Pri	368,317	368,317	112,677	411	110,201	223,288	32,475	25,881	58,356	2,276	1	186	1,144	3,608	27	12,361	22,957	3,466
364 DISTR PLANT-POLES-PRIMARY DMND-SCRDW	TRUE	Not Ap	Not Applicable	123,475	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
364 DISTR PLANT-POLES-SEC CUST-MIN SYS-NCP	TRUE	All -	All - Cust Num Sec x OL	152,111	152,111	76,181	146	54,470	130,797	18,081	676	18,757	0	1	108	468	576	440	271	1,184	10
364 DISTR PLANT-POLES-SEC CUST-MIN SYS-SCRDW	TRUE	Not Ap	Not Applicable	54,712	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
364 DISTR PLANT-POLES-SECONDARY DMND-NCP	TRUE	All -	All - NCP Sec	121,466	121,466	40,599	148	39,707	80,454	11,684	8,661	20,345	820	1	67	412	1,300	10	3,924	8,272	1,249
364 DISTR PLANT-POLES-SECONDARY DMND-SCRDW	TRUE	Not Ap	Not Applicable	40,720	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
365 DISTR PLANT-OH LINES-CONTRA AFUDC-SCR	TRUE	Not Ap	Not Applicable	(164)	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
365 DISTR PLANT-OH LINES-EXTRA FAC	TRUE	Direct	Direct Assign	67,956	40,686	0	0	0	0	37	1,110	1,147	26,553	17	0	0	26,570	0	2,845	604	1,259
365 DISTR PLANT-OH LINES-PRI CUST-MIN SYS-NCP	TRUE	All -	All - Cust Num Pri x OL	702,810	702,810	351,883	673	251,602	604,159	83,551	3,154	86,705	0	2	497	2,161	2,661	2,034	1,275	5,470	45
365 DISTR PLANT-OH LINES-PRI CUST-MIN SYS-SCRDW	TRUE	Not Ap	Not Applicable	252,789	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
365 DISTR PLANT-OH LINES-PRI DEMAND-NCP	TRUE	All -	All - NCP Pri	752,954	752,954	230,346	841	225,284	456,471	66,389	52,908	119,298	4,653	3	380	2,339	7,375	56	25,270	46,932	7,085
365 DISTR PLANT-OH LINES-PRI DEMAND-SCRDW	TRUE	Not Ap	Not Applicable	263,212	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
365 DISTR PLANT-OH LINES-SEC CUST-MIN SYS-NCP	TRUE	All -	All - Cust Num Sec x OL	79,835	79,835	39,983	76	28,589	68,648	9,490	355	9,845	0	0	57	246	302	231	142	622	5
365 DISTR PLANT-OH LINES-SEC CUST-MIN SYS-SCRDW	TRUE	Not Ap	Not Applicable	28,715	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
365 DISTR PLANT-OH LINES-SEC DEMAND-NCP	TRUE	All -	All - NCP Sec	85,525	85,525	28,586	104	27,958	56,648	8,226	6,098	14,325	577	0	47	290	915	7	2,763	5,824	879
365 DISTR PLANT-OH LINES-SEC DEMAND-SCRDW	TRUE	Not Ap	Not Applicable	29,908	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
366 DISTR PLANT-UG CONDUITS-CONTRA AFUDC-SCR	TRUE	Not Ap	Not Applicable	(4)	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
366 DISTR PLANT-UG CONDUITS-EXTRA FAC	TRUE	Direct	Direct Assign	7,696	6,258	0	0	0	0	4	115	119	4,455	3	0	0	4,458	0	299	63	131
366 DISTR PLANT-UG CONDUITS-PRI CUST-MIN SYS-NCP	TRUE	All -	All - Cust Num Pri x OL	89,045	89,045	44,583	85	31,878	76,546	10,586	400	10,985	0	0	63	274	337	258	161	693	6
366 DISTR PLANT-UG CONDUITS-PRI CUST-MIN SYS-SCRDW	TRUE	Not Ap	Not Applicable	28,370	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
366 DISTR PLANT-UG CONDUITS-PRIDMD-NCP	TRUE	All -	All - NCP Pri	14,440	14,440	4,418	16	4,321	8,754	1,273	1,015	2,288	89	0	7	45	141	1	485	900	136
366 DISTR PLANT-UG CONDUITS-PRIDMD-SCRDW	TRUE	Not Ap	Not Applicable	(0)	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
366 DISTR PLANT-UG CONDUITS-SECDMD-NCP	TRUE	All -	All - NCP Sec	7,046	7,046	2,356	9	2,304	4,668	678	503	1,181	48	0	4	24	75	1	228	480	72
366 DISTR PLANT-UG CONDUITS-SECDMD-SCRDW	TRUE	Not Ap	Not Applicable	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
366 DISTR PLANT-UG CONDUITS-SEC CUST-MIN SYS-NCP	TRUE	All -	All - Cust Num Sec x OL	43,497	43,497	21,784	42	15,576	37,402	5,170	193	5,364	0	0	31	134	165	126	77	339	3
366 DISTR PLANT-UG CONDUITS-SEC CUST-MIN SYS-SCRDW	TRUE	Not Ap	Not Applicable	13,858	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
367 DISTR PLANT-UG CONDUCTORS-CONTRA AFUDC-SCR	TRUE	Not Ap	Not Applicable	(29)	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
367 DISTR PLANT-UG CONDUCTORS-EXTRA FAC	TRUE	Direct	Direct Assign	105,123	82,438	0	0	0	0	56	1,656	1,711	59,683	38	0	0	59,721	0	4,261	899	1,879
367 DISTR PLANT-UG CONDUCTORS-PRI CUST-MIN SYS-NCP	TRUE	All -	All - Cust Num Pri x OL	216,310	216,310	108,302	207	77,438	185,947	25,715	971	26,686	0	1	153	665	819	626	392	1,683	14
367 DISTR PLANT-UG CONDUCTORS-PRI CUST-MIN SYS-SCRDW	TRUE	Not Ap	Not Applicable	61,840	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
367 DISTR PLANT-UG CONDUCTORS-PRIDMD-NCP	TRUE	All -	All - NCP Pri	978,875	978,875	299,461	1,093	292,880	593,434	86,309	68,783	155,092	6,049	4	494	3,041	9,588	72	32,852	61,013	9,211
367 DISTR PLANT-UG CONDUCTORS-PRIDMD-SCRDW	TRUE	Not Ap	Not Applicable	305,052	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
367 DISTR PLANT-UG CONDUCTORS-SEC CUST-MIN SYS-NCP	TRUE	All -	All - Cust Num Sec x OL	51,816	51,816	25,951	50	18,555	44,556	6,159	230	6,390	0	0	37	159	196	150	92	403	3
367 DISTR PLANT-UG CONDUCTORS-SEC CUST-MIN SYS-SCRDW	TRUE	Not Ap	Not Applicable	14,813	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
367 DISTR PLANT-UG CONDUCTORS-SECDMD-NCP	TRUE	All -	All - NCP Sec	234,105	234,105	78,248	286	76,528	155,062	22,518	16,693	39,211	1,581	1	129	795	2,505	19	7,563	15,943	2,407
367 DISTR PLANT-UG CONDUCTORS-SECDMD-SCRDW	TRUE	Not Ap	Not Applicable	72,956	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
368 DISTR PLANT-TRNSFMRS-CONTRA AFUDC-SCR	TRUE	Not Ap	Not Applicable	(14)	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
368 DISTR PLANT-TRNSFMRS-EXTRA FAC	TRUE	Direct	Direct Assign	66,173	52,184	0	0	0	0	94	2,542	2,636	0	0	0	0	0	0	6,728	1,366	2,813
368 DISTR PLANT-TRNSFMRS-SEC CUST-MIN SYS-NCP	TRUE	All -	All - Cust Num Sec x OL	533,514	533,514	267,196	511	191,050	458,757	63,417	2,371	65,788	0	2	378	1,641	2,021	1,545	950	4,153	34
368 DISTR PLANT-TRNSFMRS-SEC CUST-MIN SYS-SCRDW	TRUE	Not Ap	Not Applicable	176,792	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
368 DISTR PLANT-TRNSFMRS-SEC DEMAND-NCP	TRUE	All -	All - NCP Sec	522,594	522,594	174,673	638	170,834	346,145	50,267	37,264	87,531	3,528	2	288	1,774	5,593	42	16,883	35,589	5,373
368 DISTR PLANT-TRNSFMRS-SEC DEMAND-SCRDW	TRUE	Not Ap	Not Applicable	219,647	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
369 DISTR PLANT-SERVICES-CONTRA AFUDC-SCR	TRUE	Not Ap	Not Applicable	(2)	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
369 DISTR PLANT-SERVICES-EXTRA FAC	TRUE	Direct	Direct Assign	375	318	0	0	0	0	1	27	28	0	0	0	0	0	0	68	15	30
369 DISTR PLANT-SERVICES-NCP	TRUE	All -	All - Wgt Cust Services	812,698	812,698	418,879	801	299,505	719,185	82,355	3,176	85,531	0	0	0	0	0	680	1,283	5,508	46
369 DISTR PLANT-SERVICES-SCRDW	TRUE	Not Ap	Not Applicable	294,430	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
370 DISTR PLANT-METERS-CONTRA AFUDC-SCR	TRUE	Not Ap	Not Applicable	(0)	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
370 DISTR PLANT-METERS-CUSTOMER-NCP	TRUE	All -	All - Wgt Cust Meters	452,812	452,812	228,606	438	163,457	392,500	52,749	1,893	54,640	0	0	0	0	0	1,321	765	3,282	28
370 DISTR PLANT-METERS-CUSTOMER-SCRDW	TRUE	Not Ap	Not Applicable	140,076	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
370 DISTR PLANT-METERS-EXTRA FAC	TRUE	Direct	Direct Assign	14,460	7,016	0	0	0	0	12	318	330	0	0	0	0	0	0	844	169	383
371 DISTR PLANT-CUST PREMISES-CONTRA AFUDC-SCR	TRUE	Not Ap	Not Applicable	3	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
371 DISTR PLANT-CUST PREMISES-DEMAND-NC	TRUE	All -	All - Production Demand	25,463	23,987	7,088	22	3,913	11,023	2,386	2,226	4,612	0	0	0	0	0	3	744	2,419	388
371 DISTR PLANT-CUST PREMISES-DEMAND-SC	TRUE	Not Ap	Not Applicable	9,976	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
371 DISTR PLANT-CUST PREMISES-EXTRA FAC	TRUE	Direct	Direct Assign	878,570	640,449	0	0	11,113	11,113	1	26	27	629,030	0	0	0	629,030	0	66	14	29
373 DISTR PLANT-STREET LIGHTS-CONTRA AFUDC-SCR	TRUE	Not Ap	Not Applicable	(2)	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
373 DISTR PLANT-STREET LIGHTS-NCP	TRUE	Direct	Direct Assign	196,223	196,223	0	0	0	0	0	0	0	0	0	26,890	165,403	192,293	3,930	0	0	0
373 DISTR PLANT-STREET LIGHTS-SCR	TRUE	Not Ap	Not Applicable	47,172	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DISTRIBUTION PLANT IN SERVICE	D129			12,085,804	8,938,158	3,114,063	8,211	2,576,664	5,698,937	787,235	317,620	1,104,855	847,663	148	30,674	185,700	1,064,185	12,988	166,054	297,230	49,720
Account 370				607,348	459,829	228,606	438	163,457	392,500	52,759	2,211	54,971	0	0	0	0	0	1,321	1,609	3,451	390
Account 371				914,012	664,436	7,088	22	15,026	22,137	2,387	2,252	4,639	629,030	-	-	-	629,030	3	810	2,434	397
Account 373				243,394	196,223	-	-	-	-	-	-	-	-	-	26,890	165,403	192,293	3,930	-	-	-
Extra Facilities				486,335	330,283	0	0	0	0	279	7,854	8,133	192,513	123	0	0	192,636	0	20,530	4,241	8,962
DISTRIBUTION PLANT IN SERVICE, Excluding 371, 373, and Extra Facilities				9,834,715	7,287,388	2,878,369	7,751	2,398,181	**5,284,300**	731,810	305,302	1,037,113	26,120	24	3,784	**20,297**	50,225	7,735	143,105	287,104	39,971
Distribution Customer Class Allocations for Projections				100.00%	100.00%	39.50%	0.11%	32.91%	72.51%	10.04%	4.19%	14.23%	0.36%	0.00%	0.05%	0.28% 0.97%	0.69%	0.11%	1.96%	3.94%	0.55%
Customer Related																					
Minimum System and Contra AFUDC	Dbill			3,076,104	2,292,878	1,146,943	2,197	820,703	1,969,843	272,409	10,725	283,134	48	8	1,622	7,054	8,731	6,617	4,346	18,272	220
369 Services, excluding Extra Facilities				1,107,127	812,698	418,879	801	299,505	719,185	82,355	3,176	85,531	0	0	0	0	0	680	1,283	5,508	46
370 Meters, excluding Extra Facilities				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Customer Related				4,183,231	3,105,576	1,565,822	2,998	1,120,208	2,689,028	354,763	13,901	368,664	48	8	1,622	7,054	8,731	7,297	5,629	23,780	266
Distribution % Customer Related				42.5%	42.6%	54.4%	38.7%	46.7%	50.9%	48.5%	4.6%	35.5%	0.2%	32.2%	42.9%	34.8%	17.4%	94.3%	3.9%	8.3%	0.7%
Transmission Investment Allocations																					
Transmission Peak Demand				22,395,027	11,793,993	3,484,971	11,055	1,923,976	5,420,002	1,173,097	1,094,460	2,267,557	0	0	0	0	0	1,270	365,855	1,189,584	180,878
Transmission Allocations for System					52.66%	15.56%	0.05%	8.59%	24.20%	5.24%	4.89%	10.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	1.63%	5.31%	0.81%
Transmission Customer Class Allocations within NC Retail					100.00%	29.55%	0.09%	16.31%	45.96%	9.95%	9.28%	19.23%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01% 0.01%	3.10%	10.09%	1.53%

