

OFFICIAL COPY

INFORMATION SHEET

PRESIDING: Chairman Finley and Commissioners Beatty, Brown-Bland, Bailey, Dockham and Patterson

PLACE: Buncombe County Courthouse, Asheville, NC

DATE: January 26, 2016

TIME: 7:00 p.m. – 11:55 p.m.

DOCKET NO.: E-2, Sub 1089

COMPANY: Duke Energy Progress, LLC

DESCRIPTION: Application for a Certificate of Public Convenience and Necessity to Construct a 752 Megawatt Natural Gas-Fueled Electric Generating Facility in Buncombe County near the City of Asheville.

VOLUME:

APPEARANCES

DUKE ENERGY PROGRESS, LLC:

Lawrence B. Somers, Esq.

FOR NORTH CAROLINA WASTE AWARENESS AND REDUCTION NETWORK and THE CLIMATE TIMES:

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FOR THE SIERRA CLUB and MOUNTAINTRUE:

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D.J. Gerken, Esq.

FOR GRANT MILLIN, INTERVENOR:

Pro se

FOR THE USING AND CONSUMING PUBLIC:

Dianna Downey, Esq.

Robert S. Gillam, Esq.

WITNESSES

Please see attached Table of Contents.

EXHIBITS

Hicks Exhibit 1 (I)

Laping Exhibit 1 (I)

Vine Exhibit 1 (I)

Taylor Exhibit 1 (I)

Fireman Exhibit 1 (I)

COPIES ORDERED: E-mail: Somers, Runkle, Millin and Downey

REPORTED BY: Kim Mitchell

TRANSCRIBED BY: Kim Mitchell

DATE TRANSCRIBED: February 9, 2016

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1	T A B L E O F C O N T E N T S:	
2	Opening Statement by Robert Sipes.....	21
3	Opening Statement by Grant Millin, Intervenor....	24
4	BRUCE CLARKE	
5	Examination by Ms. Downey.....	27
6	BOB HANNA's	
7	Examination by Ms. Downey.....	29
8	BILL MALONEY	
9	Examination by Ms. Downey.....	32
10	STEVE RUNHOLT	
11	Examination by Ms. Downey.....	36
12	STEVE KAAGAN	
13	Examination by Ms. Downey.....	40
14	MAC SWICEGOOD	
15	Examination by Ms. Downey.....	43
16	JOAN WALKER	
17	Examination by Ms. Downey.....	45
18	KATIE HICKS	
19	Examination by Ms. Downey.....	49
20	Cross Examination by Mr. Somers.....	52
21	XAVIER BOATRIGHT	
22	Examination by Ms. Downey.....	53
23	Cross Examination by Mr. Millin.....	58
24	BRAD ROUSE	
	Examination by Ms. Downey.....	60
	Cross Examination by Mr. Somers.....	64
	Cross Examination by Mr. Millin.....	65
	Cross Examination by Ms. Thompson.....	66
	ROWDY KEELOR	
	Examination by Ms. Downey.....	67
	ALICE WYNDHAM	
	Examination by Ms. Downey.....	70

1	Cont'd.	
2	STEFFI RAUSCH	
3	Examination by Ms. Downey.....	73
4	REBECCA BRINGLE	
5	Examination by Mr. Gillam.....	77
6	Cross Examination by Mr. Millin.....	80
7	RANDY TALLEY	
8	Examination by Mr. Gillam.....	83
9	PAT MOORE	
10	Examination by Mr. Gillam.....	85
11	Direct Statement.....	204
12	KEN HUCK	
13	Examination by Mr. Gillam.....	87
14	JANE LAPING	
15	Examination by Mr. Gillam.....	89
16	KEN BRAME	
17	Examination by Mr. Gillam.....	92
18	SARA LYNCH THOMASON	
19	Examination by Mr. Gillam.....	96
20	JUDY MATTOX	
21	Examination by Mr. Gillam.....	99
22	CATHY SCOTT	
23	Examination by Mr. Gillam.....	102
24	WILLIAM VINE	
	Examination by Mr. Gillam.....	106
	Cross Examination by Mr. Somers.....	109
	KENDALL HALE	
	Examination by Mr. Gillam.....	111
	KAREN RICHARDSON DUNN	
	Examination by Mr. Gillam.....	114
	CATHY HOLT	
	Examination by Mr. Gillam.....	118