	NCOPTGSL	NCOPTVGPS	NCOPTVGPM	NCOPTVGPL	NCOPTVSS	NCOPTVSM	NCOPTVSL	NCOPTVIPS	NCOPTVIPM	NCOPTVIPL	NCOPTVTLG	OPTVSecSmall	OPTVSecMed	OPTVSecLg	OPTVPriSmall	OPTVPriMed	OPTVPriLg	OPTVTransm
360 DISTR PLANT-LAND & LAND RIGHTS-EXTRA FAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
360 DISTR PLANT-LAND & LAND RIGHTS-NCP	312.26519	118.44296	177.73428	1469.90791	581.24382	606.4981	788.95276	97.03628	100.93902	1920.11509	404.85438	3783.73658	1699.9661	1101.31795	215.48024	278.6753	3390.041	404.85438
360 DISTR PLANT-LAND & LAND RIGHTS-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
360 DISTR PLANT-LAND & RIGHTS-CONTRA AFUDC-SCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
361 DISTR PLANT-STRUCT & IMPROV-CONTRA AFUDC-SCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
361 DISTR PLANT-STRUCTURES & IMPROVEMENTS-EXTRA FAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
361 DISTR PLANT-STRUCTURES & IMPROVEMENTS-NCP	460.31113	174.54277	261.91486	2166.1028	856.53929	893.75479	1162.62575	142.99573	148.74692	2829.5689	596.60623	5575.81924	2505.20853	1622.93098	317.5385	410.66178	4995.6717	596.60623
361 DISTR PLANT-STRUCTURES & IMPROVEMENTS-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
362 DISTR PLANT-STATION EQUIPMENT-CONTRA AFUDC-SCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
362 DISTR PLANT-STATION EQUIPMENT-EXTRA FAC	1804.14814	212.43723	1246.88255	13081.03017	246.54243	535.73502	2408.98855	47.75572	237.38753	5709.4617	5929.21254	1412.70543	3017.24756	4241.13929	260.19295	1403.96986	18790.49187	5929.21254
362 DISTR PLANT-STATION EQUIP-NCP	5621.54538	2131.60546	3198.60209	26453.50442	10460.47573	10914.96964	14198.55304	1746.33365	1816.57002	34556.07613	7286.04641	68094.9253	30595.80239	19820.09842	3877.93511	5015.20211	61009.58055	7286.04641
362 DISTR PLANT-STATION EQUIP-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
364 DISTR PLANT-POLES-CONTRA AFUDC-SCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
364 DISTR PLANT-POLES-EXTRA FAC	196.4261	31.54429	130.18764	978.97324	26.77208	56.59279	229.92122	3.79776	11.74536	341.20545	246.39123	154.76179	324.8921	426.34942	26.31405	141.933	3320.17869	246.39123
364 DISTR PLANT-POLES-PRI CUST-MIN SYS-NCP	4.9568	22.98151	10.1389	11.71606	176.39158	35.3735	12.84261	4.73149	4.73149	18.92595	0	3759.27948	61.11428	17.79941	27.713	14.87039	30.64201	0
364 DISTR PLANT-POLES-PRI CUST-MIN SYS-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
364 DISTR PLANT-POLES-PRIMARY DMND-NCP	2239.21523	849.07513	1274.10262	10537.15411	4166.6835	4347.73085	5655.6759	695.6163	723.58951	13764.42997	0	27123.05113	7813.51004	7894.88753	1544.68756	1997.69210	24301.78408	0
364 DISTR PLANT-POLES-PRIMARY DMND-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
364 DISTR PLANT-POLES-SEC CUST-MIN SYS-NCP	1.63816	0	0	0	58.32984	11.69065	4.24437	0	0	0	0	1242.41039	21.51973	5.88255	0	0	0	0
364 DISTR PLANT-POLES-SEC CUST-MIN SYS-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
364 DISTR PLANT-POLES-SECONDARY DMND-NCP	806.82309	0	0	0	1501.32264	1566.55313	2037.82486	0	0	0	0	9773.16953	2815.3259	2844.64755	0	0	0	0
364 DISTR PLANT-POLES-SECONDARY DMND-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
365 DISTR PLANT-OH LINES-CONTRA AFUDC-SCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
365 DISTR PLANT-OH LINES-EXTRA FAC	924.09253	98.40299	601.79148	3752.1053	125.81348	262.91188	1053.36849	15.17966	44.98589	1067.67418	394.01723	729.8978	1521.51943	1937.46102	73.58265	646.77707	4819.77748	394.01723
365 DISTR PLANT-OH LINES-PRI CUST-MIN SYS-NCP	7.56685	35.08269	15.47766	17.88529	268.96728	53.99982	19.60503	7.22291	7.22291	28.89163	0	5738.77114	93.40995	27.17188	42.3056	22.70057	46.77602	0
365 DISTR PLANT-OH LINES-PRI CUST-MIN SYS-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
365 DISTR PLANT-OH LINES-PRI DEMAND-NCP	4577.65241	1735.77568	2604.66205	21541.22041	8518.01749	8888.11414	11561.95246	1422.04818	1479.26202	28139.1849	0	55449.79215	15973.34558	16139.60487	3157.82186	4083.90407	49680.40531	0
365 DISTR PLANT-OH LINES-PRI DEMAND-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
365 DISTR PLANT-OH LINES-SEC CUST-MIN SYS-NCP	0.85979	0	0	0	30.56179	6.13581	2.22765	0	0	0	0	652.07613	11.29458	3.08744	0	0	0	0
365 DISTR PLANT-OH LINES-SEC CUST-MIN SYS-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
365 DISTR PLANT-OH LINES-SEC DEMAND-NCP	568.08757	0	0	0	1057.08766	1103.01672	1434.84059	0	0	0	0	6881.33024	1982.28293	2002.92816	0	0	0	0
365 DISTR PLANT-OH LINES-SEC DEMAND-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
366 DISTR PLANT-UG CONDUITS-CONTRA AFUDC-SCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
366 DISTR PLANT-UG CONDUITS-EXTRA FAC	96.0709	8.18657	64.11055	513.76221	13.08947	27.81532	115.24914	1.9675	6.16518	188.89635	151.84631	75.6178	159.185	211.32004	10.15407	73.27573	702.65856	151.84631
366 DISTR PLANT-UG CONDUITS-PRI CUST-MIN SYS-NCP	0.95871	4.44496	1.961	2.26605	34.07787	6.84172	2.48394	0.91513	0.91513	3.66054	0	727.09625	12.59389	3.44265	5.36007	2.87613	5.92639	0
366 DISTR PLANT-UG CONDUITS-PRI CUST-MIN SYS-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
366 DISTR PLANT-UG CONDUITS-PRIDMD-NCP	87.79866	33.28893	49.95246	413.11961	163.35935	170.45711	221.73624	27.27218	28.36905	539.656	0	1063.42145	306.33645	309.5269	60.56101	78.32151	952.77561	0
366 DISTR PLANT-UG CONDUITS-PRIDMD-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
366 DISTR PLANT-UG CONDUITS-SECDMD-NCP	46.81678	0	0	0	87.11586	90.90093	118.24693	0	0	0	0	567.09867	163.36251	165.06375	0	0	0	0
366 DISTR PLANT-UG CONDUITS-SECDMD-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
366 DISTR PLANT-UG CONDUITS-SEC CUST-MIN SYS-NCP	0.46844	0	0	0	16.65098	3.34297	1.21369	0	0	0	0	355.27066	6.15362	1.68213	0	0	0	0
366 DISTR PLANT-UG CONDUITS-SEC CUST-MIN SYS-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
367 DISTR PLANT-UG CONDUCTORS-CONTRA AFUDC-SCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
367 DISTR PLANT-UG CONDUCTORS-EXTRA FAC	1377.99031	97.70611	905.14596	6215.96986	187.70921	394.47051	1560.79978	24.59031	74.55381	1983.14931	1144.1896	1087.08058	2273.00357	2938.79009	122.2965	979.69961	8195.11901	1144.1896
367 DISTR PLANT-UG CONDUCTORS-PRI CUST-MIN SYS-NCP	2.32892	10.79771	4.7637	5.50471	82.78244	16.62	6.03401	2.22306	2.22306	8.89223	0	1766.27229	30.59351	8.36293	13.02077	6.98676	14.39694	0
367 DISTR PLANT-UG CONDUCTORS-PRI CUST-MIN SYS-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
367 DISTR PLANT-UG CONDUCTORS-PRIDMD-NCP	5951.15993	2256.58611	3386.18117	28004.58319	11073.81684	11554.95961	15031.07314	1848.72843	1923.08306	36582.24232	0	72087.29585	20765.95839	20982.23307	4105.31414	5309.26423	64586.82551	0
367 DISTR PLANT-UG CONDUCTORS-PRIDMD-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
367 DISTR PLANT-UG CONDUCTORS-SEC CUST-MIN SYS-NCP	0.55804	0	0	0	19.83595	3.98241	1.44584	0	0	0	0	423.22616	7.33058	2.00388	0	0	0	0
367 DISTR PLANT-UG CONDUCTORS-SEC CUST-MIN SYS-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
367 DISTR PLANT-UG CONDUCTORS-SECDMD-NCP	1555.01304	0	0	0	2893.54173	3019.26211	3927.55614	0	0	0	0	18836.10846	5426.0575	5482.56918	0	0	0	0
367 DISTR PLANT-UG CONDUCTORS-SECDMD-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
368 DISTR PLANT-TRNSFMRS-CONTRA AFUDC-SCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
368 DISTR PLANT-TRNSFMRS-EXTRA FAC	2115.65959	260.13115	1470.20019	15980.77518	289.21478	630.75125	2911.66292	58.02927	191.96316	7100.94483	7530.40031	1655.25967	3543.46222	5027.32251	318.16042	1662.19715	23084.72001	7530.40031
368 DISTR PLANT-TRNSFMRS-SEC CUST-MIN SYS-NCP	5.74571	0	0	0	204.23542	41.00379	14.88672	0	0	0	0	4357.63165	75.47831	20.63247	0	0	0	0
368 DISTR PLANT-TRNSFMRS-SEC CUST-MIN SYS-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
368 DISTR PLANT-TRNSFMRS-SEC DEMAND-NCP	3471.26659	0	0	0	6459.26208	6739.90853	8767.49566	0	0	0	0	42047.89947	12112.60482	12238.75805	0	0	0	0
368 DISTR PLANT-TRNSFMRS-SEC DEMAND-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
369 DISTR PLANT-SERVICES-CONTRA AFUDC-SCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
369 DISTR PLANT-SERVICES-EXTRA FAC	22.19756	1.26608	14.35377	82.13807	3.02094	6.2843	23.70215	0.33944	0.98403	20.60486	2.29052	17.55024	36.484	45.90811	1.60553	15.3481	102.73493	2.29052
369 DISTR PLANT-SERVICES-NCP	7.60645	35.36985	15.66135	17.89869	270.71767	54.591	19.68856	7.15597	7.15997	29.08586	0	5778.96569	100.21066	27.29551	42.50938	22.82082	46.98405	0
369 DISTR PLANT-SERVICES-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
370 DISTR PLANT-METERS-CONTRA AFUDC-SCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
370 DISTR PLANT-METERS-CUSTOMER-NCP	3.66125	21.35066	9.20892	10.51533	161.67319	32.86041	11.82975	3.94325	3.94325	17.08741	0	3443.77038	60.46315	15.773	24.97391	13.14417	27.60274	0
370 DISTR PLANT-METERS-CUSTOMER-SCRDW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
370 DISTR PLANT-METERS-EXTRA FAC	262.92985	35.59037	185.10363	2177.19295	35.97325	79.13229	377.11978	7.80231	26.13299	1002.63576	1120.68015	205.30459	461.02296	640.04963	43.40268	211.21572	3179.02869	1120.68015
371 DISTR PLANT-CUST PREMISES-CONTRA AFUDC-SCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
371 DISTR PLANT-CUST PREMISES-DEMAND-NC	246.90782	77.411	133.5375	1123.85135	385.28171	415.94128	629.58421	57.2475	67.1806	1379.49842	301.30596	2806.66184	793.8316	876.49303	134.6805	205.7181	2503.04977	301.30596
371 DISTR PLANT-CUST PREMISES-DEMAND-SC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
371 DISTR PLANT-CUST PREMISES-EXTRA FAC	21.58231	1.20914	13.94165	78.57051	2.93696	6.10503	22.94262	0.32601	0.94166	19.2012	1.08236	17.06633	35.46377	44.52493	1.53531	14.88331	97.80471	1.08236
373 DISTR PLANT-STREET LIGHTS-CONTRA AFUDC-SCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
373 DISTR PLANT-STREET LIGHTS-NCP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
373 DISTR PLANT-STREET LIGHTS-SCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DISTRIBUTION PLANT IN SERVICE	32,803	8,197	15,776	134,639	50,459	52,578	74,326	6,223	6,828	137,251	25,109	347,689	102,299	107,129	14,420	22,604	271,890	25,109
Account 370	267	57	194	2,188	198	112	389	12	30	1,020	1,121	3,649	502	656	68	224	3,207	1,121
Account 371	268	79	147	1,202	388	422	653	58	68	1,399	302	2,822	819	921	136	216	2,601	302
Account 373	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Extra Facilities	6,537	654	4,433	40,608	892	1,915	8,294	152	487	16,412	15,398	5,133	10,877	14,830	805	4,920	57,020	15,398
DISTRIBUTION PLANT IN SERVICE, Excluding 371, 373, and Extra Facilities	25,731	7,408	11,001	90,641	48,981	50,130	64,991	6,002	6,243	118,421	8,288	336,085	90,100	90,722	13,410	17,244	209,062	8,288
Distribution Customer Class Allocations for Projections	0.35%	0.10%	0.15%	1.24%	0.67%	0.69%	0.89%	0.08%	0.09%	1.63%	0.11%	4.61%	1.24%	1.24%	0.18%	0.24%	2.87%	0.11%
Minimum System and Contra AFUDC	71	73	32	37	962	267	182	15	15	60	-	19,234	487	253	88	47	98	-
369 Services, excluding Extra Facilities	8	35	16	18	271	55	20	7	7	29	0	5,779	100	27	43	23	47	0
370 Meters, excluding Extra Facilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Customer Related	79	109	48	55	1,233	321	202	22	22	89	-	25,012	587	281	131	70	145	-
Distribution % Customer Related	0.3%	1.5%	0.4%	0.1%	2.5%	0.6%	0.3%	0.4%	0.4%	0.1%	0.0%	7.4%	0.7%	0.3%	1.0%	0.4%	0.1%	0.0%
Transmission Peak Demand	121402	38073	65659	552586	189439	204514	309560	28148	33032	678285	148149	1379023	385392	430962	66221	98691	1230871	148149
Transmission Allocations for System	0.54%	0.17%	0.29%	2.47%	0.85%	0.91%	1.38%	0.13%	0.15%	3.03%	0.66%	6.16%	1.72%	1.92%	0.30%	0.44%	5.50%	0.66%
Transmission Customer Class Allocations within NC Retail	1.03%	0.32%	0.56%	4.69%	1.61%	1.73%	2.62%	0.24%	0.28%	5.75%	1.26%	11.69%	3.27%	3.65%	0.56%	0.84%	10.44%	1.26%

GENERAL & INTANGIBLE PLANT	ALLOCATOR	TOTSYS TOTAL SYSTEM 1	TOT_RETAIL NC Retail 2	NCRS-1 3	NCRT 4	NCRE 5	Residential 6	NCSGS 7	NCLGS 8	NCOL 9	NCNL 10	NCGL 11	NCPL 12	Lighting 13	NCTS 14	NCI 15	NCOPTVGSS 16	NCOPTGSM 17	NCOPTGSL 18
389-399 GENRL PLANT-CONTRA AFUDC-SCR	Not Applicable	(152)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
389-399 GENRL PLANT-DISTR REL	All - Dist Plant - DEC	509,933	377,125	131,391	346	108,716	240,454	33,216	13,401	46,617	35,765	6	1,294	7,835	44,901	548	7,006	12,541	2,098
389-399 GENRL PLANT-LABOR REL	All - Labor	523,179	354,294	113,391	329	69,655	183,375	35,203	26,950	62,153	5,926	1	376	2,253	8,556	232	9,283	29,162	4,400
389-399 GENRL PLANT-PROD REL	All - Production Demand	30,705	20,706	6,118	19	3,378	9,516	2,060	1,921	3,981	-	-	-	-	-	2	642	2,088	318
389-399 GENRL PLANT-TRNSM REL	All - Transmission Demand	149,320	78,637	23,236	74	12,828	36,138	7,822	7,297	15,119	-	-	-	-	-	8	2,439	7,932	1,206
301-303 INTANG PLANT-CONTRA AFUDC-SCR	Not Applicable	(7,700)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
301-303 INTANG PLANT-DISTR REL-RETAIL	All - Cust Num	286,450	218,510	96,327	184	68,875	165,387	22,872	863	23,735	26,117	1	136	592	26,846	557	349	1,497	12
301-303 INTANG PLANT-LABOR REL	All - Labor	140,145	94,905	30,374	88	18,659	49,121	9,430	7,219	16,649	1,587	0	101	603	2,292	62	2,487	7,812	1,179
301-303 INTANG PLANT-PROD REL	All - Production Demand	508,242	342,731	101,272	321	55,910	157,504	34,090	31,805	65,895	-	-	-	-	-	37	10,632	34,569	5,256
301-303 INTANG PLANT-TRNSM REL	All - Transmission Demand	59,614	31,395	9,277	29	5,121	14,428	3,123	2,913	6,036	-	-	-	-	-	3	974	3,167	481
GENERAL & INTANGIBLE PLANT IN SERVICE		2,199,736	1,518,304	511,387	1,392	343,143	855,922	147,814	92,371	240,185	69,396	8	1,907	11,283	82,595	1,449	33,812	98,768	14,951
Distribution + Distribution Intangible Plant Allocation %		100%	74.793%	28.6%	0.1%	22.3%	51.0%	7.0%	1.8%	8.8%	7.8%	0.0%	0.2%	1.1%	9.0%	0.1%	0.9%	1.8%	0.3%
Distribution Intangible Plant		796,383	595,636	227,718	531	177,592	405,840	56,087	14,265	70,352	61,883	7	1,430	8,427	71,747	1,105	7,355	14,038	2,110
			100.00%	38.23%	0.09%	29.82%	68.14%	9.42%	2.39%	11.81%	10.39%	0.00%	0.24%	1.41%	12.05%	0.19% 13.65%	1.23%	2.36%	0.35%
			100%	34%	0%	27%	61%	9%	5%	14%	8%	0%	0%	2%	10%	0%	2%	4%	1%
							61%		14%					12%			14%		

GENERAL & INTANGIBLE PLANT	NCOPTVGPS	NCOPTVGPM	NCOPTVGPL	NCOPTVSS	NCOPTVSM	NCOPTVSL	NCOPTVIPS	NCOPTVIPM	NCOPTVIPL	NCOPTVTLG	OPTVSecSmall	OPTVSecMed	OPTVSecLg	OPTVPriSmall	OPTVPriMed	OPTVPriLg	OPTVTransm	SC Retail
389-399 GENRL PLANT-CONTRA AFUDC-SCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
389-399 GENRL PLANT-DISTR REL	1384.03405	345.84861	665.61869	5680.77494	2128.99264	2218.42194	3136.03192	262.57661	288.11269	5791.00764	1059.41383	14669.92619	4316.2618	4520.06597	608.42522	953.73138	11471.78258	1059.41383
389-399 GENRL PLANT-LABOR REL	2948.52106	921.67175	1588.59669	13336.43648	4628.40093	4973.54314	7486.22329	682.42037	797.25792	16320.95038	3448.79621	33790.4541	9373.77764	10434.74435	1604.09212	2385.85461	29657.38686	3448.79621
389-399 GENRL PLANT-PROD REL	213.13724	66.84218	115.27304	970.13767	332.58517	359.05133	543.47345	49.41753	57.99204	1190.81886	260.09513	2421.05693	676.60654	756.61069	116.25971	173.26508	2160.95653	260.09513
389-399 GENRL PLANT-TRNSM REL	809.45571	253.8542	437.78564	3684.40301	1263.09683	1363.61037	2064.01139	187.67862	220.243	4522.50925	987.79307	9194.72535	2569.62617	2873.4671	441.53282	658.02864	8206.91226	987.79307
301-303 INTANG PLANT-CONTRA AFUDC-SCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
301-303 INTANG PLANT-DISTR REL-RETAIL	2.0714	9.60378	4.23686	4.89605	73.62901	14.7823	5.36682	1.97725	1.97725	7.909	0.37662	1570.97195	27.21073	7.43822	11.58103	6.21421	12.80505	0.37662
301-303 INTANG PLANT-LABOR REL	789.82666	246.88956	425.53973	3572.45078	1239.81654	1332.27028	2005.3456	182.80094	213.56265	4371.91689	923.83409	9051.49844	2510.96754	2795.17026	429.6905	639.10238	7944.36767	923.83409
301-303 INTANG PLANT-PROD REL	3527.91481	1106.39281	1908.03577	16058.02484	5505.05472	5943.13083	8995.74396	817.97455	959.90249	19710.8095	4305.17661	40074.09813	11199.40482	12523.65877	1924.36736	2867.93826	35768.83434	4305.17661
301-303 INTANG PLANT-TRNSM REL	323.16234	101.34726	174.77896	1470.93938	504.27134	544.39978	824.02376	74.92771	87.92852	1805.53998	394.36069	3670.84803	1025.88243	1147.1861	176.27497	262.70748	3276.47936	394.36069
GENERAL & INTANGIBLE PLANT IN SERVICE	9,998	3,052	5,320	44,778	15,676	16,749	25,060	2,260	2,627	53,721	11,380	114,444	31,700	35,058	5,312	7,947	98,500	11,380
Distribution + Distribution Intangible Plant Allocation %	0.2%	0.0%	0.1%	0.7%	0.3%	0.3%	0.4%	0.0%	0.0%	0.7%	0.1%	2.0%	0.5%	0.6%	0.1%	0.1%	1.4%	0.1%
Distribution Intangible Plant	1,386	355	670	5,686	2,203	2,233	3,141	265	290	5,799	1,060	16,241	4,343	4,528	620	960	11,485	1,060
	0.23%	0.06%	0.11%	0.95%	0.37%	0.37%	0.53%	0.04%	0.05%	0.97%	0.18%	2.73%	0.73%	0.76%	0.10%	0.16%	1.93%	0.18%
	0%	0%	0%	2%	1%	1%	1%	0%	0%	2%	0%	5%	2%	2%	0%	0%	4%	

Location Population Density	Is Rural Area	Private Insurance Coverage	Has Chronic Condition	Has Diagnosed Mental Health Condition	Has Chronic Condition and Mental Health Condition	Uninsured
Urban	Rural	Private Insurance	Chronic Condition	Mental Health	Both	Uninsured
Urban-adjacent	Urban	Public Insurance	No	No	No	No
Rural						

DUKE ENERGY CAROLINAS
COMPARISON OF CURRENT AND PROPOSED DEPRECIATION PARAMETERS, RATES AND ACCRUALS AS OF DECEMBER 31, 2018
VERSION 1 - REVISED

			CURRENT					PROPOSED					
	ACCOUNT	ORIGINAL COST AS OF DECEMBER 31, 2018	PROBABLE RETIREMENT DATE	SURVIVOR CURVE	NET SALVAGE PERCENT	CALCULATED ANNUAL ACCRUAL AMOUNT	CALCULATED ANNUAL ACCRUAL RATE	PROBABLE RETIREMENT DATE	SURVIVOR CURVE	NET SALVAGE PERCENT	CALCULATED ANNUAL ACCRUAL AMOUNT	CALCULATED ANNUAL ACCRUAL RATE	INCREASE/ DECREASE
	(1)	(2)	(3)	(4)	(5)	(6)=(2)*(7)	(7)	(8)	(9)	(10)	(11)	(9)=(8)/(5)	(13)
	TRANSMISSION PLANT												
352.00	STRUCTURES AND IMPROVEMENTS	108,489,173.06		60-R3	(20)	2,115,539	1.95		55-R2	(10)	2,170,087	2.00	54,548
353.00	STATION EQUIPMENT	1,849,287,080.50		52-R1.5	(25)	39,204,886	2.12		48-R1.5	(20)	43,512,066	2.35	4,307,180
354.00	TOWERS AND FIXTURES	587,791,762.36		70-R2	(40)	9,933,681	1.69		75-R2	(50)	10,058,236	1.71	124,555
355.00	POLES AND FIXTURES	558,831,171.11		50-R1.5	(25)	12,741,351	2.28		48-R1	(30)	15,024,969	2.69	2,283,618
356.00	OVERHEAD CONDUCTORS AND DEVICES	760,660,328.73		60-R2	(40)	15,213,207	2.00		60-R2.5	(40)	15,381,796	2.02	168,589
357.00	UNDERGROUND CONDUIT	124,173.82		55-S4	0	1,391	1.12		55-S4	0	1,356	1.09	(35)
358.00	UNDERGROUND CONDUCTOR AND DEVICES	5,812,002.49		55-S3	0	80,787	1.39		50-S4	0	104,142	1.79	23,355
359.00	ROADS AND TRAILS	42,238.00		65-R4	0	617	1.46		65-R4	0	615	1.46	(2)
	TOTAL TRANSMISSION PLANT	**3,871,037,930.07**				**79,291,459**	**2.05**				**86,253,267**	**2.23**	**6,961,808**
	DISTRIBUTION PLANT												
361.00	STRUCTURES AND IMPROVEMENTS	112,827,983.33		60-R2.5	(20)	2,188,863	1.94		55-S0.5	(10)	2,214,720	1.96	25,857
362.00	STATION EQUIPMENT	1,376,647,876.87		42-R1	(25)	35,655,180	2.59		44-R1	(20)	32,261,405	2.34	(3,393,775)
364.00	POLES, TOWERS AND FIXTURES	1,633,135,516.15		49-R2	(25)	32,336,083	1.98		50-R2	(30)	34,614,100	2.12	2,278,017
365.00	OVERHEAD CONDUCTORS AND DEVICES	2,263,640,318.34		49-R0.5	(20)	43,914,622	1.94		52-R0.5	(25)	44,559,335	1.97	644,713
366.00	UNDERGROUND CONDUIT	203,949,849.78		55-R3	(15)	3,202,013	1.57		60-R3	(15)	2,791,873	1.37	(410,140)
367.00	UNDERGROUND CONDUCTORS AND DEVICES	2,040,861,815.64		54-R3	(20)	40,817,236	2.00		55-R3	(20)	40,019,115	1.96	(798,121)
368.00	LINE TRANSFORMERS	1,518,704,424.45		43-R1.5	0	26,881,068	1.77		45-R1.5	(10)	31,289,615	2.06	4,408,547
369.00	SERVICES	1,107,500,564.10		50-R1.5	(10)	14,619,007	1.32		52-R1.5	(15)	15,374,051	1.39	755,044
370.00	METERING EQUIPMENT	100,494,301.47		20-L0	0	5,326,198	5.30		17-L0	0	2,615,173	2.60	(2,711,025)
370.01	METERS	68,544,544.14	12-2019	20-L0	* 0	10,553,102			17-L0	0	10,601,895	**	48,793
370.02	METERS -UTILITY OF THE FUTURE	438,309,266.89		15-S2.5	0	31,514,436	7.19		15-S2.5	0	30,148,683	6.88	(1,365,753)
371.00	INSTALLATIONS ON CUSTOMERS' PREMISES	914,011,910.46		40-R0.5	(5)	19,742,657	2.16		40-R1	(5)	21,338,273	2.33	1,595,616
373.00	STREET LIGHTING AND SIGNAL SYSTEMS	243,393,601.32		35-R1	(10)	6,522,949	2.68		36-R0.5	(10)	6,020,417	2.47	(502,532)
	TOTAL DISTRIBUTION PLANT	**12,022,021,972.94**				**273,273,414**	**2.27**				**273,848,655**	**2.28**	**575,241**
	Excluding Meters	11,414,673,860				225,879,678	**1.98**				230,482,904	**2.02**	
	GENERAL PLANT												
390.00	STRUCTURES AND IMPROVEMENTS	675,049,911.19		40-R2	(10)	21,736,607	3.22		40-S1	(10)	20,657,294	3.06	(1,079,313)
391.00	OFFICE FURNITURE AND EQUIPMENT	48,878,029.08		15-SQ	0	3,260,165	6.67		15-SQ	0	3,258,543	6.67	(1,622)
391.10	OFFICE FURNITURE AND EQUIPMENT - EDP	113,710,527.80		8-SQ	0	14,213,816	12.50		8-SQ	0	14,217,928	12.50	4,112
392.00	TRANSPORTATION EQUIPMENT												
	PASSENGER CARS AND STATION WAGONS	94,914.61		5-S2.5	5	0	-		5-S2.5	10	3,477	3.66	3,477
	LIGHT TRUCKS	2,419,475.49		6-L3	5	181,461	7.50		6-L3	10	150,280	6.21	(31,181)
	MEDIUM TRUCKS	438,550.50		8-L2	5	0	-		8-L2	10	32,054	7.31	32,054
	HEAVY TRUCKS	1,304,835.00		10-L2	5	129,440	9.92		10-L2	10	0	-	(129,440)
	HEAVY TRUCKS / POWER EQUIPPED	2,801,236.11		10-L2	5	0	-		10-L2	10	0	-	0
	TRACTORS	65,897.00		13-L3	5	6,847	10.39		13-L3	10	0	-	(6,847)
	TRAILERS	5,511,868.72		17-L0.5	5	288,271	5.23		16-L0.5	10	104,821	1.90	(183,450)
	TOTAL TRANSPORTATION EQUIPMENT	12,636,777.43				606,019	4.80				290,632	2.30	(315,387)
393.00	STORES EQUIPMENT	14,298,928.76		20-SQ	0	714,946	5.00		20-SQ	0	714,946	5.00	0
394.00	TOOLS,SHOPS AND GARAGE EQUIPMENT												
	FULLY ACCRUED	0.00		0.00	0	0	-				0	-	0
	AMORTIZED	104,793,595.68		20-SQ	0	5,239,680	5.00		20-SQ	0	5,240,529	5.00	849
	TOTAL TOOLS SHOP AND GARAGE EQUIPMENT	104,793,595.68				5,239,680					5,240,529		849
395.00	LABORATORY EQUIPMENT	5,877,459.28		15-SQ	0	392,027	6.67		15-SQ	0	391,830	6.67	(197)
396.00	POWER OPERATED EQUIPMENT												
	MOBILE CRANES	509,129.42		19-S1.5	0	15,987	3.14		19-S1.5	10	19,910	3.91	3,923
	MISCELLANEOUS NON-HIGHWAY EQUIPMENT	1,020,976.03		14-S1.5	0	48,394	4.74		13-L2	10	0	-	(48,394)
	MISCELLANEOUS EQUIPMENT	9,797,880.43		14-S1.5	0	640,781	6.54		13-L2	10	0	-	(640,781)
	TOTAL POWER OPERATED EQUIPMENT	11,327,985.88				705,162	6.22				19,910	0.18	(685,252)
397.00	COMMUNICATION EQUIPMENT	153,219,179.05		10-SQ	0	15,321,918	10.00		10-SQ	0	15,328,598	10.00	6,680
398.00	MISCELLANEOUS EQUIPMENT	10,275,692.04		20-SQ	0	513,785	5.00		20-SQ	0	513,784	5.00	(1)
	TOTAL GENERAL PLANT	**1,150,068,086.19**				**62,704,125**	**5.45**				**60,633,994**	**5.27**	**(2,070,131)**
	DEPRECIABLE LAND RIGHTS												

DUKE ENERGY CAROLINAS
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	ACCOUNT	ORIGINAL COST AS OF DECEMBER 31, 2018	PROBABLE RETIREMENT DATE	SURVIVOR CURVE	NET SALVAGE PERCENT	CALCULATED ANNUAL ACCRUAL AMOUNT	CALCULATED ANNUAL ACCRUAL RATE	PROBABLE RETIREMENT DATE	SURVIVOR CURVE		NET SALVAGE PERCENT	CALCULATED ANNUAL ACCRUAL AMOUNT	CALCULATED ANNUAL ACCRUAL RATE	INCREASE/ DECREASE
	(1)	(2)	(3)	(4)	(5)	(6)=(2)*(7)	(7)	(8)	(9)		(10)	(11)	(9)=(8)/(5)	(13)
310.00	RIGHTS OF WAY													
	MARSHALL	452,636.00	06-2034	100-R4	0	0	-	06-2034	100-R4	*	0	0	-	0
	BELEWS CREEK	1,543,811.00	06-2037	100-R4	0	0	-	06-2037	100-R4	*	0	0	-	0
	LEE	3,106.00	06-2030	100-R4	0	0	-	06-2030	100-R4	*	0	0	-	0
	ALLEN	4,303.00	06-2026	100-R4	0	0	-	06-2024	100-R4	*	0	0	-	0
	TOTAL ACCOUNT 310	2,003,856.00				0	-					0	-	0
320.00	RIGHTS OF WAY													
	OCONEE	425,003.00	07-2034	100-R4	0	6,588	1.55	07-2034	100-R4	*	0	6,546	1.54	(42)
	MCGUIRE	74,882.00	03-2043	100-R4	0	1,236	1.65	03-2043	100-R4	*	0	1,227	1.64	(9)
	CATAWBA	456,656.68	12-2043	100-R4	0	8,448	1.85	12-2043	100-R4	*	0	8,399	1.84	(49)
	TOTAL ACCOUNT 320	956,541.68				16,272	1.70					16,172	1.69	(100)
330.00	RIGHTS OF WAY													
	COWANS FORD	6,881,547.00	06-2055	110-R4	0	45,418	0.66	06-2055	110-R4	*	0	45,372	0.66	(46)
	BAD CREEK	723,692.00	06-2058	110-R4	0	8,901	1.23	06-2058	110-R4	*	0	8,840	1.22	(61)
	JOCASSEE	436,179.00	06-2046	110-R4	0	3,751	0.86	06-2046	110-R4	*	0	3,685	0.84	(66)
	KEOWEE	12,071,075.00	06-2046	110-R4	0	86,912	0.72	06-2046	110-R4	*	0	86,162	0.71	(750)
	FISHING CREEK	35,796.00	06-2055	110-R4	0	0	-	06-2055	110-R4	*	0	0	-	0
	BRIDGEWATER	393,705.00	06-2055	110-R4	0	0	-	06-2055	110-R4	*	0	0	-	0
	GASTON SHOALS	16,648.00	06-2036	110-R4	0	0	-	06-2036	110-R4	*	0	0	-	0
	LOOKOUT SHOALS	7,426.00	06-2055	110-R4	0	0	-	06-2055	110-R4	*	0	0	-	0
	MOUNTAIN ISLAND	323,913.00	06-2055	110-R4	0	0	-	06-2055	110-R4	*	0	0	-	0
	99 ISLANDS	17,102.00	06-2036	110-R4	0	0	-	06-2036	110-R4	*	0	0	-	0
	OXFORD	695,790.00	06-2055	110-R4	0	417	0.06	06-2055	110-R4	*	0	548	0.08	131
	RHODHISS	199,929.00	06-2055	110-R4	0	0	-	06-2055	110-R4	*	0	17	0.01	17
	TUXEDO	245,404.00	06-2041	110-R4	0	0	-	06-2041	110-R4	*	0	0	-	0
	WATEREE	204,111.00	06-2055	110-R4	0	0	-	06-2055	110-R4	*	0	0	-	0
	WYLIE	1,189,441.24	06-2055	110-R4	0	0	-	06-2055	110-R4	*	0	0	-	0
	NPL BEAR CREEK	435.00	06-2041	110-R4	0	0	-	06-2041	110-R4	*	0	0	-	0
	NPL FRANKLIN	12,423.00	06-2041	110-R4	0	0	-	06-2041	110-R4	*	0	0	-	0
	NPL NANTAHALA	80,304.00	06-2042	110-R4	0	0	-	06-2042	110-R4	*	0	0	-	0
	NPL QUEENS CREEK	5,782.00	06-2032	110-R4	0	0	-	06-2032	110-R4	*	0	0	-	0
	NPL TENNESSEE CREEK	711.00	06-2041	110-R4	0	0	-	06-2041	110-R4	*	0	0	-	0
	NPL THORPE	47,127.00	06-2041	110-R4	0	0	-	06-2041	110-R4	*	0	0	-	0
	NPL TUCKASEGEE	1,518.00	06-2041	110-R4	0	0	-	06-2041	110-R4	*	0	0	-	0
	TOTAL ACCOUNT 330	23,590,058.24				145,399	0.62					144,624	0.61	(775)
340.00	RIGHTS OF WAY													
	DAN RIVER	7,693.00	06-2052	60-R4	0	342	4.45	06-2052	60-R4	*	0	383	4.98	41
	TOTAL ACCOUNT 330	7,693.00				342	4.45					383	4.98	41
350.00	RIGHTS OF WAY	163,057,492.39		75-R4	0	1,875,161	1.15		80-R4		0	1,673,327	1.03	(201,834)
360.00	RIGHTS OF WAY	8,830,280.42		75-R3	0	120,975	1.37		80-R3		0	110,290	1.25	(10,685)
360.20	LAND RIGHTS	561,560.00		75-R3	0	8,480	1.51		80-R3		0	7,656	1.36	(824)
389.00	RIGHTS OF WAY	550,127.03		60-R3	0	8,307	1.51		60-R3		0	8,256	1.50	(51)
389.20	LAND RIGHTS	165.00		60-R3	0	2	1.21		60-R3		0	2	1.21	0
	TOTAL DEPRECIABLE LAND RIGHTS	**199,557,773.76**				**2,174,938**	**1.09**					**1,960,710**	**0.98**	**(214,228)**
	RESERVE ADJUSTMENT FOR AMORTIZATION													
391.00	OFFICE FURNITURE AND EQUIPMENT					(485,779) ***						(1,091,336) ***		(605,557)
391.10	OFFICE FURNITURE AND EQUIPMENT - EDP					(7,162,540) ***						(6,686,253) ***		476,287
393.00	STORES EQUIPMENT					(167,822) ***						(510,479) ***		(342,657)
394.00	TOOLS,SHOP AND GARAGE EQUIPMENT					791,555 ***						182,044 ***		(609,511)
395.00	LABORATORY EQUIPMENT					60,273 ***						(196,882) ***		(257,155)
397.00	COMMUNICATION EQUIPMENT					(3,375,963) ***						(5,756,654) ***		(2,380,691)
398.00	MISCELLANEOUS EQUIPMENT					181,040 ***						152,142 ***		(28,898)
	TOTAL RESERVE ADJUSTMENT FOR AMORTIZATION					**(10,159,236)**						**(13,907,418)**		**(3,748,182)**
	TOTAL DEPRECIABLE PLANT	**50,816,367,931.52**				**1,343,742,881**	**2.64**					**1,458,084,379**	**2.87**	**109,738,272**
	NONDEPRECIABLE PLANT													

DUKE ENERGY CAROLINAS
COMPARISON OF CURRENT AND PROPOSED DEPRECIATION PARAMETERS, RATES AND ACCRUALS AS OF DECEMBER 31, 2018
VERSION 1 - REVISED

	ACCOUNT	ORIGINAL COST AS OF DECEMBER 31, 2018	CURRENT PROBABLE RETIREMENT DATE	CURRENT SURVIVOR CURVE	CURRENT NET SALVAGE PERCENT	CURRENT CALCULATED ANNUAL ACCRUAL AMOUNT	CURRENT CALCULATED ANNUAL ACCRUAL RATE	PROPOSED PROBABLE RETIREMENT DATE	PROPOSED SURVIVOR CURVE	PROPOSED NET SALVAGE PERCENT	PROPOSED CALCULATED ANNUAL ACCRUAL AMOUNT	PROPOSED CALCULATED ANNUAL ACCRUAL RATE	INCREASE/ DECREASE
	(1)	(2)	(3)	(4)	(5)	(6)=(2)*(7)	(7)	(8)	(9)	(10)	(11)	(9)=(8)/(5)	(13)
302.00	FRANCHISES AND CONSENTS	10,582,513.97											
302.01	NPL FEASIBILITY	51,514.00											
303.00	MISCELLANEOUS INTANGIBLE PLANT	881,801,467.56											
303.10	MISCELLANEOUS INTANGIBLE PLANT - 10 YEAR	77,334,560.26											
303.02	NUCLEAR LICENSING	16,980,814.09											
310.00	LAND	26,928,990.69											
317.00	ARO	886,954,100.65											
320.00	LAND	2,084,901.52											
326.00	ARO	(333,080,604.95)											
330.00	LAND	28,756,791.34											
340.00	LAND	9,356,078.64											
347.00	ARO	14,776,081.47											
350.00	LAND	33,315,866.21											
360.00	LAND	54,389,762.82											
389.00	LAND	62,366,844.64											
399.00	ARO	(931,335.11)											
	TOTAL NONDEPRECIABLE PLANT	**1,771,668,347.80**											
	ACCOUNTS NOT STUDIED												
352.99	STRUCTURES AND IMPROVEMENTS - IMPAIRMENT	(4,692,470.50)											
353.99	STATION EQUIPMENT - IMPAIRMENT	(9,531,580.93)											
354.99	TOWERS AND FIXTURES - IMPAIRMENT	(146,639.71)											
355.99	POLES AND FIXTURES - IMPAIRMENT	(146,639.63)											
356.99	OVERHEAD CONDUCTORS AND DEVICES - IMPAIRMENT	(146,639.68)											
	TOTAL ACCOUNTS NOT STUDIED	**(14,663,970.45)**											
	TOTAL ELECTRIC PLANT	**52,573,372,308.87**				**1,343,742,881**					**1,458,084,379**		**109,738,272**

* Curve shown is interim survivor curve. Each facility in the account is assigned an individual probable retirement year.
** Annual Accrual Amount calculated based on remaining amortization period of 14.58 years (August 2033 which is 15 years from implementation).
*** 5 year Amortization of Adjusted Reserve related to implementation of Amortization Accounting.

= Provided in Melissa A.'s 5-2-2019 email

= Used the Ordered Projected Rates from 2016 Depr Study.

2018 Calculation of Tax Rates

Current (Statutory) Tax Rate Per "Provision" - Year 2019

Line No.	Description	Total	Statutory Rate (a)	Allocation Factor (b)	Composite Rate (a) x (b)
1					
2		100.0000%			
3	North Carolina	1.6750%	2.50%	67.0000%	1.67500%
4	South Carolina	1.3000%	5.00%	26.0000%	1.30000%
5	Federal Taxable Income (L2 - L3 - L4)	97.0250%			
6	Federal Tax Rate	**21.0000%**			
7	Federal Net of State (L5 x L6)	20.3753%			
8	North Carolina (L3)	1.6750%			
9	South Carolina (L4)	1.3000%			
10	Composite Tax Rate (L7 + L8 + L9)	23.3503%			

Source: Duke Energy Carolinas Tax Department

Line No.	Description	State - NC	State - SC	
1	12/31/2017 System Balances Subject to Property Tax			
2	Utility Plant (101-106, 114)	$ 38,269,626 [1]	$ 38,269,626 [1]	
3	Less: Asset Retirement Obligations	(198,027) [2]	(198,027) [2]	
4	Construction Work in Progress (107)	2,610,346 [1]	- [3]	
5	Net Nuclear Fuel (120.1-5)	842,653 [1]	- [3]	
6	Fuel Stock (151)	229,301 [1]	- [3]	
7	Materials & Supplies (154)	474,672 [4]	222,870 [4]	
8	Store Expenses Undistributed (163) [M & S Burdens]	24,528 [4]	19,892 [4]	
9	Other Materials & Supplies (156)	66 [4]	5 [4]	
10	Property Subject to Property Tax (Sum L2 through L8)	$ 42,253,166	$ 38,314,366	
11				
12	2018 Property Tax Expense Paid	$ 90,787 [5]	$ 117,894 [6]	Combined
13	Average Property Tax Rate (L12 / L10)	0.21486%	0.30770%	0.259%
14				
15	12/31/2018 System Balances Subject to Property Tax			
16	Utility Plant (101-106, 114)	$ 41,161,863 [1]	$ 41,161,863 [1]	
17	Less: Asset Retirement Obligations	(567,718) [2]	(567,718) [2]	
18	Construction Work in Progress (107)	1,632,658 [1]	- [3]	
19	Net Nuclear Fuel (120.1-5)	814,296 [1]	- [3]	
20	Fuel Stock (151)	220,761 [1]	- [3]	
21	Plant Materials & Operating Supplies (154)	464,250 [7]	217,976 [7]	
22	Store Expenses Undistributed (163) [M & S Burdens]	24,952 [7]	20,236 [7]	
23	Other Materials & Supplies (156)	96 [7]	8 [7]	
24	Property Subject to Property Tax (Sum L16 through L22)	$ 43,751,062	$ 40,832,357	
25				
26	Average Property Tax Rate (L13)	0.21486%	0.30770%	
27	Annualized Property Tax Expense (L24 x L26)	$ 94,005	$ 125,641	
28				
29	Test Year Property Tax Expense (Excluding Deferrals) (L12)	$ 90,787	$ 117,894	
30	Property Tax Expense Adjustment (L27 - L29)	$ 3,218	$ 7,748	
31				
32	Total Property Tax Adjustment (NC Col. L30 + SC Col. L30)	$ 10,966		
33	Allocation Factor - Gross Plant	68.3083% [8]		
34	Impact to general taxes (L32 x L33)	$ 7,491		
35	Statutory tax rate	23.3503% [9]		
36	Impact to income taxes (-L34 x L35)	$ (1,749)		
37	Impact to operating income (-L34 - L36)	$ (5,742)		

[1] NC-0902 - FERC Form 1, Comparative Balance Sheet, Page 110, Lines 2, 3, 13, and 45
[2] NC-0903 - Asset Retirement Obligations
[3] There is no property tax applied for these items in SC - Per DEC Property Tax Department
[4] NC-0904 - Duke Energy Carolinas - Materials and Supplies - By State, Line 16, Line 17 and Line 18
[5] NC-0905 - 2018 - Property Tax Expense - NC, Col. (b) + Col. (c)
[6] NC-0906 - 2018 - Property Tax Expense - SC, Col. (a)
[7] 2018 FERC 154, 156 and 163 accounts are spread across NC and SC based on 2017 distribution.
[8] COSS NC retail percentage of gross plant in service
[9] NC-0104 - 2019 Calculation of Tax Rates - Statutory Tax Rate, Line 10

Duke Energy Carolinas
Response to
NCJC Data Request
Data Request No. 8

Docket No. E-7, Sub 1214

Date of Request: January 31, 2020
Date of Response: February 11, 2020

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[X] **NOT CONFIDENTIAL**

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The attached response to NCJC Data Request No. 8-24, was provided to me by the following individual(s): Karen Ann Ralph, Lead Planning and Regulatory Support Specialist, and was provided to NCJC under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Carolinas

Request:

8-24. Refer to DEC's targeted undergrounding program generally.
a. How many miles of residential "Backyard" overhead lines does DEC estimate it has today?
b. What percentage of the miles DEC proposes to underground in its proposed targeted undergrounding program are shared with telecom, internet, or cable TV providers?

Response:

a) The amount is not quantifiable using GIS attributes
b) We have assumed all, although there will be exceptions

Duke Energy Progress
Response to
NCJC Data Request
Data Request No. 5

Docket No. E-2, Sub 1219

Date of Request: **January 31, 2020**
Date of Response: **February 10, 2020**

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The attached response to NCJC Data Request No. 5-22, was provided to me by the following individual(s): Karen Ann Ralph, Lead Planning & Regulatory Support Specialist, and was provided to NCJC under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Progress

Request:

5-22. Refer to DEP's targeted undergrounding program generally.
a. How many miles of residential "Backyard" overhead lines does DEP estimate it has today?
b. What percentage of the miles DEC proposes to underground in its proposed targeted undergrounding program are shared with telecom, internet, or cable TV providers?