1	Cont'd.	
2	SUSAN PRESSON	
3	Examination by Mr. Gillam.....	122
4	ASHLEIGH HILLEN	
5	Examination by Mr. Gillam.....	124
6	SCOTT HARDIN-NIERY	
7	Examination by Mr. Gillam.....	126
8	Cross Examination by Mr. Runkle.....	130
9	CAROLINA ARIAS	
10	Examination by Mr. Gillam.....	131
11	MARSTON BLOW	
12	Examination by Mr. Gillam.....	133
13	RICH WASCH	
14	Examination by Mr. Gillam.....	136
15	PHILIP BISESI	
16	Examination by Mr. Gillam.....	138
17	MARK THRELKELD	
18	Examination by Mr. Gillam.....	142
19	LEWIS PATRIE	
20	Examination by Ms. Downey.....	146
21	RICK BURT	
22	Examination by Ms. Downey.....	149
23	GABRIELLE WHITE	
24	Examination by Ms. Downey.....	151
	HARVARD AYERS	
	Examination by Ms. Downey.....	156
	MACON VERTESKJALL	
	Examination by Ms. Downey.....	159
	KELLY MARTIN	
	Examination by Ms. Downey.....	162
	Cross Examination by Mr. Somers.....	167

1	Cont'd.	
2	RACHEL SHOPPER	
3	Examination by Ms. Downey.....	169
4	STEVEN NORRIS	
5	Examination by Ms. Downey.....	172
6	KEITH THOMSON	
7	Direct Statement.....	175
8	SABREY FRANKS	
9	Examination by Ms. Downey.....	180
10	PHILLIP BROWN	
11	Examination by Ms. Downey.....	185
12	KELLY GLOGER	
13	Direct Statement.....	190
14	RONALD TAYLOR	
15	Examination by Ms. Downey.....	196
16	RICHARD FIREMAN	
17	Examination by Ms. Downey.....	204
18	BETH HENRY	
19	Examination by Ms. Downey.....	209
20	Cross Examination by Mr. Somers.....	213
21	GRAYDON NANCE	
22	Examination by Ms. Downey.....	214
23	AVRAM FRIEDMAN	
24	Examination by Ms. Downey.....	218

NORTH CAROLINA UTILITIES COMMISSION
APPEARANCE SLIP

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CITY Chapel Hill NC ZIP 27516

APPEARING FOR: Mountain Time
Sierra Club
APPLICANT _____ COMPLAINANT _____ INTERVENER
PROTESTANT _____ RESPONDENT _____ DEFENDANT _____

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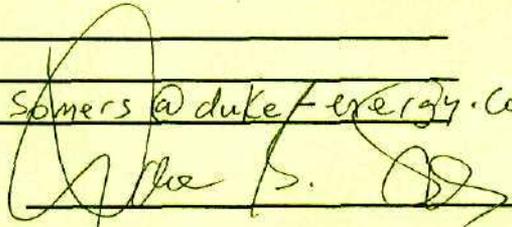
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NORTH CAROLINA UTILITIES COMMISSION
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APPEARING FOR: NC WARN - The Climate Times

APPLICANT _____ COMPLAINANT _____ INTERVENER
PROTESTANT _____ RESPONDENT _____ DEFENDANT _____

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NORTH CAROLINA UTILITIES COMMISSION
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DATE 1/26/16 DOCKET #: F2-SUB 1089

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CITY ASHEVILLE, NC ZIP 28805

APPEARING FOR: GRANT MILLIN

APPLICANT _____ COMPLAINANT _____ INTERVENER
PROTESTANT _____ RESPONDENT _____ DEFENDANT _____

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NORTH CAROLINA UTILITIES COMMISSION
APPEARANCE SLIP

DATE 1/26/16 DOCKET #: E-2, Sub 1089
NAME AND TITLE OF ATTORNEY Donna Downey & Robert Gillam
FIRM NAME _____
ADDRESS _____
CITY _____ ZIP _____

APPEARING FOR: NCUC Public Staff

APPLICANT _____ COMPLAINANT _____ INTERVENER _____
PROTESTANT _____ RESPONDENT _____ DEFENDANT _____

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Name: _____
Phone #: _____
Email: _____

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Signature: Donna Downey

Utilities Buying Gas Pipelines Better Watch Out for Batteries

Harry Weber Tim Loh

HarryRWeber TimLoh

November 11, 2015 — 3:05 PM EST

- ▶ Natural-gas pipelines seen as good bet with power use slowing
- ▶ Battery storage, cheaper wind and solar threaten strategy

Efforts by utilities to buy U.S. natural-gas pipelines to make up for lackluster power use could be upended if the shift toward renewables accelerates.