Response:

a) The amount is not quantifiable using GIS attributes
b) We have assumed all, although there will be exceptions

Duke Energy Carolinas
Response to
NCJC Data Request
Data Request No. 8

Docket No. E-7, Sub 1214

Date of Request: January 31, 2020
Date of Response: February 10, 2020

[ ] **CONFIDENTIAL**

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Confidential Responses are provided pursuant to Confidentiality Agreement

The attached response to NCJC Data Request No. 8-1, was provided to me by the following individual(s): Karen Ann Ralph, Lead Planning and Regulatory Support Specialist, and was provided to NCJC under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Carolinas

Request:

8-1. Refer to forthcoming responses from DEC for NCJC DRs 6-08 and 6-09.
a. How many miles of 44kV does DEC have today?
b. How many miles of 44kV upgrades will deliver a capacity increase, and to what capacity?
c. How many distribution circuits does DEC have? DEP?

Response:

a. Approximately 2,800 miles
b. In the 3-year Grid Improvement Plan there are no capacity increase projects associated with the 44kV rebuilds. 44kV line rebuilds in the 3-year plan total approximately 80 miles and are all driven by reliability improvements, these rebuilds will reduce the probability of circuit failures that could result in customer outages. This work is all part of Phase I as described in Oliver Exhibit 4 page 36. These 44kV circuits are rebuilt to 100kV standards with regards to structure design, insulation level, and conductor sizing. There is no timeline established for Phase II, voltage conversions to 100kV, which would deliver the capacity increase.
c. DEC NC has 2,093 circuits as of November 2019.
DEP NC has 1,077 circuits as of November 2019.

Duke Energy Progress
Response to
NCJC Data Request
Data Request No. 5

Docket No. E-2, Sub 1219

Date of Request: **January 31, 2020**
Date of Response: **February 10, 2020**

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The attached response to NCJC Data Request No. 5-1, was provided to me by the following individual(s): Karen Ann Ralph, Lead Planning & Regulatory Support Specialist, and was provided to NCJC under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Progress

Request:

5-1. Refer to forthcoming responses from DEC for NCJC DRs 6-08 and 6-09.
a. How many miles of 44kV does DEP have today?
b. How many miles of 44kV will be upgraded, and to what capacity, in DEP if the current GIP is approved?

Response:

a. 0 miles. Voltages in the DEP Transmission system are 230kV, 115kV, and 69kV.
b. N/A

Duke Energy Carolinas
Response to
NCJC Data Request
Data Request No. 8

Docket No. E-7, Sub 1214

Date of Request: January 31, 2020
Date of Response: February 10, 2020

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The attached response to NCJC Data Request No. 8-26, was provided to me by the following individual(s): Karen Ann Ralph, Lead Planning and Regulatory Support Specialist, and was provided to NCJC under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Carolinas

Request:

8-26. Refer to DEC's response to NCJC DR 5-49, which states "in the past 5 years in the DEC system there have been 88,739 customer outages totaling 18,442,020 customer minutes interrupted as a result of transformer equipment failures."
a. How many individual distribution transformer failures are represented in these statistics?
b. How many distribution transformers does DEC have?
c. How many individual transmission transformer failures are represented in these statistics?
d. How many transmission transformers does DEC have?

Response:

Note, in answering the question Duke Energy assumed it related to substation transformer banks. "Distribution" would be T to D banks and "Transmission" would be T to T banks. Upon re-running the query from the Transmission Reliability Reporting System it was identified that the original numbers provided in DR 5-49 were incorrect and lower than actual. Updated numbers applicable to DR 5-49: in the past 5 years in the DEC system there have been 157,682 customer outages totaling 36,134,492 customer minutes interrupted as a result of transformer equipment failures. The below responses are associated with these updated numbers.
a. Individual transformer assets are not tracked to specific outages in the Transmission Reliability Reporting System, although there were 57 unique events that comprised the above-mentioned customer interruptions and customer minutes interrupted. 35 of these events are associated with distribution class transformers.
b. DEC has approximately 4,500 distribution class substation transformers
c. Individual transformer assets are not tracked to specific outages in the Transmission Reliability Reporting System, although there were 57 unique events that comprised the above-mentioned customer interruptions and customer minutes interrupted. 22 of these events are associated with transmission class transformers.
d. DEC has approximately 400 transmission class substation transformers

Duke Energy Progress
Response to
NCJC Data Request
Data Request No. 5

Docket No. E-2, Sub 1219

Date of Request: **January 31, 2020**
Date of Response: **February 10, 2020**

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The attached response to NCJC Data Request No. 5-17, was provided to me by the following individual(s): Karen Ann Ralph, Lead Planning & Regulatory Support Specialist, and was provided to NCJC under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Progress

Request:

5-17. Refer to DEP's response to NCJC DEP DR 2-16(c), which states "in the past 5 years in the DEP system there have been 290,450 customer outages totaling 28,539,477 customer minutes interrupted as a result of transformer equipment failures."
a. How many individual distribution transformer failures are represented in these statistics?
b. How many distribution transformers does DEP have?
c. How many individual transmission transformer failures are represented in these statistics?
d. How many of transmission transformers does DEP have?

Response:

For this response, it is assumed that "distribution transformer" refers to a substation T to D bank, and "transmission transformer" refers to a substation T to T bank.
a. Individual transformer assets are not tracked to specific outages in the Transmission Reliability Reporting System, although there were 65 unique events that comprised the above-mentioned customer interruptions and customer minutes interrupted. 56 of these events are associated with distribution class transformers.
b. DEP has approximately 900 distribution class substation transformers
c. Individual transformer assets are not tracked to specific outages in the Transmission Reliability Reporting System, although there were 65 unique events that comprised the above-mentioned customer interruptions and customer minutes interrupted. 9 of these events are associated with transmission class transformers.
d. DEP has approximately 117 transmission class substation transformers

Duke Energy Carolinas
Response to
NCJC Data Request
Data Request No. 8

Docket No. E-7, Sub 1214

Date of Request: January 31, 2020
Date of Response: February 11, 2020

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The attached response to NCJC Data Request No. 8-25, was provided to me by the following individual(s): Karen Ann Ralph, Lead Planning and Regulatory Support Specialist, and was provided to NCJC under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Carolinas

Request:

8-25. Refer to DEC's response to NCJC DR 5-44, which states "in the past 5 years in the DEC system there have been 77,515 customer outages totaling 8,642,573 customer minutes interrupted as a result of breaker equipment failures."
a. How many individual distribution breaker failures are represented in these statistics?
b. How many distribution breakers does DEC have?
c. How many of DEC's distribution breakers are oil filled?
d. How many individual transmission breaker failures are represented in these statistics?
e. How many transmission breakers does DEC have?
f. How many of DEC's transmission breakers are oil filled?

Response:

Upon re-running the query from the Transmission Reliability Reporting System it was identified that the original numbers provided in DR 5-44 were incorrect and lower than actual. Updated numbers applicable to DR 5-44: in the past 5 years in the DEC system there have been 123,103 customer outages totaling 11,242,664 customer minutes interrupted as a result of breaker equipment failures. The below responses are associated with these updated numbers.
a. Individual breaker assets are not tracked to specific outages in the Transmission Reliability Reporting System, although there were 50 unique events that comprised the above-mentioned customer interruptions and customer minutes interrupted. 37 of these events are associated with distribution class breakers.
b. DEC has approximately 4,600 distribution class substation breakers
c. DEC has approximately 1,500 distribution class substation oil breakers
d. Individual breaker assets are not tracked to specific outages in the Transmission Reliability Reporting System, although there were 50 unique events that comprised the above-mentioned customer interruptions and customer minutes interrupted. 13 of these events are associated with transmission class breakers.
e. DEC has approximately 3,400 transmission class substation breakers
f. DEC has approximately 2,000 transmission class substation oil breakers

Duke Energy Progress
Response to
NCJC Data Request
Data Request No. 5

Docket No. E-2, Sub 1219

Date of Request: **January 31, 2020**
Date of Response: **February 10, 2020**

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The attached response to NCJC Data Request No. 5-16, was provided to me by the following individual(s): Karen Ann Ralph, Lead Planning & Regulatory Support Specialist, and was provided to NCJC under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Progress

Request:

5-16. Refer to DEP's response to NCJC DEP DR 2-15 (g), which states "in the past 5 years in the DEP system there have been 46,085 customer outages totaling 2,549,341 customer minutes interrupted as a result of breaker equipment failures."
a. How many individual distribution breaker failures are represented in these statistics?
b. How many of these distribution breakers were oil-filled?
c. How many distribution breakers does DEP have?
d. How many oil-filled distribution breakers does DEP have?
e. How many individual transmission breaker failures are represented in these statistics?
f. How many of these transmission breakers were oil filled?
g. How many transmission breakers does DEP have?
h. How many oil-filled transmission breakers does DEP have?

Response:

a. Individual breaker assets are not tracked to specific outages in the Transmission Reliability Reporting System, although there were 8 unique events that comprised the above-mentioned customer interruptions and customer minutes interrupted. 5 of these events are associated with distribution class breakers.
b. Individual breaker assets are not tracked to specific outages in the Transmission Reliability Reporting System, therefore it is unknown how many of these breakers were oil-filled.
c. DEP has approximately 1,700 distribution class substation breakers
d. DEP has approximately 800 distribution class substation oil breakers
e. Individual breaker assets are not tracked to specific outages in the Transmission Reliability Reporting System, although there were 8 unique events that comprised the above-mentioned customer interruptions and customer minutes interrupted. 3 of these events are associated with transmission class breakers.
f. Individual breaker assets are not tracked to specific outages in the Transmission Reliability Reporting System, therefore it is unknown how many of these breakers were oil-filled.
g. DEP has approximately 940 transmission class substation breakers
h. DEP has approximately 350 transmission class substation oil breakers

Duke Energy Carolinas
Response to
NCJC Data Request
Data Request No. 2

Docket No. E-7, Sub 1214

Date of Request: December 30, 2019
Date of Response: January 9, 2020

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Confidential Responses are provided pursuant to Confidentiality Agreement

The attached response to NCJC Data Request No. 2-5, was provided to me by the following individual(s): Karen Ann Ralph, Lead Planning & Regulatory Support Specialist, and was provided to NCJC under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Carolinas

Request:

2-5. Please refer to DEC's responses to NCSEA DR 2-19, which indicates that the physical security of substations will be upgraded at a rate of 11-13 per year.
a. How many substations does DEC have in North Carolina?
b. Which ones will be upgraded in the proposed 3-year Grid Improvement Plan period?
c. How many substations does DEP have in North Carolina?
d. Which ones will be upgraded in the proposed 3-year Grid Improvement Plan period?
e. How did (or how will) DEC and DEP (collectively, "Duke") go about prioritizing and selecting substations for physical security upgrades?
f. How did Duke come to determine the $110 million budget for physical substation security upgrades? How does the value of this spending compare to the value to be delivered by other types of spending in the Grid Improvement Plan? How does Duke know it shouldn't spend less on substation security and more on other investments, or more on substation security and less on other investments?

Response:

a) 1759 in DEC NC
b) 12
c) 356 in DEP NC
d) 15
e) The Transmission Security Working Group determined the physical security requirements needed for substations that fell into the tiering for CIP-014 compliance, Tier 1 and Tier 2 classifications.
f) Duke Energy Transmission determined the $110M budget based on a threat and vulnerability assessment as well as the prioritization of the sites based on CIP-014, Tier 1 and Tier 2 classifications. Each project and program contained in the Grid Improvement Plan has unique and complementary value that address the megatrends described in witness Oliver testimony and Exhibits. The rate of investment mix contained within the Grid Improvement Plan was informed by Company experts and input from stakeholders.

Duke Energy Carolinas
Response to
NCJC Data Request
Data Request No. 5

Docket No. E-7, Sub 1214

Date of Request: January 16, 2020
Date of Response: January 27, 2020

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The attached response to NCJC Data Request No. 5-4, was provided to me by the following individual(s): Karen Ann Ralph, Lead Planning & Regulatory Support Specialist, and was provided to NCJC under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Carolinas

Request:

5-4. Refer to the Oliver testimony regarding the Grid Improvement Plan generally.
a. For what Grid Improvement Plan capital amount, over what years, is Duke requesting approval from the North Carolina Utilities Commission?
b. Is Duke requesting approval from the NCUC for 2019 Grid Improvement Plan capital spending in this rate case? If so, please provide amounts and detail by program, as well as where the total can be found in test year adjustments or other rate case detail.
c. Is Duke requesting approval from the NCUC for Grid Improvement Plan capital spending beyond 2022?
d. Explain how Duke intends to secure approval to recover a return of and on Grid Improvement Plan capital spending beyond 2022.
e. If Duke is not requesting approval for spending beyond 2022, explain why several benefit-cost analyses include benefits for capital spending beyond 2022.

Response:

a. Refer to attachment PS DR 36-3 for the GIP capital investments included in the current rate request. The amount is subject to update through January 31, the capital cut-off date for this case. Additionally, Duke is requesting deferral accounting for 2020 -2022 GIP capital assets placed in service until they can be requested for recovery in the next rate case.
b. See a. above.
c. No
d. This has not been determined.
e. The GIP CBA's used a 30-year evaluation period for the 3-year capital investment. The exception being DEC IVVC as it has an estimated deployment timeframe of 4 years.

Duke Energy Carolinas
Response to
North Carolina Sustainable Energy Association Data Request
Data Request No. NCSEA 2

Docket No. E-7, Sub 1214

Date of Request: **November 18, 2019**
Date of Response: **November 25, 2019**

[ ] **CONFIDENTIAL**

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Confidential Responses are provided pursuant to Confidentiality Agreement

The attached response to NCSEA Data Request No. 2-52, was provided to me by the following individual(s): Karen Ann Ralph, Senior Financial Analyst, Distribution Finance - Carolinas, and was provided to NCSEA under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Carolinas

Request:

52. Refer to Oliver Exhibit 10, page 50 (Enterprise Communications). Regarding "Mission Critical Voice" capital spending of $52.5 million:
a. Describe the existing Land Mobile Radio systems in place for DEC.
b. Describe any shortcomings associated with these systems.
c. Explain how the new system will avoid any shortcomings described.
d. Provide any analysis the Company completed comparing the cost of cellular service over the public cellular network to a new, proprietary voice network. If the Company has not completed such an analysis, please explain why not.

Response:

[Note: Clarification, the $52.5 million referenced in the question is for both DEC-NC and DEP-NC together; the correct value for just DEC-NC is $10.3 million]
a. The existing DEC Land Mobile Radio (LMR) system is a 2008 Harris Opensky 800MHz trunked-radio platform.
b. The existing Harris Opensky trunked-radio system will not be compatible with Duke Energy's enterprise wide communications strategy that is meant to migrate all jurisdictions onto a single LMR platform and improve operational excellence.
c. This platform provides enterprise wide interoperability, improves reliability, sustainability and portability.
d. A cost comparison of cellular services over the public cellular network was not performed. Cellular carriers could not meet the minimum requirements for mission critical communications.

Duke Energy Carolinas
Response to
North Carolina Sustainable Energy Association Data Request
Data Request No. NCSEA 2

Docket No. E-7, Sub 1214

Date of Request: **November 18, 2019**
Date of Response: **November 25, 2019**

[ ] **CONFIDENTIAL**

[X] **NOT CONFIDENTIAL**

Confidential Responses are provided pursuant to Confidentiality Agreement

The attached response to NCSEA Data Request No. 2-53, was provided to me by the following individual(s): Karen Ann Ralph, Senior Financial Analyst, Distribution Finance - Carolinas, and was provided to NCSEA under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Carolinas

Request:

53. Refer to Oliver Exhibit 10, page 50 (Enterprise Communications). Regarding "Mission Critical (data) Transport" capital spending of $107.1 million:
a. Describe the existing (data) transport network.
b. Provide the annual operations and maintenance cost associated with the existing (data) transport network.
c. Describe any shortcomings associated with these systems.
d. Provide details regarding all the various upgrades anticipated, the locations and counts of each upgrade, and the cost of each upgrade such that the total equals $107.1 million.
e. Provide any analysis the Company completed comparing the cost of its proposed (data) Transport upgrades to other alternatives, including the use of new 4G LTE and Cat M-1 networks now available from public carriers. If the Company has not completed such an analysis, explain why not.

Response:

a. The Duke Energy (data) transport network is comprised of many components of various technologies. These include fiber, optical electronics, data management and routing platforms, as well as microwave and wireless technologies.

b.

RU	O&M
DEC	$21,700,431
DEP	$15,119,010

c. Aging physical infrastructure and technological advances have rendered many of the existing data transport platforms obsolete, with most no longer supported by vendors.

d. Data networks are systems comprised of multiple, various components; details regarding final locations and counts are subject to final engineering and design completion, which may occur once approved. The primary transport networks types, site counts and associated cost are included below. Specific location information about communications infrastructure of any kind is generally limited or not publicly available due to security concerns, from both physical and cyber perspectives.

DEC		
Site count	Technology	Cost
204	Microwave	$14,100,000
29	Fiber	$49,450,000
7	MAS Cambium	$ 750,000
	Region total	$64,300,000

DEP		
Site count	Technology	Cost
26	Microwave	$ 1,800,000
17	Fiber	$ 33,910,000
62	MAS Cambium	$ 7,100,000
	Region total	$ 42,810,000
	Program total	$107,110,000

Alternatives like 4G LTE and Cat M-1 do not have the capacity nor can they satisfy mission critical requirements to support an enterprise core data network. Given the inability to meet the requirements a cost analysis wasn't performed.

CAPITAL DETAIL: BENEFIT-COST ANALYSES, NC ONLY

Program/Asset (Asset Life)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	Source
Self-Optimizing Grid (30)																																
DEC (ADMS)	65,770,946	98,489,790	161,566,334	177,074,120	-	-	-	-	-	-	-	-	-	62,369,028	-	-	-	-	-	-	-	-	-	79,837,629	-	-	-	-	-	-	-	SOG_DEC_NC_19-22_vF_rev8 9-2-19.xlsx; tab "DEC North Carolina_SOG"; cells F17-I17
DEP	40,493,079	65,917,601	90,482,882	155,070,517	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SOG_DEP_NC_19-22_vF_rev4 9-2-19.xlsx; tab "DEP North Carolina_SOG"; cells F17-I17
Integrated Volt-VAr Control (25)	307,933	40,407,172	118,498,991	117,499,135	93,937,955	-	-	-	2,172,641	6,426,808	6,323,677	8,969,071	11,262,013	11,723,951	9,205,802	2,480,782	29,681,046	63,149,599	65,804,226	50,242,793	-	5,299,110	17,483,816	23,749,355	20,357,427	6,889,842	-	-	-	-	-	IVVC_DEC_NC Only_19-23_vF_rev2 7-12-19.xlsx; tab "DEC-NC IVVC"; cells G20-AF20
DSDR (25)	1,736,340	1,778,434	1,815,788	1,856,302	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DSDR_DEP_NC Only_19-21_vF 5-6-19.xlsx; tab " "; cells
Transmisison H&R (30)																																
DEC Line Projects (18.7% SC removed)	6,262,483	12,925,171	22,132,318	75,207,031	39,681,222	2,494,164	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Trans_Line Projects_DEC_NC-SC_19-21_multiple_vF_rev2 7-28-19. xlsx line 12 *81.3% (NC Portion)
DEP Line Projects (9.3% SC removed)	1,553,725	42,231	4,717,592	8,524,708	12,250,931	5,281,623	1,061,338	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Trans_Line Projects_DEP_NC-SC_19-21_multiple_vF_rev2 7-28-19.xlsx line 12 *90.7% (NC Portion)
DEC Rebuilds (18.7% SC removed)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Trans_44kV Rebuilds_DEC_NC-SC_19_multiple_vF 1-26-19.xlsx line 12 * 81.3%
DEP Rebuilds (9.3% SC removed)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Trans_Line Rebuilds_DEP_NC-SC_19_multiple_vF 2-19-19.xlsx line 12 * 90.7%
DEP Substation Flooding (9.3% SC removed)	3,085,614	6,778,918	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Trans_Flood Sub_Reinforce_DEP_NC-SC_19-20_All Program_vF 5-3-19.xlsx * .907 (NC Portion)
Transmission H&R: NC Only	10,901,822	19,746,320	26,849,910	83,731,739	51,932,153	7,775,787	1,061,338	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Subs Flooding -- Whiteville Relo (30; 9.3% removed)				10,918,256																												Trans_Flood Sub_Rebuild_DEP_NC-SC_22_Whiteville_vF_rev1 7-17-19.xlsx & NCJC DR DEP x-xx
Targeted Undergrounding (35)	7,702,700	14,070,688	32,978,930	60,193,878	45,789,443	22,059,886	8,473,416	4,421,436	4,531,971																							TUG_DEC-DEP_NC_19-22_Consolidated_vF rev1 8-9-19.xlsx, tab "All Years Summary", line "Project Capital".
Energy Storage (30?)		16,321,000	30,321,000	82,361,000																												
Distribution Trans Retrofit (35)	31,560,900	36,515,625	53,948,963	62,262,585																												HR_Transformer Retro_DEC-DEP_NC_19-22_vF_rev2 8-2-19.xlsx, tab "NPV - Tx Retrofit NC", cells E20-H20
Long Duration/High Impact Sites (35)	29,604,302	18,154,000	12,715,000	5,378,500	1,460,000																											LDI_DEC-DEP_NC_2019-2022_Summary_v1_rev1 7-9-19.xlsx, tab "2019-2022 Summary", cells D20-H20
Transformer Bank Replacement (30)																																
DEC total	5,712,000	6,537,040	8,798,354	5,851,393																												Trans_Transformer Bank_DEC_NC-SC_19-22_vF_rev3 8-2-19.xlsx, tab "NPV", cells D18-G18
Less: DEC SC (18.7%)	1,068,144	1,222,426	1,645,292	1,094,210																												NCJC DR DEC x-xx
DEC NC	4,643,856	5,314,614	7,153,062	4,757,182																												
DEP total	17,632,000	7,219,280	14,799,524	10,868,842																												Trans_Transformer Bank_DEP_NC-SC_19-22_vF_rev3 8-2-19.xlsx, tab "
Less: DEP SC (9.3%)	1,639,776	671,393	1,376,356	1,010,802																												NCJC DR DEP x-xx
DEP NC	15,992,224	6,547,887	13,423,168	9,858,040																												
Oil Breaker Replacements (30)																																
DEC total	21,460,870	14,852,260	26,420,844	20,304,256																												Trans_Oil Breaker_DEC_NC-SC_19-22_vF_rev3 8-2-19.xlsx, tab "NPV", cells D18-G18
Less: DEC SC (18.7%)	4,013,183	2,777,373	4,940,698	3,796,896																												NCJC DR DEC x-xx
DEC NC	17,447,687	12,074,887	21,480,146	16,507,360																												
DEP total	9,051,260	8,783,891	6,055,939	19,182,760																												Trans_Oil Breaker_DEP_NC-SC_19-22_vF_rev3 8-2-19.xlsx, tab "NPV", cells D18-G18
Less: DEP SC (9.3%)	841,767	816,902	563,202	1,783,997																												NCJC DR DEP x-xx
DEP NC	8,209,493	7,966,989	5,492,737	17,398,764																												
Modernize																																
Enterprise Communications	-	52,797,000	68,160,000	90,861,000										271,144,948										347,088,457								Oliver Exh. 10, page 3 (GIP Capital Budget Summary, NC Budget)
Dist Auto (detail $194,069 does't tie to total)	-	52,464,000	50,744,000	90,861,000																												Oliver Exh. 10, page 3 (GIP Capital Budget Summary, NC Budget)
Transmission System Intelligence	-	30,837,000	41,601,000	13,973,000																												Oliver Exh. 10, page 3 (GIP Capital Budget Summary, NC Budget)
Enterprise Applications	-	5,709,000	6,351,000	15,787,000					31,506,325					35,646,514					40,330,759					45,630,552				51,626,781				Oliver Exh. 10, page 3 (GIP Capital Budget Summary, NC Budget)
Integrated Systems Operation Plan	-	4,858,000	612,000	1,180,000					7,523,865					8,512,562					9,631,183					10,896,799				12,328,728				Oliver Exh. 10, page 3 (GIP Capital Budget Summary, NC Budget)
DER Dispatch Tool	-	2,856,000	3,339,000	1,252,000					8,425,597					9,532,790					10,785,476					12,202,777				13,806,322				Oliver Exh. 10, page 3 (GIP Capital Budget Summary, NC Budget)
Electric Transportation (30)	-	31,740,000	31,740,000	-																												Oliver Exh. 10, page 3 (GIP Capital Budget Summary, NC Budget)
Power Electronics for Volt/VAr Control	-	36,000	879,000	879,000																												Oliver Exh. 10, page 3 (GIP Capital Budget Summary, NC Budget)
	-	181,297,000	203,426,000	214,793,000																												
Physical & Cyber Security	-	65,594,000	34,837,000	33,326,000																												Oliver Exh. 10, page 3 (GIP Capital Budget Summary, NC Budget)
TOTALS	234,371,282	590,196,007	814,989,911	1,052,986,379	193,119,551	29,835,673	9,534,754	4,421,436	6,704,612	6,426,808	6,323,677	8,969,071	11,262,013	74,092,979	9,205,802	2,480,782	29,681,046	63,149,599	65,804,226	50,242,793	-	5,299,110	17,483,816	103,586,984	20,357,427	6,889,842	-	-	-	-	-	
CHECK																																
Remove Energy Storage	-	16,321,000	30,321,000	82,361,000																												
Remove Electric Transportation	-	31,740,000	31,740,000	-																												
COMPARE to OLIVER Exh. 10, p. 3 (cap budget)	234,371,282	542,135,007	752,928,911	970,625,379	193,119,551	29,835,673	9,534,754	4,421,436	6,704,612																							
Oliver Exh. 10	-	554,501,718	785,941,112	978,786,170	-	-	-	-	-																							
Difference	(234,371,282)	12,366,711	33,012,201	8,160,791	(193,119,551)	(29,835,673)	(9,534,754)	(4,421,436)	(6,704,612)																							
FOR REVENUE REQUIREMENT CALCULATIONS																																
total capital per BCAs	234,371,282	590,196,007	814,989,911	1,052,986,379	193,119,551	29,835,673	9,534,754	4,421,436	6,704,612	6,426,808	6,323,677	8,969,071	11,262,013	74,092,979	9,205,802	2,480,782	29,681,046	63,149,599	65,804,226	50,242,793	-	5,299,110	17,483,816	103,586,984	20,357,427	6,889,842	-	-	-	-	-	line 71
Programs with 10-year lives																																
ADMS portion of SOG	-	15,435,027	14,511,506	18,927,210	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	"Oliver Exh 10 Detail"
Enterprise Communications	-	52,796,973	68,159,906	90,860,239	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	"Oliver Exh 10 Detail"
Programs with 10-year lives total	-	68,232,000	82,671,412	109,787,449	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Programs with 5-year lives																																
Enterprise Applications	-	5,709,000	6,351,000	15,787,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	"Oliver Exh 10 Detail" for 2020-2022; "Short-lived Asset Table" 2023+
ISOP Programs	-	4,858,000	612,000	1,180,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	"Oliver Exh 10 Detail" for 2020-2022; "Short-lived Asset Table" 2023+
DER Dispatch Tool	-	2,856,000	3,339,000	1,252,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	"Oliver Exh 10 Detail" for 2020-2022; "Short-lived Asset Table" 2023+
Programs with 5-year lives total	-	13,423,000	10,302,000	18,219,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
All other programs' capital (30 yr life average)	234,371,282	508,541,007	722,016,499	924,979,930	193,119,551	29,835,673	9,534,754	4,421,436	6,704,612	6,426,808	6,323,677	8,969,071	11,262,013	74,092,979	9,205,802	2,480,782	29,681,046	63,149,599	65,804,226	50,242,793	-	5,299,110	17,483,816	103,586,984	20,357,427	6,889,842	-	-	-	-	-	

O&M DETAIL: BENEFIT-COST ANALYSES, NC ONLY

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	Source
Self-Optimizing Grid																																
DEC	-	23,289	65,005	190,110	2,221,548	409,125	409,469	514,657	628,598	1,006,095	1,012,559	411,319	411,718	412,126	537,161	672,605	1,121,291	1,128,851	414,326	414,799	415,284	563,911	724,911	1,258,312	1,267,455	417,899	418,462	419,039	595,711	702,941	732,729	SOG_DEC_NC_19-22_vF_rev8 9-2-19.xlsx; tab "DEC North Carolina_SOG"; line 25 (Total O&M)
DEP	-	9,274	85,879	108,828	136,147	323,341	323,577	365,567	602,160	661,573	707,160	324,845	325,118	325,398	375,311	656,551	727,133	781,247	326,906	327,230	327,563	386,893	721,197	805,149	869,573	329,355	329,741	330,136	400,662	762,201	603,144	SOG_DEP_NC_19-22_vF_rev4 9-2-19.xlsx; tab "DEP North Carolina_SOG"; line 25 (Total O&M)
Integrated Volt-VAr Control	-	1,073,108	3,209,001	3,321,881	3,143,520	3,524,838	3,737,059	3,952,553	4,168,963	4,387,872	4,572,842	4,721,124	4,783,182	4,846,791	4,911,991	4,978,821	5,047,322	5,117,535	5,189,503	5,263,271	5,338,882	5,416,384	5,495,824	5,577,250	5,660,711	5,746,259	-	-	-	-	-	IVVC_DEC_NC Only_19-23_vF_rev2 7-12-19.xlsx; tab "DEC-NC IVVC", line 29 (Total O&M)
DSDR	20,000	20,000	21,000	21,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DSDR_DEP_NC Only_19-21_vF 5-6-19.xlsx; tab "DSDR", line 28
Transmisison H&R																																
DEC Line Projects (18.7% SC removed)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Trans_Line Projects_DEC_NC-SC_19-21_multiple_vF_rev2 7-28-19. xlsx & NCJC DR DEC x-xx
DEP Line Projects (9.3% SC removed)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Trans_Line Projects_DEP_NC-SC_19-21_multiple_vF_rev2 7-28-19.xlsx $ NCJC DR DEP x-xx
DEC Rebuilds (18.7% SC removed)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Trans_44kV Rebuilds_DEC_NC-SC_19_multiple_vF 1-26-19.xlsx & NCJC DR DEC x-xx
DEP Rebuilds (9.3% SC removed)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Trans_Line Rebuilds_DEP_NC-SC_19_multiple_vF 2-19-19.xlsx & NCJC DR DEP x-xx
Substation Flooding (SC?)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Trans_Flood Sub_Reinforce_DEP_NC-SC_19-20_All Program_vF 5-3-19 & NCHC DR DEP x-xx
Transmission H&R: NC Only	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Substation Flooding -- Whiteville Relo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Trans_Flood Sub_Rebuild_DEP_NC-SC_22_Whiteville_vF_rev1 7-17-19.xlsx & NCJC DR DEP x-xx
Targeted Undergrounding	231,081	424,333	1,001,167	1,821,590	1,450,840	819,083	459,417	367,936	377,135	276,780	283,699	290,792	298,062	305,513	313,151	320,980	329,004	337,229	345,660	354,302	363,159	372,238	381,544	391,083	400,860	410,881	421,153	431,682	442,474	453,536	464,874	TUG_DEC-DEP_NC_19-22_Consolidated_vF rev1 8-9-19.xlsx, tab "All Years Summary", line 20 (O&M).
Energy Storage	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Distribution Trans Retrofit	946,827	1,095,469	1,618,469	1,867,878	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	HR_Transformer Retro_DEC-DEP_NC_19-22_vF_rev2 8-2-19.xlsx, tab "NPV - Tx Retrofit NC", line 22 (Program O&M costs)
Long Duration/High Impact Sites	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LDI_DEC-DEP_NC_2019-2022_Summary_v1_rev1 7-9-19.xlsx, tab "2019-2022 Summary"
Transformer Bank Replacement																																
DEC total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	27	Trans_Transformer Bank_DEC_NC-SC_19-22_vF_rev3 8-2-19.xlsx, tab "NPV", cells D18-G18
Less: DEC SC (18.3%)																																NCJC DR DEC x-xx
DEC NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	27	
DEP total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	27	Trans_Transformer Bank_DEP_NC-SC_19-22_vF_rev3 8-2-19.xlsx, tab "
Less: DEP SC (9.3%)																																NCJC DR DEP x-xx
DEP NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	27	
Oil Breaker Replacements																																
DEC total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	27	Trans_Oil Breaker_DEC_NC-SC_19-22_vF_rev3 8-2-19.xlsx, tab "NPV", cells D18-G18
Less: DEC SC (18.3%)																																NCJC DR DEC x-xx
DEC NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	27	
DEP total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	27	Trans_Oil Breaker_DEP_NC-SC_19-22_vF_rev3 8-2-19.xlsx, tab "NPV", cells D18-G18
Less: DEP SC (9.3%)																																NCJC DR DEP x-xx
DEP NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	27	
Modernize																																
Enterprise Communications	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Oliver Exh. 10, page 3 (GIP Capital Budget Summary, NC Budget)
Dist Auto	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Oliver Exh. 10, page 3 (GIP Capital Budget Summary, NC Budget)
Transmission System Intelligence	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Oliver Exh. 10, page 3 (GIP Capital Budget Summary, NC Budget)
Enterprise Applications	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Oliver Exh. 10, page 3 (GIP Capital Budget Summary, NC Budget)
Integrated Systems Operation Plan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Oliver Exh. 10, page 3 (GIP Capital Budget Summary, NC Budget)
DER Dispatch Tool	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Oliver Exh. 10, page 3 (GIP Capital Budget Summary, NC Budget)
Electric Transportation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Oliver Exh. 10, page 3 (GIP Capital Budget Summary, NC Budget)
Power Electronics for Volt/VAr Control	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Oliver Exh. 10, page 3 (GIP Capital Budget Summary, NC Budget)
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Physical & Cyber Security	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	27	Oliver Exh. 10, page 3 (GIP Capital Budget Summary, NC Budget)
TOTALS	1,197,908	2,645,472	6,000,521	7,331,287	6,952,054	5,076,388	4,929,521	5,200,713	5,776,856	6,332,320	6,576,261	5,748,080	5,818,079	5,889,829	6,137,614	6,628,957	7,224,750	7,364,862	6,276,394	6,359,602	6,444,889	6,739,427	7,323,476	8,031,794	8,198,598	6,904,394	1,169,356	1,180,857	1,438,848	1,918,808	1,800,883	

RR ESTIMATE: BENEFIT-COST ANALYSES, NC ONLY

ASSUMPTIONS

Return on Equity (%)	10.3%
Weighted Average Cost of Debt (%)	4.15%
Discount Rate (%)	6.8%
General Tax (% of Revenues)	4.0%
Income Tax (% of Return on Equity)	21.0%
Debt Ratio	47%