Duke Energy Corp., Dominion Resources Inc. and Eversource Energy are among companies spending billions to expand into pipeline networks that link distant gas-producing regions to areas where demand is increasing.

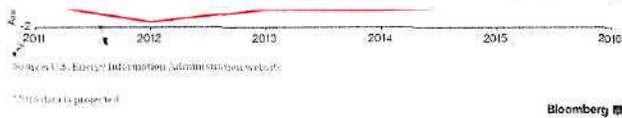
It's a hot deal at a time when coal-fired power plants are getting shuttered, nuclear stations aren't being built and gas-fired generators are picking up most of the slack. Their bets may prove riskier than they think if improvements in battery storage and ever cheaper wind and solar power edge out gas-fired generation in electricity markets, according to one former energy regulator.

"These utilities are taking a risk that these will be stranded assets that ultimately their shareholders will have to pay off," Jon B. Wellinghoff, a San Francisco attorney who served as chairman of the Federal Energy Regulatory Commission from 2009 to 2013, said by phone. "We will see regulators being more critical of these asset decisions as prices of renewables continue to go down."

U.S. Natural Gas and Electricity Demand

Consumption of gas has been rising steadily since 2011 while power use has declined or been flat





Gas pipelines are attractive as shale output booms, dragging the price of the power-plant and heating fuel below \$2 per million British thermal units last month for the first time since 2012. At the same time, U.S. power demand overall has slowed, cutting into utility profits. Opportunities for utilities to expand into pipelines are especially ripe in the U.S. Northeast and Southeast, which aren't traditionally well-served by gas lines.

Duke upped its stake to 50 percent in the Atlantic Coast Pipeline, which will link West Virginia shale gas fields to North Carolina, following its \$4.9 billion acquisition of Piedmont Natural Gas Co. Dominion Resources is a partner in that project. Then there's Eversource Energy and Spectra Energy, which have joined the Access Northeast pipeline in New England.

'Relatively Safe'

"There's nothing risk free, but given the ongoing low price of gas and the regulatory environment moving away from coal, building gas infrastructure to serve our customers seems like a relatively safe bet," Thomas Williams, a Duke spokesman, said by phone.

Since gas now generates half of New England's electricity, even increased use of renewables will need to be complemented with the fuel, according to Jeff Kotkin, a spokesman for Eversource. Dominion's pipeline strategy is secured with "firm commitments" from gas consumers, not producers who might struggle when prices are low, said C. Ryan Frazier, a spokesman.

Regulated Returns

Pipelines are also attractive because they offer regulated returns, resembling the traditional utility business model, except with better growth potential. They are also regulated by FERC, which is seen as more stable than state-level oversight that's often affected by turbulent local politics, said Kit Konolige, senior utilities analyst for Bloomberg Intelligence.

The threat from batteries, however, is that they can remove the problem of "intermittency" from renewable sources – allowing for solar and wind power to keep the lights on even when it's cloudy and calm out, Paul Patterson, a New York-based analyst for Glenrock Associates LLC, said in a telephone interview.

If battery costs fall far enough compared with gas, then wind and solar could become the preferred source of "peaking" power that's needed when electricity demand is at its highest. "In general, there would be less

demand for natural gas," Patterson said.

There are signs it's already occurring. Utility Southern California Edison said at an energy storage conference last month that supply from batteries is set to compete against gas-fired peaker plants.

In the area covered by PJM Interconnection LLC, lithium-ion battery costs can be already competitive with gas peaker plants when needed for periods of less than an hour, according to a recent study by Bloomberg New Energy Finance. PJM is the largest U.S. power grid.

"In five years time, we would expect batteries to be even more likely an attractive option for longer," said Andrew Turner, a BNEF analyst who conducted the study. "And they're just going to get cheaper."

Before it's here, it's on the Bloomberg Terminal.

• Duke Energy Corp

Traders Are Pulling Money From VIX Funds Like Never Before

Camila Russo

CamiRusso

January 25, 2016 — 7:00 PM EST Updated on January 26, 2016 — 10:47 AM EST



Hello. Thank you for being here. My name is Jane Laping, 14 Concord Place, Asheville, NC 28803

I feel obliged to speak today because I am a person of faith and believe that we are not caring for creation (keeping and tilling the earth) the way that God intended. Burning of fossil fuels has harmed our environment, our climate, and consequently all living things that inhabit the earth.

I commend Duke Energy for making the decision to retire the Asheville coal plant in 5 years, and for reversing their decision to build new transmission lines and a new substation in response to public opinion. In its place, Duke Energy is requesting permission to build two new natural gas-fired units, with oil as a back-up fuel and a third gas unit in 2023 if energy efficiency and alternative sources are not sufficient to meet the growing demand.

I have some comments and questions about Duke's proposal to the Public Utilities Commission that is available to the public.

- In General Information #3, the statement is made that "DEP also has two existing 185 MW (winter rating) combustion turbine units at the Asheville plant site that will continue operation." I assume that the existing units referred to are the back-up units for the coal-fired units. How long will these units continue operating?
- General Information #4 says that "The Asheville Combined Cycle units will provide base load generation for DEP's customers in North Carolina and South Carolina." Will the Asheville gas power plant be generating electricity for customers outside the Asheville area although customers here have made it clear that we only want power generated for our own needs?
- I was surprised to find the Duke energy need projections to be so high: "1,152 MW of new resources to meet customers' energy needs by 2020 and 5,099 MW by 2030." Stated another way, Duke Energy's projection says that energy needs in the area will increase nearly 5 fold in 10 years! Duke needs to show us -- the public -- how these numbers are calculated.
- Until there is an established need for a third gas unit to be installed in 2023, I request that the Public Utilities Commission disapprove the third gas unit in this CPCN.

I also applaud Duke Energy for including energy efficiency and solar power in the mix. However, if Duke Energy is serious about its public announcement to "reduce power demand across the region through...renewable energy..." shouldn't the application for a new solar generation facility be part of this CPCN and not "subject to a future CPCN application." ?

Secondly, 15 MW of solar power is just 1% of Duke Energy's projected need for this region in 2020. Again, if DEP is serious about renewable energy, this contribution to the needs of our community should be much larger. And another question: what is the timeline for the solar panels to be operational and are there plans to expand capacity?

Energy efficiency is a low cost, sustainable and achievable option to meet electricity demand. Duke currently offers some energy efficiency programs, but these will need to be improved greatly if Duke is serious about energy efficiency and to be competitive with the rest of the nation. DTE Energy in SE Michigan has an exemplary energy efficiency program that includes initiatives such as refrigerator replacement for low-income households. It is worthy of being emulated in this region. Additionally, Duke's efforts should be expanded beyond Buncombe County to all 9 western NC counties in their service area.

On a personal note, I am on the Steering committee of the Creation Care Alliance of Western North Carolina and for a year now have been working to engage churches in energy efficiency and renewable energy. Churches and other houses of worship are noted for being energy inefficient for several reasons:

- their buildings are generally older and have high ceilings
- the space is primarily used only one day a week, and
- there are insufficient budgets for maintenance.

This not only places a financial burden on the faith community but also increases demand for available energy in the larger community. Duke Energy's announcement to work "with the community to reduce power demand across the region through energy efficiency, demand response, renewable energy and other technologies" is welcome news. The Creation Care Alliance is eager to partner with Duke Energy to make this happen in the multitude of churches and houses of worship in this region.

Natural gas is a better fuel option than coal, but has its own negative environmental impacts. Natural gas releases methane, a gas that is a much greater contributor to climate change than carbon dioxide. Trading gas for coal only continues our reliance on fossil fuels for many more years into the future, further endangering our climate, our lives and especially the lives of those less fortunate. If Duke Energy would view natural gas as an interim fuel – rather than a long term solution – and invest in renewable energy and energy efficiency at the same time, it would create jobs, more comfortable buildings, and a healthier environment for WNC residents and visitors.