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	Source
REVENUE REQUIREMENT CALCULATION																																
Rate Base	226,558,906	782,483,370	1,528,806,980	2,467,671,849	2,540,232,572	2,448,514,894	2,338,863,072	2,226,010,950	2,156,826,947	2,039,695,127	1,922,249,387	1,813,973,271	1,715,881,838	2,041,737,578	1,915,193,440	1,781,841,589	1,674,700,633	1,598,923,245	1,582,943,316	1,488,979,777	1,344,773,444	1,205,689,585	1,078,207,638	1,518,094,420	1,378,416,850	1,225,042,034	1,064,777,376	904,512,717	820,203,550	658,132,551	503,873,928	
Debt	106,482,686	367,767,184	718,539,281	1,159,805,769	1,193,909,309	1,150,802,000	1,099,265,644	1,046,225,147	1,013,708,665	958,656,710	903,457,212	852,567,438	806,464,464	959,616,662	900,140,917	837,465,547	787,109,298	751,493,925	743,983,359	699,820,495	632,043,519	566,674,105	506,757,590	713,504,377	647,855,920	575,769,756	500,445,367	425,120,977	385,495,668	309,322,299	236,820,746	
Equity	120,076,220	414,716,186	810,267,699	1,307,866,080	1,346,323,263	1,297,712,894	1,239,597,428	1,179,785,804	1,143,118,282	1,081,038,417	1,018,792,175	961,405,834	909,417,374	1,082,120,917	1,015,052,523	944,376,042	887,591,336	847,429,320	838,959,957	789,159,282	712,729,925	639,015,480	571,450,048	804,590,042	730,560,931	649,272,278	564,332,009	479,391,740	434,707,881	348,810,252	267,053,182	
Return on Equity	12,367,851	42,715,767	83,457,573	134,710,206	138,671,296	133,664,428	127,678,535	121,517,938	117,741,183	111,346,957	104,935,594	99,024,801	93,669,990	111,458,454	104,550,410	97,270,732	91,421,908	87,285,220	86,412,876	81,283,406	73,411,182	65,818,594	58,859,355	82,872,774	75,247,776	66,875,045	58,126,197	49,377,349	44,774,912	35,927,456	27,506,478	
Income Tax	2,597,249	8,970,311	17,526,090	28,289,143	29,120,972	28,069,530	26,812,492	25,518,767	24,725,648	23,382,861	22,036,475	20,795,208	19,670,698	23,406,275	21,955,586	20,426,854	19,198,601	18,329,896	18,146,704	17,069,515	15,416,348	13,821,905	12,360,465	17,403,283	15,802,033	14,043,759	12,206,501	10,369,243	9,402,731	7,544,766	5,776,360	
Interest Expense	4,419,031	15,262,338	29,819,380	48,131,939	49,547,236	47,758,283	45,619,524	43,418,344	42,068,910	39,784,253	37,493,474	35,381,549	33,468,275	39,824,091	37,355,848	34,754,820	32,665,036	31,186,998	30,875,309	29,042,551	26,229,806	23,516,975	21,030,440	29,610,432	26,886,021	23,894,445	20,768,483	17,642,521	15,998,070	12,836,875	9,828,061	
O&M Expense	1,197,908	2,645,472	6,000,521	7,331,287	6,952,054	5,076,388	4,929,521	5,200,713	5,776,856	6,332,320	6,576,261	5,748,080	5,818,079	5,889,829	6,137,614	6,628,957	7,224,750	7,364,862	6,276,394	6,359,602	6,444,889	6,739,427	7,323,476	8,031,794	8,198,598	6,904,394	1,169,356	1,180,857	1,438,848	1,918,808	1,800,883	"BCA O&M Detail"
Total Depreciation	7,812,376	34,271,543	68,666,301	114,121,510	120,558,828	121,553,351	119,186,576	117,273,557	123,344,401	123,558,628	123,769,418	117,245,187	109,353,446	135,443,081	135,749,941	135,832,633	136,822,002	138,926,988	142,531,573	144,206,333	144,206,333	144,382,970	144,965,764	159,356,416	160,034,997	160,264,658	160,264,658	160,264,658	162,070,999	162,070,999	154,258,623	
Revenue Requirement, pre General Tax	28,394,415	103,865,432	205,469,865	332,584,086	344,850,387	336,121,980	324,226,649	312,929,319	313,656,999	304,405,019	294,811,222	278,194,825	261,980,488	316,021,730	305,749,399	294,913,997	287,332,295	283,093,964	284,242,856	277,961,406	265,708,558	254,279,872	244,539,499	297,274,698	286,169,424	271,982,301	252,535,195	238,834,629	233,685,560	220,298,904	199,170,405	
Plus: General Tax	1,135,777	4,154,617	8,218,795	13,303,363	13,794,015	13,444,879	12,969,066	12,517,173	12,546,280	12,176,201	11,792,449	11,127,793	10,479,220	12,640,869	12,229,976	11,796,560	11,493,292	11,323,759	11,369,714	11,118,456	10,628,342	10,171,195	9,781,580	11,890,988	11,446,777	10,879,292	10,101,408	9,553,385	9,347,422	8,811,956	7,966,816	
Total Revenue Requirement	29,530,191	108,020,049	213,688,659	345,887,449	358,644,403	349,566,859	337,195,715	325,446,492	326,203,279	316,581,220	306,603,671	289,322,618	272,459,707	328,662,600	317,979,374	306,710,557	298,825,587	294,417,722	295,612,570	289,079,862	276,336,900	264,451,066	254,321,079	309,165,686	297,616,201	282,861,593	262,636,603	248,388,014	243,032,983	229,110,860	207,137,221	
PRESENT VALUE OF REVENUE REQUIREMENT	3,447,723,528																														8,585,496,792	TOTAL Revenue requirement over 30 years
PRESENT VALUE OF RETURN ON EQUITY	1,165,706,056																														2,619,982,242	TOTAL return on equity over 30 years
DEPRECIATION TABLES (Balance of Wksht)																																
2019 Assets -- 30 year																																
Opening Balance	234,371,282	226,558,906	218,746,530	210,934,154	203,121,778	195,309,402	187,497,026	179,684,649	171,872,273	164,059,897	156,247,521	148,435,145	140,622,769	132,810,393	124,998,017	117,185,641	109,373,265	101,560,889	93,748,513	85,936,137	78,123,761	70,311,385	62,499,009	54,686,632	46,874,256	39,061,880	31,249,504	23,437,128	15,624,752	7,812,376	0	
Depreciation (30 years)	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	7,812,376	-	
Closing Balance	226,558,906	218,746,530	210,934,154	203,121,778	195,309,402	187,497,026	179,684,649	171,872,273	164,059,897	156,247,521	148,435,145	140,622,769	132,810,393	124,998,017	117,185,641	109,373,265	101,560,889	93,748,513	85,936,137	78,123,761	70,311,385	62,499,009	54,686,632	46,874,256	39,061,880	31,249,504	23,437,128	15,624,752	7,812,376	0	0	
2020 Assets -- 5 year																																
Opening Balance		13,423,000	10,738,400	8,053,800	5,369,200	2,684,600																										
Depreciation (5 years)		2,684,600	2,684,600	2,684,600	2,684,600	2,684,600																										
Closing Balance		10,738,400	8,053,800	5,369,200	2,684,600	-																										
2020 Assets -- 10 year																																
Opening Balance		68,232,000	61,408,800	54,585,600	47,762,400	40,939,200	34,116,000	27,292,800	20,469,600	13,646,400	6,823,200																					
Depreciation (10 years)		6,823,200	6,823,200	6,823,200	6,823,200	6,823,200	6,823,200	6,823,200	6,823,200	6,823,200	6,823,200																					
Closing Balance		61,408,800	54,585,600	47,762,400	40,939,200	34,116,000	27,292,800	20,469,600	13,646,400	6,823,200	-																					
2020 Assets -- 30 year																																
Opening Balance		508,541,007	491,589,640	474,638,273	457,686,906	440,735,539	423,784,172	406,832,806	389,881,439	372,930,072	355,978,705	339,027,338	322,075,971	305,124,604	288,173,237	271,221,870	254,270,503	237,319,137	220,367,770	203,416,403	186,465,036	169,513,669	152,562,302	135,610,935	118,659,568	101,708,201	84,756,834	67,805,468	50,854,101	33,902,734	16,951,367	
Depreciation (30 years)		16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	16,951,367	
Closing Balance		491,589,640	474,638,273	457,686,906	440,735,539	423,784,172	406,832,806	389,881,439	372,930,072	355,978,705	339,027,338	322,075,971	305,124,604	288,173,237	271,221,870	254,270,503	237,319,137	220,367,770	203,416,403	186,465,036	169,513,669	152,562,302	135,610,935	118,659,568	101,708,201	84,756,834	67,805,468	50,854,101	33,902,734	16,951,367	0	
2021 Assets -- 5 year																																
Opening Balance			10,302,000	8,241,600	6,181,200	4,120,800	2,060,400																									
Depreciation (5 years)			2,060,400	2,060,400	2,060,400	2,060,400	2,060,400																									
Closing Balance			8,241,600	6,181,200	4,120,800	2,060,400	-																									
2021 Assets -- 10 year																																
Opening Balance			82,671,412	74,404,271	66,137,130	57,869,988	49,602,847	41,335,706	33,068,565	24,801,424	16,534,282	8,267,141																				
Depreciation (10 years)			8,267,141	8,267,141	8,267,141	8,267,141	8,267,141	8,267,141	8,267,141	8,267,141	8,267,141	8,267,141																				
Closing Balance			74,404,271	66,137,130	57,869,988	49,602,847	41,335,706	33,068,565	24,801,424	16,534,282	8,267,141	(0)																				
2021 Assets -- 30 year																																
Opening Balance			722,016,499	697,949,283	673,882,066	649,814,849	625,747,633	601,680,416	577,613,199	553,545,983	529,478,766	505,411,549	481,344,333	457,277,116	433,209,899	409,142,683	385,075,466	361,008,250	336,941,033	312,873,816	288,806,600	264,739,383	240,672,166	216,604,950	192,537,733	168,470,516	144,403,300	120,336,083	96,268,867	72,201,650	48,134,433	
Depreciation (30 years)			24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	24,067,217	
Closing Balance			697,949,283	673,882,066	649,814,849	625,747,633	601,680,416	577,613,199	553,545,983	529,478,766	505,411,549	481,344,333	457,277,116	433,209,899	409,142,683	385,075,466	361,008,250	336,941,033	312,873,816	288,806,600	264,739,383	240,672,166	216,604,950	192,537,733	168,470,516	144,403,300	120,336,083	96,268,867	72,201,650	48,134,433	24,067,217	
2022 Assets -- 5 year																																
Opening Balance				18,219,000	14,575,200	10,931,400	7,287,600	3,643,800																								
Depreciation (5 years)				3,643,800	3,643,800	3,643,800	3,643,800	3,643,800																								
Closing Balance				14,575,200	10,931,400	7,287,600	3,643,800	-																								
2022 Assets -- 10 year																																
Opening Balance				109,787,449	98,808,704	87,829,959	76,851,214	65,872,469	54,893,725	43,914,980	32,936,235	21,957,490	10,978,745																			
Depreciation (10 years)				10,978,745	10,978,745	10,978,745	10,978,745	10,978,745	10,978,745	10,978,745	10,978,745	10,978,745	10,978,745																			
Closing Balance				98,808,704	87,829,959	76,851,214	65,872,469	54,893,725	43,914,980	32,936,235	21,957,490	10,978,745	-																			
2022 Assets -- 30 year																																
Opening Balance				924,979,930	894,147,266	863,314,601	832,481,937	801,649,273	770,816,608	739,983,944	709,151,280	678,318,615	647,485,951	616,653,287	585,820,622	554,987,958	524,155,294	493,322,629	462,489,965	431,657,301	400,824,636	369,991,972	339,159,308	308,326,643	277,493,979	246,661,315	215,828,650	184,995,986	154,163,322	123,330,657	92,497,993	
Depreciation (30 years)				30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	30,832,664	
Closing Balance				894,147,266	863,314,601	832,481,937	801,649,273	770,816,608	739,983,944	709,151,280	678,318,615	647,485,951	616,653,287	585,820,622	554,987,958	524,155,294	493,322,629	462,489,965	431,657,301	400,824,636	369,991,972	339,159,308	308,326,643	277,493,979	246,661,315	215,828,650	184,995,986	154,163,322	123,330,657	92,497,993	61,665,329	
2023 Assets -- 30 year																																
Opening Balance					193,119,551	186,682,232	180,244,914	173,807,596	167,370,277	160,932,959	154,495,641	148,058,322	141,621,004	135,183,685	128,746,367	122,309,049	115,871,730	109,434,412	102,997,094	96,559,775	90,122,457	83,685,139	77,247,820	70,810,502	64,373,184	57,935,865	51,498,547	45,061,228	38,623,910	32,186,592	25,749,273	
Depreciation (30 years)					6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	6,437,318	
Closing Balance					186,682,232	180,244,914	173,807,596	167,370,277	160,932,959	154,495,641	148,058,322	141,621,004	135,183,685	128,746,367	122,309,049	115,871,730	109,434,412	102,997,094	96,559,775	90,122,457	83,685,139	77,247,820	70,810,502	64,373,184	57,935,865	51,498,547	45,061,228	38,623,910	32,186,592	25,749,273	19,311,955	
2024 Assets -- 30 year																																
Opening Balance						29,835,673	28,841,151	27,846,628	26,852,106	25,857,583	24,863,061	23,868,539	22,874,016	21,879,494	20,884,971	19,890,449	18,895,926	17,901,404	16,906,882	15,912,359	14,917,837	13,923,314	12,928,792	11,934,269	10,939,747	9,945,224	8,950,702	7,956,180	6,961,657	5,967,135	4,972,612	
Depreciation (30 years)						994,522	994,522	994,522	994,522	994,522	994,522	994,522	994,522	994,522	994,522	994,522	994,522	994,522	994,522	994,522	994,522	994,522	994,522	994,522	994,522	994,522	994,522	994,522	994,522	994,522	994,522	
Closing Balance						28,841,151	27,846,628	26,852,106	25,857,583	24,863,061	23,868,539	22,874,016	21,879,494	20,884,971	19,890,449	18,895,926	17,901,404	16,906,882	15,912,359	14,917,837	13,923,314	12,928,792	11,934,269	10,939,747	9,945,224	8,950,702	7,956,180	6,961,657	5,967,135	4,972,612	3,978,090	
2025 Assets -- 30 year																																
Opening Balance							9,534,754	9,216,929	8,899,104	8,581,278	8,263,453	7,945,628	7,627,803	7,309,978	6,992,153	6,674,328	6,356,503	6,038,677	5,720,852	5,403,027	5,085,202	4,767,377	4,449,552	4,131,727	3,813,902	3,496,076	3,178,251	2,860,426	2,542,601	2,224,776	1,906,951	
Depreciation (30 years)							317,825	317,825	317,825	317,825	317,825	317,825	317,825	317,825	317,825	317,825	317,825	317,825	317,825	317,825	317,825	317,825	317,825	317,825	317,825	317,825	317,825	317,825	317,825	317,825	317,825	
Closing Balance							9,216,929	8,899,104	8,581,278	8,263,453	7,945,628	7,627,803	7,309,978	6,992,153	6,674,328	6,356,503	6,038,677	5,720,852	5,403,027	5,085,202	4,767,377	4,449,552	4,131,727	3,813,902	3,496,076	3,178,251	2,860,426	2,542,601	2,224,776	1,906,951	1,589,126	
2026 Assets -- 30 year																																
Opening Balance								4,421,436	4,274,054	4,126,673	3,979,292	3,831,911	3,684,530	3,537,148	3,389,767	3,242,386	3,095,005	2,947,624	2,800,243	2,652,861	2,505,480	2,358,099	2,210,718	2,063,337	1,915,955	1,768,574	1,621,193	1,473,812	1,326,431	1,179,049	1,031,668	
Depreciation (30 years)								147,381	147,381	147,381	147,381	147,381	147,381	147,381	147,381	147,381	147,381	147,381	147,381	147,381	147,381	147,381	147,381	147,381	147,381	147,381	147,381	147,381	147,381	147,381	147,381	
Closing Balance								4,274,054	4,126,673	3,979,292	3,831,911	3,684,530	3,537,148	3,389,767	3,242,386	3,095,005	2,947,624	2,800,243	2,652,861	2,505,480	2,358,099	2,210,718	2,063,337	1,915,955	1,768,574	1,621,193	1,473,812	1,326,431	1,179,049	1,031,668	884,287	
2027 Assets -- 5 year																																
Opening Balance									47,455,786	37,964,629	28,473,472	18,982,314	9,491,157																			
Depreciation (5 years)									9,491,157	9,491,157	9,491,157	9,491,157	9,491,157																			
Closing Balance									37,964,629	28,473,472	18,982,314	9,491,157	-																			
2027 Assets -- 30 year																																
Opening Balance									6,704,612	6,481,125	6,257,638	6,034,151	5,810,664	5,587,177	5,363,690	5,140,203	4,916,716	4,693,229	4,469,741	4,246,254	4,022,767	3,799,280	3,575,793	3,352,306	3,128,819	2,905,332	2,681,845	2,458,358	2,234,871	2,011,384	1,787,897	
Depreciation (30 years)									223,487	223,487	223,487	223,487	223,487	223,487	223,487	223,487	223,487	223,487	223,487	223,487	223,487	223,487	223,487	223,487	223,487	223,487	223,487	223,487	223,487	223,487	223,487	
Closing Balance									6,481,125	6,257,638	6,034,151	5,810,664	5,587,177	5,363,690	5,140,203	4,916,716	4,693,229	4,469,741	4,246,254	4,022,767	3,799,280	3,575,793	3,352,306	3,128,819	2,905,332	2,681,845	2,458,358	2,234,871	2,011,384	1,787,897	1,564,410	
2028 Assets -- 30 year																																
Opening Balance										6,426,808	6,212,581	5,998,355	5,784,128	5,569,901	5,355,674	5,141,447	4,927,220	4,712,993	4,498,766	4,284,539	4,070,312	3,856,085	3,641,858	3,427,631	3,213,404	2,999,177	2,784,950	2,570,723	2,356,496	2,142,269	1,928,043	
Depreciation (30 years)										214,227	214,227	214,227	214,227	214,227	214,227	214,227	214,227	214,227	214,227	214,227	214,227	214,227	214,227	214,227	214,227	214,227	214,227	214,227	214,227	214,227	214,227	
Closing Balance										6,212,581	5,998,355	5,784,128	5,569,901	5,355,674	5,141,447	4,927,220	4,712,993	4,498,766	4,284,539	4,070,312	3,856,085	3,641,858	3,427,631	3,213,404	2,999,177	2,784,950	2,570,723	2,356,496	2,142,269	1,928,043	1,713,816	
2029 Assets -- 30 year																																
Opening Balance											6,323,677	6,112,888	5,902,099	5,691,310	5,480,520	5,269,731	5,058,942	4,848,153	4,637,363	4,426,574	4,215,785	4,004,996	3,794,206	3,583,417	3,372,628	3,161,839	2,951,049	2,740,260	2,529,471	2,318,682	2,107,892	
Depreciation (30 years)											210,789	210,789	210,789	210,789	210,789	210,789	210,789	210,789	210,789	210,789	210,789	210,789	210,789	210,789	210,789	210,789	210,789	210,789	210,789	210,789	210,789	
Closing Balance											6,112,888	5,902,099	5,691,310	5,480,520	5,269,731	5,058,942	4,848,153	4,637,363	4,426,574	4,215,785	4,004,996	3,794,206	3,583,417	3,372,628	3,161,839	2,951,049	2,740,260	2,529,471	2,318,682	2,107,892	1,897,103	
2030 Assets -- 30 year																																
Opening Balance												8,969,071	8,670,102	8,371,133	8,072,164	7,773,195	7,474,226	7,175,257	6,876,288	6,577,319	6,278,350	5,979,381	5,680,412	5,381,443	5,082,474	4,783,505	4,484,536	4,185,567	3,886,598	3,587,629	3,288,660	
Depreciation (30 years)												298,969	298,969	298,969	298,969	298,969	298,969	298,969	298,969	298,969	298,969	298,969	298,969	298,969	298,969	298,969	298,969	298,969	298,969	298,969	298,969	
Closing Balance												8,670,102	8,371,133	8,072,164	7,773,195	7,474,226	7,175,257	6,876,288	6,577,319	6,278,350	5,979,381	5,680,412	5,381,443	5,082,474	4,783,505	4,484,536	4,185,567	3,886,598	3,587,629	3,288,660	2,989,690	
2031 Assets -- 30 year																																
Opening Balance													11,262,013	10,886,612	10,511,212	10,135,811	9,760,411	9,385,010	9,009,610	8,634,210	8,258,809	7,883,409	7,508,008	7,132,608	6,757,208	6,381,807	6,006,407	5,631,006	5,255,606	4,880,205	4,504,805	
Depreciation (30 years)													375,400	375,400	375,400	375,400	375,400	375,400	375,400	375,400	375,400	375,400	375,400	375,400	375,400	375,400	375,400	375,400	375,400	375,400	375,400	
Closing Balance													10,886,612	10,511,212	10,135,811	9,760,411	9,385,010	9,009,610	8,634,210	8,258,809	7,883,409	7,508,008	7,132,608	6,757,208	6,381,807	6,006,407	5,631,006	5,255,606	4,880,205	4,504,805	4,129,405	
2032 Assets -- 5 year																																
Opening Balance														53,691,866	42,953,493	32,215,120	21,476,746	10,738,373														
Depreciation (5 years)														10,738,373	10,738,373	10,738,373	10,738,373	10,738,373														
Closing Balance														42,953,493	32,215,120	21,476,746	10,738,373	-														
2032 Assets -- 10 year																																
Opening Balance														333,513,976	300,162,578	266,811,181	233,459,783	200,108,386	166,756,988	133,405,590	100,054,193	66,702,795	33,351,398									
Depreciation (10 years)														33,351,398	33,351,398	33,351,398	33,351,398	33,351,398	33,351,398	33,351,398	33,351,398	33,351,398	33,351,398									
Closing Balance														300,162,578	266,811,181	233,459,783	200,108,386	166,756,988	133,405,590	100,054,193	66,702,795	33,351,398	0									
2032 Assets -- 30 year																																
Opening Balance														74,092,979	71,623,213	69,153,447	66,683,681	64,213,915	61,744,149	59,274,383	56,804,617	54,334,851	51,865,085	49,395,319	46,925,553	44,455,787	41,986,021	39,516,255	37,046,489	34,576,723	32,106,958	
Depreciation (30 years)														2,469,766	2,469,766	2,469,766	2,469,766	2,469,766	2,469,766	2,469,766	2,469,766	2,469,766	2,469,766	2,469,766	2,469,766	2,469,766	2,469,766	2,469,766	2,469,766	2,469,766	2,469,766	
Closing Balance														71,623,213	69,153,447	66,683,681	64,213,915	61,744,149	59,274,383	56,804,617	54,334,851	51,865,085	49,395,319	46,925,553	44,455,787	41,986,021	39,516,255	37,046,489	34,576,723	32,106,958	29,637,192	
2033 Assets -- 30 year																																
Opening Balance															9,205,802	8,898,942	8,592,082	8,285,222	7,978,362	7,671,502	7,364,642	7,057,782	6,750,921	6,444,061	6,137,201	5,830,341	5,523,481	5,216,621	4,909,761	4,602,901	4,296,041	
Depreciation (30 years)															306,860	306,860	306,860	306,860	306,860	306,860	306,860	306,860	306,860	306,860	306,860	306,860	306,860	306,860	306,860	306,860	306,860	
Closing Balance															8,898,942	8,592,082	8,285,222	7,978,362	7,671,502	7,364,642	7,057,782	6,750,921	6,444,061	6,137,201	5,830,341	5,523,481	5,216,621	4,909,761	4,602,901	4,296,041	3,989,181	
2034 Assets -- 30 year																																
Opening Balance																2,480,782	2,398,090	2,315,397	2,232,704	2,150,011	2,067,319	1,984,626	1,901,933	1,819,240	1,736,548	1,653,855	1,571,162	1,488,469	1,405,777	1,323,084	1,240,391	

Depreciation (30 years)	82,693	82,693	82,693	82,693	82,693	82,693	82,693	82,693	82,693	82,693	82,693	82,693	82,693	82,693	82,693	82,693
Closing Balance	2,398,090	2,315,397	2,232,704	2,150,011	2,067,319	1,984,626	1,901,933	1,819,240	1,736,548	1,653,855	1,571,162	1,488,469	1,405,777	1,323,084	1,240,391	1,157,698
2035 Assets -- 30 year																
Opening Balance		29,681,046	28,691,678	27,702,310	26,712,941	25,723,573	24,734,205	23,744,837	22,755,469	21,766,100	20,776,732	19,787,364	18,797,996	17,808,628	16,819,259	15,829,891
Depreciation (30 years)		989,368	989,368	989,368	989,368	989,368	989,368	989,368	989,368	989,368	989,368	989,368	989,368	989,368	989,368	989,368
Closing Balance		28,691,678	27,702,310	26,712,941	25,723,573	24,734,205	23,744,837	22,755,469	21,766,100	20,776,732	19,787,364	18,797,996	17,808,628	16,819,259	15,829,891	14,840,523
2036 Assets -- 30 year																
Opening Balance			63,149,599	61,044,613	58,939,626	56,834,639	54,729,653	52,624,666	50,519,680	48,414,693	46,309,706	44,204,720	42,099,733	39,994,746	37,889,760	35,784,773
Depreciation (30 years)			2,104,987	2,104,987	2,104,987	2,104,987	2,104,987	2,104,987	2,104,987	2,104,987	2,104,987	2,104,987	2,104,987	2,104,987	2,104,987	2,104,987
Closing Balance			61,044,613	58,939,626	56,834,639	54,729,653	52,624,666	50,519,680	48,414,693	46,309,706	44,204,720	42,099,733	39,994,746	37,889,760	35,784,773	33,679,786
2037 Assets -- 5 year																
Opening Balance				60,747,418	48,597,935	36,448,451	24,298,967	12,149,484								
Depreciation (5 years)				12,149,484	12,149,484	12,149,484	12,149,484	12,149,484								
Closing Balance				48,597,935	36,448,451	24,298,967	12,149,484	-								
2037 Assets -- 30 year																
Opening Balance				65,804,226	63,610,752	61,417,278	59,223,803	57,030,329	54,836,855	52,643,381	50,449,907	48,256,432	46,062,958	43,869,484	41,676,010	39,482,536
Depreciation (30 years)				2,193,474	2,193,474	2,193,474	2,193,474	2,193,474	2,193,474	2,193,474	2,193,474	2,193,474	2,193,474	2,193,474	2,193,474	2,193,474
Closing Balance				63,610,752	61,417,278	59,223,803	57,030,329	54,836,855	52,643,381	50,449,907	48,256,432	46,062,958	43,869,484	41,676,010	39,482,536	37,289,061
2038 Assets -- 30 year																
Opening Balance					50,242,793	48,568,034	46,893,274	45,218,514	43,543,754	41,868,995	40,194,235	38,519,475	36,844,715	35,169,955	33,495,196	31,820,436
Depreciation (30 years)					1,674,760	1,674,760	1,674,760	1,674,760	1,674,760	1,674,760	1,674,760	1,674,760	1,674,760	1,674,760	1,674,760	1,674,760
Closing Balance					48,568,034	46,893,274	45,218,514	43,543,754	41,868,995	40,194,235	38,519,475	36,844,715	35,169,955	33,495,196	31,820,436	30,145,676
2040 Assets -- 30 year																
Opening Balance							5,299,110	5,122,473	4,945,836	4,769,199	4,592,562	4,415,925	4,239,288	4,062,651	3,886,014	3,709,377
Depreciation (30 years)							176,637	176,637	176,637	176,637	176,637	176,637	176,637	176,637	176,637	176,637
Closing Balance							5,122,473	4,945,836	4,769,199	4,592,562	4,415,925	4,239,288	4,062,651	3,886,014	3,709,377	3,532,740
2041 Assets -- 30 year								17,483,816	16,901,022	16,318,229	15,735,435	15,152,641	14,569,847	13,987,053	13,404,259	12,821,465
Opening Balance								582,794	582,794	582,794	582,794	582,794	582,794	582,794	582,794	582,794
Depreciation (30 years)								16,901,022	16,318,229	15,735,435	15,152,641	14,569,847	13,987,053	13,404,259	12,821,465	12,238,671
Closing Balance																
2042 Assets -- 5 year									68,730,128	54,984,102	41,238,077	27,492,051	13,746,026			
Opening Balance									13,746,026	13,746,026	13,746,026	13,746,026	13,746,026			
Depreciation (5 years)									54,984,102	41,238,077	27,492,051	13,746,026	-			
Closing Balance																
2042 Assets -- 10 year									426,926,086	384,233,477	341,540,869	298,848,260	256,155,652	213,463,043	170,770,434	128,077,826
Opening Balance									42,692,609	42,692,609	42,692,609	42,692,609	42,692,609	42,692,609	42,692,609	42,692,609
Depreciation (10 years)									384,233,477	341,540,869	298,848,260	256,155,652	213,463,043	170,770,434	128,077,826	85,385,217
Closing Balance																
2042 Assets -- 30 year									103,586,984	100,134,084	96,681,185	93,228,285	89,775,386	86,322,486	82,869,587	79,416,687
Opening Balance									3,452,899	3,452,899	3,452,899	3,452,899	3,452,899	3,452,899	3,452,899	3,452,899
Depreciation (30 years)									100,134,084	96,681,185	93,228,285	89,775,386	86,322,486	82,869,587	79,416,687	75,963,788
Closing Balance																
2043 Assets -- 30 year										20,357,427	19,678,846	19,000,266	18,321,685	17,643,104	16,964,523	16,285,942
Opening Balance										678,581	678,581	678,581	678,581	678,581	678,581	678,581
Depreciation (30 years)										19,678,846	19,000,266	18,321,685	17,643,104	16,964,523	16,285,942	15,607,361
Closing Balance																
2044 Assets -- 30 year											6,889,842	6,660,181	6,430,519	6,200,858	5,971,196	5,741,535
Opening Balance											229,661	229,661	229,661	229,661	229,661	229,661
Depreciation (30 years)											6,660,181	6,430,519	6,200,858	5,971,196	5,741,535	5,511,874
Closing Balance																
2047 Assets -- 5 year														77,761,831	62,209,465	46,657,099
Opening Balance														15,552,366	15,552,366	15,552,366
Depreciation (5 years)														62,209,465	46,657,099	31,104,733
Closing Balance																