Vine Exhibit 1
I/

NCUC Hearing
NCUC DOCKET NO. E-2, SUB 1089
Asheville, NC
1-26-16

Thanks to the NCUC for this hearing and, more importantly, for ensuring the reliability of the power grid in North Carolina. Thus, the NCUC must be concerned with the effects on reliability of Duke's recently submitted Western Carolinas Modernization Project at the existing Asheville Steam Electric Plant in Buncombe County (Lake Julian Plant). A measure of future reliability is the operational redundancy of power sources. Duke provides an estimate of redundancy for DEP-Western Region in its "Statement of Need" in "Confidential Exhibit 1B." Fortunately, or unfortunately, depending on how you view the benefits of transparency, only portions of this document are available to the public. Duke would benefit from greater transparency, especially given its recent history in North Carolina. My presentation will utilize the limited amount of public data, provide an alternative analysis of redundancy in our area of Western NC and raise concerns.

Duke summarizes its estimate of redundancy in Table 1 (*DEP-Western Region Demand/Load Balance (Winter) and NERC Compliance Post-WCMP*) on page 7 of Exhibit 1B (enclosed). I have reformulated the table as a spreadsheet in Table 2 in order to present an alternative assessment of redundancy. This alternative analysis notes the improvement of redundancy in terms of power produced at the Lake Julian Plant, but raises serious concerns about redundancy for the single greatest source of power to the region, the import of power through the Pisgah transmission system (Shiloh Switching to Pisgah Tie to Progress Energy Skyland Steam Plant [Lake Julian] Table 3. Thus, the largest single source of power at the Lake Julian Plant is the 680 MW transmitted by the Pisgah transmission system. This source must be accounted for in any redundancy calculations for Reliability Margin. Currently, the actual power available from this source is 600 MW as a result of transformer limitations at Lake Julian (Table 4).

As shown in Table 2 for the year 2020, if the power import via the Pisgah line is lost (Column: Revised RM, Row 3a), then Useable Transmission (Row 3b) decrease from 470 MW to 150 MW and NERC Compliance Reserves (Row 5b) decreases from 90 MW to -230 MW. **Thus, additional, independent power sources and/or demand reduction are needed in 2020 to meet NERC Compliance Reserves.**

Again, this analysis is limited by the lack of access to all necessary data and the consequent assumptions about the configuration of power generation and transmission lines in the region. Fortunately, NCUC has the resources for an unfettered analysis following the process suggested herein.

Sincerely submitted,

William Vine
Hendersonville, NC
willvn100@gmail.com

Table 1: DEP-Western Region Demand/Load Balance (Winter) and NERC Compliance Post-WCMP

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
(1) Peak Demand Forecast	1,146	1,170	1,187	1,199	1,214	1,243	1,259	1,278	1,297	1,310	1,333
(2) Total Generating Capacity	1,046	1,046	1,046	1,046	1,232	1,232	1,232	1,232	1,232	1,232	1,232
(2a) Existing Company-Owned Resources	486	486	486	486	486	486	486	486	486	486	486
(2b) 1x1 CC	280	280	280	280	280	280	280	280	280	280	280
(2c) 1x1 CC	280	280	280	280	280	280	280	280	280	280	280
(2d) Contingent CT					186	186	186	186	186	186	186
(3) Total Transmission Import Capability	750	750	750	750	750	750	750	750	750	750	750
(3a) Transmission Reliability Margin (TRM)	280	280	280	280	280	280	280	280	280	280	280
(3b) Useable Transmission	470	470	470	470	470	470	470	470	470	470	470
(4) Total Generation and Usable Transmission	1,516	1,516	1,516	1,516	1,702	1,702	1,702	1,702	1,702	1,702	1,702
(5) Total Reserves (Gen + Usable Trans less Peak Load)	370	346	329	317	488	459	443	424	405	392	369
(5a) TRM Requirements after Single Contingency	280	280	280	280	280	280	280	280	280	280	280
(5b) NERC Compliance Reserves after Single Contingency	90	66	49	37	208	179	163	144	125	112	89

(1) Fall 2015 Update for DEP-West; Net of EE Impacts

(2) Line (2a) plus Line (2b) plus Line (2c) plus Line (2d); Winter Generating Capacity in DEP-West

(2a) Company owned winter capacity in DEP-West following retirement of Asheville Coal units and includes: Asheville 3 CT (185 MW), Asheville 4 CT (185 MW), Walters 1,2,3 Hydro (112 MW), Marshal 1,2 Hydro (4 MW)

(2b) & (2c) New 1x1 CCs as part of WCMP

(2d) New Contingent CT as part of WCMP

(3) Available transmission capacity into DEP-West

(3a) TRM is equal to the size of the largest unit in DEP-West (Asheville 1) and is the amount of transmission required to cover the worst generation contingency in the DEP-West Balancing Authority (BA). Discussed in more detail in Attachment A

(3b) Line (3) minus Line (3a); Transmission import capability into DEP-West after accounting for TRM

(4) Line (2) plus Line (3b)

(5) Line (4) minus Line (1); reserves above peak load

(5a) TRM if the first contingency (Line 3a) is realized. This is equal to the second largest unit in DEP-West (2nd 1x1 CC)

(5b) Line (5) minus Line (5a); Must be a positive number to be able to meet applicable NERC reliability standards per DEP operating procedures as discussed in further detail in Attachment A.

Table 2

		2020 Duke Numbers from Table 1	Revised RM (import failure)
1	Peak demand forecast	1146	1146
2	total Generating Capacity	1046	1046
2a	Existing Co Resources: 2016	486	486
2b	1x1 CC	280	280
2c	1X1 CC	280	280
3	Total Transmission Import	750	750
3a	Reliability Margin	280	600*
3b	Useable Transmission	470	150
4	Total Gen & Usable Trans	1516	1196
5	Total Reserves	370	50
5a	TRM after Single Contingency	280	280
5b	NERC Compliance Reserves	90	-230

*Loss of Pisgah transmission Line
import

Table 3

DEC Transmission Lines that Interconnect with DEP-West (not a complete listing)

Duke Energy Carolin: FERC Form 1 2014 Q4 http://www.duke-energy.com/pdfs/Q4_2014_DE_Carollnas_Form_1.pdf page 422.1

FERC Form 1 Page, line #	DESIGNATION		VOLTAGE (KV)		Supporting Structure	Length		# of circuits	Size of Conductor & Material	Amperage rating a/ Per circuit	Approx. MW Capacity b/	
	From	To	Oper- ating	De- signed		On desig- nated, Supporting Structure	On Another Support Structure				Per circuit	Total
422.1, 35	Pisgah Tie	Progress Energy Skyland Steam Plant (Asheville)	230	230	Tower	14.48 (connects to or is DEP's circuit of similar name?)	-	2	954	993	340	680
422.2, 10	Shiloh Switching	Pisgah Tie	230	230	Tower	21.96	-	2	954	993	340	680

Table 4

Major Substation data - Asheville Plant, Enka

Data from DEP's FERC Form 1 2014 4Q

http://www.duke-energy.com/pdfs/Q4_2014_DE_Progress_Form_1_part_2_of_2.pdf

Page, Line #	Location	Charac- teristic	Voltages		Capacity in Mva	Transformers	
			Primary	Secondary		#	# of spares
426- 427, 18	Asheville S.E. Plant	Trans- mission	230	115	600	2	0
426- 427, 19	Asheville S.E. Plant	Transmission, Gen Step up 1	115	17.2	210	1	0
426- 427, 20	Asheville S.E. Plant	Transmission, Gen Step up 2	115	19	210	1	1
426- 427, 21	Asheville S.E. Plant	Transmission, Gen Step up 3,4	115	18	420	2	0
426.2- 427.2, 20	Enka	Trans- mission	230	115	300	1	0
426.2- 427.2, 21	Enka, Sardis Road	Distri- bution	115	24	25	1	0

Mva x PF = MW; Mega Volt-Amps x Power Factor = MegaWatts

Typical power factors range between 0.9 to 1.0, Power Factors for above substations is TBD.