RELIABILITY	Residential	Small C&I	Large C&I	Not Defined	Total Reliability	**ASSETS**	**Energy & Demand**	**O&M**	**Emissions (CO2)**	TOTAL PRIMARY	Oliver Exh. 8
TUG	30,213,660	374,938,080	1,476,355,783	4,959,802	1,886,467,325	47,287,983		107,410,608		2,041,165,916	2,041,165,916
Transformer Retrofit	7,172,999	149,957,793	82,802,426		239,933,218			10,071,665		250,004,883	250,004,884
IVVC					-		359,982,087	100,266,070	86,256,721	546,504,878	546,504,878
DSDR					-		192,539,000	16,619,000	57,192,000	266,350,000	232,348,694
SOG - DEC	46,986,086	623,932,977	379,618,459		1,050,537,522		78,997,663			1,129,535,185	1,129,535,184
SOG - DEP	46,312,439	739,265,853	139,399,592		924,977,884		34,251,650			959,229,534	959,229,534
DEP Oil Breaker Replacements	4,452,812	25,111,390	50,624,840		80,189,042	40,183,659				120,372,701	54,341,285
DEC Oil Breaker Replacements	4,132,045	27,771,507	12,178,530		44,082,082	15,833,130				59,915,212	97,863,006
DEP Trans Bank Replacements	1,790,862	4,141,082	1,340,491		7,272,435	29,355,623				36,628,058	33,221,648
DEC Trans Bank Replacements	2,493,132	7,434,531	4,521,460		14,449,123	14,102,246				28,551,369	23,212,261
Substation Flooding -- Reinforce					-	21,817,816	-	-		21,817,816	19,788,759
LDI/HIS	16,226,891	720,539,386	1,122,837,611		1,859,603,888	-	-	-		1,859,603,888	1,859,603,889
substation Relo -- Whiteville	1,110,580	375,873			1,486,453	4,964,803				6,451,255	5,851,288
Trans -- DEP line projects (less 9.7% SC)				88,673,349	88,673,349					88,673,349	89,066,144
Trans -- DEC line projects (less 18.3% SC)				1,908,658,683	1,908,658,683					1,908,658,683	1,899,313,965
Trans Upgrades -- DEP (less 9.7% SC)				-	-					-	
Trans Upgrades -- DEC (less 18.3% SC)				-	-					-	
TOTALS	160,891,506	2,673,468,472	3,269,679,192	2,002,291,835	8,106,331,004	173,545,259	665,770,400	234,367,343	143,448,721	9,323,462,727	9,241,051,335
	2.64%	43.80%	53.57%								

Reliability Benefits as a % of Total:	86.9%
Residential reliability benefits:	213,668,321

Program/Sub-Component	Present Value	2027	2032	2037	2042	2047
ADMS (Self-Optimizing Grid)	53,722,192	-	62,369,028	-	79,837,629	-
Enterprise Communications	233,553,437	-	271,144,948	-	347,088,457	-
Enterprise Applications	78,380,613	31,506,325	35,646,514	40,330,759	45,630,552	51,626,781
ISOP Programs	18,717,674	7,523,865	8,512,562	9,631,183	10,896,799	12,328,728
DER Dispatch Tool	20,960,980	8,425,597	9,532,790	10,785,476	12,202,777	13,806,322
Total	405,334,895	47,455,786	387,205,842	60,747,418	495,656,214	77,761,831

Oliver Exh. 10 Capital Detail NC ONLY	DEC			DEP			TOTAL			
	2020	2021	2022	2020	2021	2022	2020	2021	2022	GIP TOTAL
TOTALS	326,766,615	454,473,324	550,147,959	227,735,103	331,467,788	428,638,211	554,501,718	785,941,112	978,786,170	2,319,229,000
Self-Optimizing Grid (Total)	90,604,000	153,733,000	175,802,000	61,528,000	86,057,000	154,752,000	152,132,000	239,790,000	330,554,000	722,476,000
Fixed Costs (ADMS and POC)	9,417,344	8,853,752	11,516,811	6,017,683	5,657,754	7,410,399	15,435,027	14,511,506	18,927,210	48,873,743
Variable Costs (segments/capacity/conn)	81,186,656	144,879,248	164,285,189	55,510,317	80,399,246	147,341,601	136,696,973	225,278,494	311,626,790	673,602,257
Integrated Volt-VAr Control (total)	30,797,000	86,311,000	89,550,000	-	5,000,000	5,000,000	30,797,000	91,311,000	94,550,000	216,658,000
Transmission H & R (Total)	13,985,730	20,417,670	68,058,900	8,933,625	9,568,905	12,785,010	22,919,355	29,986,575	80,843,910	133,749,840
Line H&R (Trans + Distribution)	11,966,400	20,417,670	68,058,900	595,575	8,735,100	10,799,760	12,561,975	29,152,770	78,858,660	120,573,405
Substation Flooding	-	-	-	8,338,050	794,100	1,588,200	8,338,050	794,100	1,588,200	10,720,350
Substation Animal Mitigation	2,019,330	-	-	-	39,705	397,050	2,019,330	39,705	397,050	2,456,085
Targeted Undergrounding	6,424,000	15,313,000	38,104,000	8,628,000	19,524,000	26,550,000	15,052,000	34,837,000	64,654,000	114,543,000
Distribution Transformer Retrofit	-	-	8,293,000	30,105,000	42,053,000	37,568,000	30,105,000	42,053,000	45,861,000	118,019,000
Long Dur Interruption/High Impact Sites	2,354,000	5,725,000	3,245,000	6,881,000	4,978,000	3,912,000	9,235,000	10,703,000	7,157,000	27,095,000
Transmission Transformer Bank Replace	6,193,000	18,174,000	9,274,000	25,019,000	38,514,000	19,217,000	31,212,000	56,688,000	28,491,000	116,391,000
Oil Breaker Replacements	28,244,000	53,998,000	33,415,000	19,654,000	20,051,000	44,925,000	47,898,000	74,049,000	78,340,000	200,287,000
Enterprise Communications Total	26,989,547	35,877,788	40,895,277	25,807,426	32,282,118	49,964,962	52,796,973	68,159,906	90,860,239	211,817,118
Next Gen Cellular	1,765,025	2,918,856	1,430,751	2,617,183	2,617,183	255,978	4,382,208	5,536,039	1,686,729	11,604,976
Mission Critical Voice	227,406	-	10,084,885	146,103	12,948,245	29,061,474	373,509	12,948,245	39,146,359	52,468,113
POC	394,315	0	0	256,149	0	0	650,464	-	-	650,464
Biz WAN	0	149,505	149,505	0	158,741	158,741	-	308,246	308,246	616,492
Grid WAN	4,214,704	1,208,846	747,900	5,198,889	2,617,544	79,410	9,413,593	3,826,390	827,310	14,067,293
Mission Critical Data Transport	16,784,625	24,107,526	23,408,744	13,322,647	11,355,628	18,129,300	30,107,272	35,463,154	41,538,044	107,108,470
Towers Shelters Pow Sup	2,450,868	6,961,068	4,815,343	3,515,481	2,317,612	2,110,765	5,966,349	9,278,680	6,926,108	22,171,137
Network Asset Systems	312,240	407,387	258,149	202,832	267,165	169,294	515,072	674,552	427,443	1,617,067
Vehical Area Network	840,364	124,600	-	548,142	-	-	1,388,506	124,600	-	1,513,106
Distribution Automation	36,142,000	17,863,000	61,382,000	16,322,000	32,881,000	29,696,000	52,464,000	50,744,000	91,078,000	194,286,000
Transmission System Intelligence	24,008,000	30,290,000	8,414,000	6,829,000	11,311,000	5,559,000	30,837,000	41,601,000	13,973,000	86,411,000
Enterprise Applications	4,348,000	3,140,000	9,555,000	1,361,000	3,211,000	6,232,000	5,709,000	6,351,000	15,787,000	27,847,000
Integrated Systems Operations Planning	3,028,000	379,000	749,000	1,830,000	233,000	431,000	4,858,000	612,000	1,180,000	6,650,000
DER Dispatch Tool	1,738,000	2,032,000	762,000	1,118,000	1,307,000	490,000	2,856,000	3,339,000	1,252,000	7,447,000
Power Electronics for Volt/VAr Control	-	347,000	347,000	36,000	532,000	532,000	36,000	879,000	879,000	1,794,000
Physical and Cyber Security Total	51,911,338	10,872,866	2,301,782	13,683,052	23,964,765	31,024,239	65,594,390	34,837,631	33,326,021	133,758,042
Substation Phys Security	47,117,700	7,254,630	-	7,742,475	20,170,140	28,428,780	54,860,175	27,424,770	28,428,780	110,713,725
Windows Based Unit Change outs	822,690	-	-	-	-	-	822,690	-	-	822,690
Device Entry Alert System	1,197,327	745,237	0	770,410	479,416	0	1,967,737	1,224,653	-	3,192,390
Secure Access Device Mgmt	1,728,621	1,512,999	1,021,782	1,112,267	973,527	657,464	2,840,888	2,486,526	1,679,246	7,006,660
Line Device Protection**	1,045,000	1,360,000	1,280,000	4,057,900	2,341,682	1,937,995	5,102,900	3,701,682	3,217,995	12,022,577
Mission Critical Voice & Data Total	17,012,031	24,107,526	33,493,629	13,468,750	24,303,873	47,190,774	30,480,781	48,411,399	80,684,403	159,576,583
Enterprise Comm's Total w/o	309,754,584	430,365,798	516,654,330	214,266,353	307,163,915	381,447,437	524,020,937	737,529,713	898,101,767	2,159,652,417

Program/Subcomponent	Capital $ per Oliver Exh. 10 (in millions)	Suggested Adjustments	Capital $ per NCJC/NCSEA If GIP Not Rejected
Merits Approval w/Conditions	$ 374.16	$ -	$ 374.16
Integrated Volt/VAr Control	$ 216.66	$ -	$ 216.66
Transmission H&R -- Flood & Animal Mitigation Components	$ 13.18	$ -	$ 13.18
Long Duration Interruption/High Impact Sites	$ 27.10	$ -	$ 27.10
Enterprise Applications/ISOP Software/DER Software	$ 41.94	$ -	$ 41.94
Cyber and Physical Security, excluding substation physical	$ 23.04	$ -	$ 23.04
Enterprise Comm's excluding new data and voice networks	$ 52.24	$ -	$ 52.24
Merits Approval w/Material Modifications & Conditions	$ 843.05	$ (336.80)	$ 506.25
Self-Optimizing Grid/Advanced Dist Mgmt System	$ 722.48	$ (336.80)	$ 385.67
Transmission H&R (DER Capacity Upgrades ONLY)	$ 120.57	$ -	$ 120.57
Merits Rejection	$ 659.95	$ (659.95)	$ -
Targeted Undergrounding	$ 114.54	$ (114.54)	$ -
Distribution Transformer Retrofit	$ 118.02	$ (118.02)	$ -
Transfomer Bank Replacement	$ 116.39	$ (116.39)	$ -
Oil-Filled Breaker Replacement	$ 200.29	$ (200.29)	$ -
Substation Perimeter Security	$ 110.71	$ (110.71)	$ -
Merits Rejection Pending Further Evaluation	$ 440.27	$ (440.27)	$ -
Enterprise Comm's, new data & voice (tech/econ make/buy analyses)	$ 159.58	$ (159.58)	$ -
Distribution Automation (benefit-cost analysis)	$ 194.29	$ (194.29)	$ -
Transmission System Intelligence (benefit-cost analysis)	$ 86.41	$ (86.41)	$ -
GIP Components Being Considered in Other Dockets	$ 192.48	$ (192.48)	$ -
Energy Storage (NCUC #E-100, Sub 164)	$ 129.00	$ (129.00)	$ -
Electric Transportation (NCUC #E-2 Sub 1197 & E-7 Sub 1195)	$ 63.48	$ (63.48)	$ -
TOTALS	$ 2,509.92	$ (1,629.51)	$ 880.41

	DEC			DEP			TOTAL			
	2020	2021	2022	2020	2021	2022	2020	2021	2022	GIP TOTAL
TOTALS	51,911,338	10,872,866	2,301,782	13,683,052	23,964,765	31,024,239	65,594,390	34,837,631	33,326,021	133,758,042
Substation Phys Security	47,117,700	7,254,630	-	7,742,475	20,170,140	28,428,780	54,860,175	27,424,770	28,428,780	110,713,725
Windows Based Unit Change outs	822,690	-	-	-	-	-	822,690	-	-	822,690
Device Entry Alert System	1,197,327	745,237	0	770,410	479,416	0	1,967,737	1,224,653	-	3,192,390
Secure Access Device Mgmt	1,728,621	1,512,999	1,021,782	1,112,267	973,527	657,464	2,840,888	2,486,526	1,679,246	7,006,660
Line Device Protection**	1,045,000	1,360,000	1,280,000	4,057,900	2,341,682	1,937,995	5,102,900	3,701,682	3,217,995	12,022,577

	DEC			DEP			TOTAL			
	2020	2021	2022	2020	2021	2022	2020	2021	2022	GIP TOTAL
TOTALS	26,989,547	35,877,788	40,895,277	25,807,426	32,282,118	49,964,962	52,796,973	68,159,906	90,860,239	211,817,118
Next Gen Cellular	1,765,025	2,918,856	1,430,751	2,617,183	2,617,183	255,978	4,382,208	5,536,039	1,686,729	11,604,976
Mission Critical Voice	227,406	-	10,084,885	146,103	12,948,245	29,061,474	373,509	12,948,245	39,146,359	52,468,113
POC	394,315	0	0	256,149	0	0	650,464	-	-	650,464
Biz WAN	0	149,505	149,505	0	158,741	158,741	-	308,246	308,246	616,492
Grid WAN	4,214,704	1,208,846	747,900	5,198,889	2,617,544	79,410	9,413,593	3,826,390	827,310	14,067,293
Mission Critical Data Transport	16,784,625	24,107,526	23,408,744	13,322,647	11,355,628	18,129,300	30,107,272	35,463,154	41,538,044	107,108,470
Towers Shelters Pow Sup	2,450,868	6,961,068	4,815,343	3,515,481	2,317,612	2,110,765	5,966,349	9,278,680	6,926,108	22,171,137
Network Asset Systems	312,240	407,387	258,149	202,832	267,165	169,294	515,072	674,552	427,443	1,617,067
Vehical Area Network	840,364	124,600	-	548,142	-	-	1,388,506	124,600	-	1,513,106
Mission Critical Voice & Data Total	17,012,031	24,107,526	33,493,629	13,468,750	24,303,873	47,190,774	30,480,781	48,411,399	80,684,403	159,576,583
Enterprise Comm's Total w/o	9,977,516	11,770,262	7,401,648	12,338,676	7,978,245	2,774,188	22,316,192	19,748,507	10,175,836	52,240,535

Duke Energy Progress
Response to
NCJC Data Request
Data Request No. 6

Docket No. E-2, Sub 1219

Date of Request: **February 25, 2020**
Date of Response: **March 3, 2020**

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The attached response to NCJC Data Request No. 6-3, was provided to me by the following individual(s): Karen Ann Ralph, Lead Planning & Regulatory Support Specialist, and was provided to NCJC under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Progress

Request:

6-3. Refer to the DEP transmission line rebuild and upgrade programs as described in Oliver testimony exhibits generally. Please provide:
a. The total number of DEP transmission-voltage line miles for each voltage level
b. The total number of DEP transmission-voltage support structures
c. The total number of DEP transmission-voltage support structure failures in the past five years.
d. A description of DEP's transmission-voltage support structure inspection program
e. The total number of DEP transmission-voltage static line failures in the past five years.
f. A description of DEP's transmission-voltage static line (and/or conductor) inspection program.

Response:

See attachment DEP NCJC DR 6-3

DEP NCJC DR 6-3.docx

Circuit voltage and mileage	115 kV	230 kV	500 kV	69 kV	Grand Total
Duke Energy Progress	2,551	3,390	292	12	6,244

b. DEP has ~48,000 support structures on the transmission system. Each structure may consist of multiple poles (in the case of an H-frame structure), a tower, etc. DEP has ~85,000 poles.

c. Since 2015 there have been approximately 3,700 poles that failed inspection criteria and were identified for replacement.

d. DEP Circuit Inspection Program Description:

- All transmission circuits are inspected via aerial patrol on a nominal frequency of 6 months. This inspection is intended to capture significant threats such as leaning structures, vegetation, or other notable deficiencies that can be observed from overhead.
- Circuits with wood poles are inspected as part of ground patrols on a nominal frequency of 6 years. Industry standard wood pole inspection procedures are implemented, including probe testing and hammer testing.
- Non-wood circuits (steel and concrete structures) are inspected on a nominal frequency of 12 years. Inspections of all structures include noting any insulator, hardware, conductor, or grounding system deficiencies that warrant correction.

e. In the past 5 years there have been 10 static failures resulting in transmission system interruptions.

f. See answer to d. above.

Duke Energy Progress
Response to
NCJC Data Request
Data Request No. 6

Docket No. E-2, Sub 1219

Date of Request: February 25, 2020
Date of Response: March 3, 2020

☐ **CONFIDENTIAL**

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The attached response to NCJC Data Request No. 6-8, was provided to me by the following individual(s): Karen Ann Ralph, Lead Planning & Regulatory Support Specialist, and was provided to NCJC under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Progress

Request:

6-8. Refer to the demonstration of Copperleaf C-55 software provided by Duke Energy to NCJC on Thursday, February 20th. A slide titled "Transmission Line Risk Final Outputs" was presented in an introduction which preceded the demonstration. The following equation and supporting information were shown on this slide:
(benefits =) Frequency * [(Redundancy value * Time to repair (hours)) + Initial Duration (hours)] * Load Risk (kW) * Duration Cost ($/kWh)
where 1) Frequency is derived from asset count and probability of failure; 2) Redundancy Value is determined by line segment characteristics, either radial (value = 0.05) or networked (value =0.005); 3) Time to repair (hours) and initial outage duration (hours) is determined by an engineer familiar with the line segment; 4) Load Risk (kW) is estimated based on voltage; and 5) Duration Cost ($/kWh) is based on the US DOE's Interruption Cost Estimator values.
Provide the following:
a. Is the "probability of Failure" expressed as "Probability of Failure per Asset per year"? If not, please explain the actual expression of the variable.
b. What is the total average "probability of Failure" for all Transmission Conductor assets in C-55?
c. What is the total average "probability of Failure" for all of the Transmission Conductor assets in C-55 as determined by the information input into C-55 by Duke Energy?
d. What is DEP's historical actual average transmission conductor failure rate?
e. What is the total average "probability of Failure" for all Transmission Equipment assets in C-55?
f. What is the total average "probability of Failure" for all Transmission Equipment assets in C-55 as determined by the information input into C-55 by Duke Energy?
g. What is DEP's historical actual average transmission equipment failure rate?
h. What is the total average "probability of Failure" for all Transmission Structure assets in C-55?
i. What is the total average "probability of Failure" for all Transmission Structure assets in C-55 as determined by the information input into C-55 by Duke Energy?
j. What is DEP's historical actual average transmission structure failure rate?
k. What is the overall average "probability of Failure" for all transmission assets in C-55?
l. What is the overall average "probability of Failure" for all transmission assets in C-55 as determined by the information input into C-55 by Duke Energy?
m. What is DEP's overall historical actual average transmission asset failure rate?

Response:

a. Probability of Failure is expressed as Probability of Failure per Asset per year.
b. Probability of Failure is based on the user defining the Asset Condition for a given project. Probability of failure can only be provided based on information input into C55 by Duke Energy.
c. The Probability of Failure curve is applicable to all line assets including conductor, static, structures, and switches. The average probability of failure for line assets modeled in Copperleaf C55 is approximately 0.25% per asset/span per year.
d. Duke Energy does not formally track failure rates for circuit equipment/assets. Note that due to redundancy of the Transmission system, not all failures result in outages and there are not industry accepted criteria for how to track circuit equipment failure rates.
e. Refer to b.
f. Refer to c.
g. Refer to d.
h. Refer to b.
i. Refer to c.
j. Refer to d.
k. Refer to b.
l. Refer to c.
m. Refer to d.

Duke Energy Carolinas
Response to
NCJC Data Request
Data Request No. 8

Docket No. E-7, Sub 1214

Date of Request: January 31, 2020
Date of Response: February 10, 2020

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The attached response to NCJC Data Request No. 8-28, was provided to me by the following individual(s): Karen Ann Ralph, Lead Planning and Regulatory Support Specialist, and was provided to NCJC under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Carolinas

Request:

8-28. Refer to DEC's response to NCJC DR 5-54, which states ". . . in the last 5 years, line equipment failures on the DEC 44kV Transmission system have resulted in 111,477 customer outages, totaling 21,179,109 customer minutes interrupted."
a. How many individual instances of line equipment failures are represented in these statistics?
b. How many individual pieces of 44kV line equipment does DEC have today?

Response:

a. 85 unique events are represented in the referenced statistics.
b. Line equipment assets are not all uniquely tracked and identified as pieces of equipment in the Duke Energy Transmission Asset Management system, therefore a number cannot be provided. Example of line equipment include: Conductor, Static, Crossarms, Poles, Guy Wire, Insulators, Connectors, Clamps, Jumpers, Cross Braces, Switches, Hardware. A 44kV line rebuild project replaces all of these assets on a given line.

Duke Energy Carolinas
Response to
NCJC Data Request
Data Request No. 8

Docket No. E-7, Sub 1214

Date of Request: January 31, 2020
Date of Response: February 10, 2020

[ ] **CONFIDENTIAL**

[X] **NOT CONFIDENTIAL**

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The attached response to NCJC Data Request No. 8-1, was provided to me by the following individual(s): Karen Ann Ralph, Lead Planning and Regulatory Support Specialist, and was provided to NCJC under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Carolinas

Request:

8-1. Refer to forthcoming responses from DEC for NCJC DRs 6-08 and 6-09.
a. How many miles of 44kV does DEC have today?
b. How many miles of 44kV upgrades will deliver a capacity increase, and to what capacity?
c. How many distribution circuits does DEC have? DEP?

Response:

a. Approximately 2,800 miles
b. In the 3-year Grid Improvement Plan there are no capacity increase projects associated with the 44kV rebuilds. 44kV line rebuilds in the 3-year plan total approximately 80 miles and are all driven by reliability improvements, these rebuilds will reduce the probability of circuit failures that could result in customer outages. This work is all part of Phase I as described in Oliver Exhibit 4 page 36. These 44kV circuits are rebuilt to 100kV standards with regards to structure design, insulation level, and conductor sizing. There is no timeline established for Phase II, voltage conversions to 100kV, which would deliver the capacity increase.
c. DEC NC has 2,093 circuits as of November 2019.
DEP NC has 1,077 circuits as of November 2019.

Duke Energy Progress
Response to
NCJC Data Request
Data Request No. 6

Docket No. E-2, Sub 1219

Date of Request: **February 25, 2020**
Date of Response: **March 3, 2020**

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The attached response to NCJC Data Request No. 6-9, was provided to me by the following individual(s): Karen Ann Ralph, Lead Planning & Regulatory Support Specialist, and was provided to NCJC under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Progress

Request:

6-9. Refer to the demonstration of Copperleaf C-55 software provided by Duke Energy to NCJC on Thursday, February 20th. A slide titled "Transmission Line Risk Final Outputs" was presented in an introduction which preceded the demonstration. The following equation and supporting information were shown of this slide:
(benefits =) Frequency * [(Redundancy value * Time to repair (hours)) + Initial Duration (hours)] * Load Risk (kW) * Duration Cost ($/kWh)
where 1) Frequency is derived from asset count and probability of failure; 2) Redundancy Value is determined by line segment characteristics, either radial (value = 0.05) or networked (value =0.005); 3) Time to repair (hours) and initial outage duration (hours) is determined by an engineer familiar with the line segment; 4) Load Risk (kW) is estimated based on voltage; and 5) Duration Cost ($/kWh) is based on the US DOE's Interruption Cost Estimator values.
Provide the following:
a. Is the "probability of Failure" expressed as "Probability of Failure per Asset per year"? If not, please explain the actual expression of the variable.
b. Do the "Redundancy Value" rates shown above (0.05 and 0.005) represent the probabilities that a second transmission line failure will occur during the time that a transmission line, which the first line supports, is out of service because of an initial transmission line failure ("Initial Outage")? If not, please explain.
c. Confirm that with the Redundancy Value rates indicated (0.05 and 0.005), Duke Energy is indicating a 5% likelihood that a second transmission line failure will occur on the redundant line supporting a radial transmission line that has just failed. If not, please explain.
d. Confirm that Duke does not use or calculate the potential load lost per circuit analyzed, but instead uses an estimated load lost based on voltage.
e. Provide the minimum and maximum duration of outages used for "Transmission conductor failures" in the Copperleaf program analysis.
f. Provide the minimum and maximum duration of outages used for "Transmission equipment failures" in the Copperleaf program analysis.
g. Provide the minimum and maximum duration of outages used for "Transmission structure failures" in the Copperleaf program analysis.
h. Provide the Interruption Cost Estimator values in dollars used by the C-55 software for all durations between minimum and maximum as indicated in responses to e, f, and g.
i. Confirm that the line "Time to Repair and Initial Outage: Entered by User" presented on the slide should be "Time to Repair an Initial Outage: Entered by User". If this cannot be confirmed, explain why time to repair and initial outage should be separately estimated and added together, or some other explanation as appropriate.

Response:

a. Refer to DEP NCJC Data Request 6-8a.
b. Yes.
c. Yes.
d. Correct, the load lost per circuit is estimated based on voltage class.
e. There are no minimum or maximum restrictions in C55, these are based on user input for the specific project being analyzed.
f. See e.
g. See e.
h. C55 is using a customer mix assuming 95% residential, 3% Small C&I, and 2% Large C&I. A blended rate for the DEP region based on NC and SC is used: the duration cost (cost per unserved kWh) is $8.23.
i. Initial outage is the duration that actual customer outages are anticipated, which is concluded through either switching, temporary repair, or permanent repair (all classified as initial repair). Time to repair is the duration that the transmission system is in a loss of redundancy condition, starting with the initiating event and concluding when the permanent repair is completed.

Duke Energy Carolinas
Response to
North Carolina Sustainable Energy Association Data Request
Data Request No. NCSEA 3

Docket No. E-7, Sub 1214

Date of Request: **December 20, 2019**
Date of Response: **January 2, 2020**

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The attached response to NCSEA Data Request No. 3-31, was provided to me by the following individual(s): Karen Ann Ralph, Senior Financial Analyst, Distribution Finance – Carolinas, and was provided to NCSEA under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Carolinas

Request:

Refer to the list of 55 neighborhoods identified for targeted undergrounding indicated in TUG_DEC-DEP_NC_19-22_Consolidated_vF rev1 8-9-19.xlsx.
a. Provide maps indicating the locations of each neighborhood (55 in all) which indicates the surrounding areas, such that the neighborhoods can be located in the context of counties, cities, towns, etc.
b. Provide circuit maps which overlay and identify each neighborhood (55 in all) which can be used to help NCSEA understand which circuit(s) and substation serves each neighborhood.

Response:

a. Formatted maps have not been created that indicate locations of neighborhoods and circuit map overlays. This information is contained in an electronic mapping tool.
b. See response to item a.

Duke Energy Carolinas
Response to
NCJC Data Request
Data Request No. 5

Docket No. E-7, Sub 1214

Date of Request: January 16, 2020
Date of Response: January 27, 2020

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The attached response to NCJC Data Request No. 5-32, was provided to me by the following individual(s): Karen Ann Ralph, Senior Financial Analyst, Distribution Finance – Carolinas, and was provided to NCJC under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Carolinas

Request:

5-32. Refer to DEC's response to NCSEA DR 3-26 (b), which states: "Duke does not currently track, record, or report momentary outages. For estimation of momentary interruptions refer to the responses for NCSEA 3-11." Refer also to NCSEA DR 3-11, which indicates that momentaries per sustained outage are calculated using a MAIFI (momentary) per SAIFI ratio.
a. Explain how DEC derived the MAIFI values employed in the response to NCSEA DR 3-11 if it is does not track momentary outages.
b. Provide MAIFI(Breaker) and SAIFI data for each year from 2011 to 2018 for DEC. If this data is not available, explain why DEC stopped tracking MAIFI data after 2010.

Response:

a. As indicated in the Excel spreadsheet supporting the company's response to NCSEA DR 3-11 (titled NCSEA 3-11 1997-2010 DEC SAIFI and MAIFI) the MAIFI is the substation breakers in DEC where momentary operations were recorded & stored from 1997 – 2010.
b. MAIFIBreaker is not available after 2010. The company stopped the manual process of capturing & storing MAIFIBreaker after 2010 because the program used to store the data became obsolete.

Duke Energy Progress
Response to
NCJC Data Request
Data Request No. 5

Docket No. E-2, Sub 1219

Date of Request: **January 31, 2020**
Date of Response: **February 10, 2020**

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Confidential Responses are provided pursuant to Confidentiality Agreement

The attached response to NCJC Data Request No. 5-18, was provided to me by the following individual(s): Karen Ann Ralph, Lead Planning & Regulatory Support Specialist, and was provided to NCJC under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Progress

Request:

5-18. Refer to DEP's response to NCJC DEP DR 2-17(f), which states "In the last 5 years, Conductor failures on the DEC 44kV Transmission system have resulted in 14,008 customer outages, totaling 2,180,102 customer minutes interrupted."
a. How many individual instances of 44kV conductor failure are represented in these statistics?
b. How many miles of 44kV lines does DEP have?

Response:

a. This question is not applicable to DEP since DEP has no 44kV transmission lines.
b. 0 miles

Duke Energy Carolinas
Response to
NCJC Data Request
Data Request No. 5

Docket No. E-7, Sub 1214

Date of Request: January 16, 2020
Date of Response: January 27, 2020

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The attached response to NCJC Data Request No. 5-10, was provided to me by the following individual(s): Karen Ann Ralph, Lead Planning & Regulatory Support Specialist, and was provided to NCJC under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Carolinas

Request:

5-10. Refer to the Oliver testimony regarding the Grid Improvement Plan generally. Assume that all aspects of Duke's Grid Improvement Plan are approved. Provide the improvement over 2018 DEC SAIDI, with and without major event days, Duke expects the Plan will deliver, as well as the year by which Duke expects the improvements to be reflected.

Response:

See attached Excel spreadsheet titled "PS DR 36-5 DEC GIP SAIFI-SAIDI Savings By Year 2019 - 2025 (Revised 11-19-19)". The Company has not done any GIP SAIDI reduction analysis associated with MEDs because their frequency and impact are highly variable from year-to-year.

PS DR 36-5 DEC GIP SAIFI-SAIDI Savings B

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1214
Public Staff Data Request No. 36-5 (Revised 11-19-19)

DEC 2019 - 2024 Scope	Estimated Incremental SAIDI Minutes Reduction in 2019	Estimated Incremental SAIDI Minutes Reduction in 2020	Estimated Incremental SAIDI Minutes Reduction in 2021	Estimated Incremental SAIDI Minutes Reduction in 2022	Estimated Incremental SAIDI Minutes Reduction in 2023	Estimated Incremental SAIDI Minutes Reduction in 2024	Estimated Incremental SAIDI Minutes Reduction in 2025
Total	**2.07**	**1.75**	**4.78**	**8.75**	**10.52**		
SOG	2.07	0.99	3.38	6.65	6.81		
TUG	0.00	0.05	0.22	0.33	0.55		
Transformer Retrofit	0.00	0.09	0.00	0.00	0.00	N/A*	N/A*
LDO/ HIS	0.00	0.55	0.75	1.01	1.15		
Hydraulic Recloser Replacement	0.00	0.07	0.21	0.00	0.10		
Fuse Replacement	0.00	0.00	0.23	0.75	1.90		
Projected # of Customers Served	2,598,518	2,631,647	2,665,198	2,699,177	2,733,589		

DEC 2019 - 2024 Scope	Estimated Incremental SAIFI Reduction in 2019	Estimated Incremental SAIFI Reduction in 2020	Estimated Incremental SAIFI Reduction in 2021	Estimated Incremental SAIFI Reduction in 2022	Estimated Incremental SAIFI Reduction in 2023	Estimated Incremental SAIFI Reduction in 2024	Estimated Incremental SAIFI Reduction in 2025
Total	**0.0166**	**0.0091**	**0.0224**	**0.0460**	**0.0660**		
SOG	0.0166	0.0077	0.0178	0.0379	0.0472		
TUG	0.0000	0.0002	0.0010	0.0015	0.0024		
Transformer Retrofit	0.0000	0.0005	0.0000	0.0000	0.0000	N/A*	N/A*
LDO/ HIS	0.0000	0.0003	0.0006	0.0009	0.0012		
Hydraulic Recloser Replacement	0.0000	0.0004	0.0013	0.0000	0.0006		
Fuse Replacement	0.0000	0.0000	0.0017	0.0057	0.0145		
Projected # of Customers Served	2,598,518	2,631,647	2,665,198	2,699,177	2,733,589		

* The current GIP scope ends in 2022 so there are no estimated **incremental** SAIDI/SAIFI savings beyond 2023

NOTE: We have not included the effect of transmission programs in these estimates, although transmission Grid Improvement programs will certainly improve system reliability. These programs are not quantified because transmission failures occur on a much more infrequent basis and therefore we cannot accurately predict short term impacts on SAIDI and SAIFI. However, when transmission outages do occur they typically affect a large number of customers.

Duke Energy Progress
Response to
NCJC Data Request
Data Request No. 2

Docket No. E-2, Sub 1219

Date of Request: **January 16, 2020**
Date of Response: **January 24, 2020**

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The attached response to NCJC Data Request No. 2-7, was provided to me by the following individual(s): Karen Ann Ralph, Lead Planning & Regulatory Support Specialist, and was provided to NCJC under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Progress

Request:

2-7. Refer to the Oliver testimony regarding the Grid Improvement Plan generally. Assume that all aspects of Duke's Grid Improvement Plan are approved. Provide the improvement over 2018 DEP SAIDI, with and without major event days, Duke expects the Plan will deliver, as well as the year by which Duke expects the improvements to be reflected.

Response:

See attached Excel spreadsheet titled "PS DR 21-11 for the DEP GIP SAIFI-SAIDI Savings By Year 2019 – 2025". The Company has not done any GIP SAIDI reduction analysis associated with MEDs because their frequency and impact are highly variable from year-to-year.

PS DR 21-11 DEP
GIP SAIFI-SAIDI Savir

DEP 2019 - 2023 Scope	Estimated Incremental SAIDI Minutes Reduction in 2019	Estimated Incremental SAIDI Minutes Reduction in 2020	Estimated Incremental SAIDI Minutes Reduction in 2021	Estimated Incremental SAIDI Minutes Reduction in 2022	Estimated Incremental SAIDI Minutes Reduction in 2023	Estimated Incremental SAIDI Minutes Reduction in 2024	Estimated Incremental SAIDI Minutes Reduction in 2025
Total	**13.00**	**2.88**	**10.69**	**12.02**	**12.99**		
SOG	13.00	2.28	7.91	7.25	8.00		
TUG	0.00	0.00	0.04	0.15	0.27		
Transformer Retrofit	0.00	0.37	0.52	0.73	0.72	N/A*	N/A*
LDO/ HIS	0.00	0.08	1.68	2.22	2.56		
Hydraulic Recloser Replacement	0.00	0.12	0.20	0.11	0.06		
Fuse Replacement	0.00	0.03	0.34	1.57	1.39		
Projected # of Customers Served	1,572,852	1,594,854	1,617,163	1,639,785	1,662,723		

DEP 2019 - 2023 Scope	Estimated Incremental SAIFI Reduction in 2019	Estimated Incremental SAIFI Reduction in 2020	Estimated Incremental SAIFI Reduction in 2021	Estimated Incremental SAIFI Reduction in 2022	Estimated Incremental SAIFI Reduction in 2023	Estimated Incremental SAIFI Reduction in 2024	Estimated Incremental SAIFI Reduction in 2025
Total	**0.0823**	**0.0190**	**0.0694**	**0.1032**	**0.0880**		
SOG	0.0823	0.0141	0.0457	0.0652	0.0495		
TUG	0.0000	0.0000	0.0005	0.0014	0.0022		
Transformer Retrofit	0.0000	0.0037	0.0052	0.0073	0.0072	N/A*	N/A*
LDO/ HIS	0.0000	0.0002	0.0141	0.0167	0.0181		
Hydraulic Recloser Replacement	0.0000	0.0008	0.0013	0.0007	0.0004		
Fuse Replacement	0.0000	0.0002	0.0026	0.0119	0.0106		
Projected # of Customers Served	1,572,852	1,594,854	1,617,163	1,639,785	1,662,723		

* The current GIP scope ends in 2022 so there are no estimated **incremental** SAIDI/SAIFI savings beyond 2023

NOTE: We have not included the effect of transmission programs in these estimates, although transmission Grid Improvement programs will certainly improve system reliability. These programs are not quantified because transmission failures occur on a much more infrequent basis and therefore we cannot accurately predict short term impacts on SAIDI and SAIFI. However, when transmission outages do occur they typically affect a large number of customers.

Duke Energy Carolinas
Response to
North Carolina Sustainable Energy Association Data Request
Data Request No. NCSEA 2

Docket No. E-7, Sub 1214

Date of Request: **November 18, 2019**
Date of Response: **November 25, 2019**

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Confidential Responses are provided pursuant to Confidentiality Agreement

The attached response to NCSEA Data Request No. 2-16, was provided to me by the following individual(s): Karen Ann Ralph, Senior Financial Analyst, Distribution Finance - Carolinas, and was provided to NCSEA under my supervision.

Camal O. Robinson
Senior Counsel
Duke Energy Carolinas

Request:

16. Refer to the Oliver testimony regarding stakeholder engagement generally, pages 45-50.
a. Indicate where in any stakeholder engagement presentation or materials Duke Energy presented the likely rate impact of its $2.5 billion Grid Improvement Plan.
b. Indicate where in any stakeholder engagement presentation or materials Duke Energy presented the impact on the average residential customer's bill of its $2.5 billion Grid Improvement Plan.
c. Describe any input Duke Energy received from Stakeholders regarding the overall size of the Grid Improvement Plan, which Duke Energy estimated at $1.6-$2.5 billion over 3 years in stakeholder engagement presentations and materials.
d. Describe any changes Duke Energy made to the overall size of the Grid Improvement Plan, which Duke Energy estimated at $1.6-$2.5 billion over 3 years in stakeholder engagement presentations and materials, as a result of stakeholder feedback.

Response:

a. None.
b. None.
c. Please see Witness Oliver's direct testimony, Exhibits 11, 13, 16, and 17
d. No changes were made to that estimated range.