MW is always equal to (power factor of 1.0) or less (power factor <1.0) than Mva

Draft copy of intended presentation to NC PUC on Jan 26, 2016

Good evening ladies and gentlemen of the NC Public Utilities Commission of North Carolina and to all of the members in the audience and especially to those who are present from Duke Energy that would care to listen. My name is Ronald Taylor I am a retired geological consultant and utility employee of 20 plus years. I have considerable experience working in the nuclear utility industry in New York State with Niagara Mohawk Power Corporation as a quality assurance specialist. I was trained by Kepner Tregoe in the application of rational process to all phases of assessment and decision making in the utility industry as a rational process consultant. Indeed the training was required by the New York State Public Service Commission. This was their method to make sure Niagara Mohawk Power Corporation was spending the rate payers (customers) money prudently by properly assessing the situation they were in, making making good decisions and analyzing problems properly.

First, before I go further into my comments I think it should be made clear as to why we require a Public Service Commission at all. I believe that the duty of the Public Service Commission is to make sure that because Duke Energy is a regulated public monopoly that they are making proper decisions in spending the money of the ratepayers (customers) prudently, and not wasting it. It is my belief that society and technology has advanced to the point that access to energy should no longer be considered as a monopoly or allowed to be a monopoly such that it needs to be regulated by a commission. I will explain further.

I have always been what I refer to as a paradigm pioneer, and I've been looking forward instead of backwards as to how to solve our problems. My first recommendation to you tonight would be that you require Duke Energy to implement some form of rational process analysis in all of their planning, their assessment, decision making and their problem analysis throughout the company, so that they document those decisions in the same manner in which Niagara Mohawk was required to do years ago by their NY Public Service Commission. There are numerous systems of rational prices available today. The system we use was provided by Kepner Tregoe, a consulting firm out of Princeton New Jersey. They are still in business today and they offer an exceptionally good program.

As a paradigm pioneer I would like to propose the concept that the proposal to build a natural gas fired plant is obsolete technology, and that the money would be much better allocated to develop and build a 21st century electrical power system for the residents of North Carolina. I would also like to add to that that my belief is that the electrical grid system is also obsolete technology. In my view by looking over the horizon and understanding what is really already available to us, I believe that we should be building power systems to provide power on demand at the point of use. Having large power producing plants and then distributing that power with a very vulnerable grid is in my opinion not a very good choice today. My reasoning behind this belief is that, first, we are on the verge of major Earth changes which will include earthquakes and other disasters and catastrophes which will take down our power grid in and of themselves. Secondly, I recognize that our power grid today is extremely vulnerable to not only human terrorism and false flag events, but also the ravages of an electromagnetic pulse or an EMP from the Sun. Anyone who knows the history of our planet getting hit by coronal mass ejections (CME) will have heard of the 1859 Carrington event which basically put so much power into the telegraph wires at that time that it actually caught on fire the paper upon which the Morse code operators were writing down messages. We almost got hit by a CME of such magnitude this last summer that it could have taken down our electrical grid. So I believe it is only a matter of time before our electrical grid is severely damaged by an electromagnetic pulse from the Sun. Therefore I think we would be much safer as a society to have the power produced at the point of use through very small units which are owned by the people individually or by local organizations or neighborhoods, and not produced by a massive generating system which requires distribution of the power over a very fragile grid.

Now speaking to the question of whether such power generation approach is practical at this point in time, I believe the technology is actually available, and in use today, that would allow these power systems which I call zero point energy or over-unity energy or $cop > 1$, (meaning coefficient of performance greater than 1) to be built. My reasoning for this is that I understand that we have probably more than 8 trillion dollars that have been used by our shadow government (also known as the Cabal, the Bilderbergers, the Illuminati) over the past 40 or so years through theft from the people via our fraudulent central banking system, known as the Federal Reserve Banking system to build off world secret space programs. These elements have developed and utilized anti-gravity technology and free energy technologies over the last 60 some years. Those of you who have not done your homework, which probably includes 98% of the people here, do not know anything about this, however, disclosure is now coming at a very fast pace. Use the Internet and do your research.

I expect the public disclosure of what I already know to be true, will be forthcoming in the next months and that it will be public even before your proposed gas plant construction could begin. By that time it will be clear that the technologies have existed, and currently exist to allow people to have virtually free energy units available to them to provide as much power as they require locally on demand.

Most of you probably do not know that there have been at least 5,000 patents that have been sequestered under the auspices of national security over the last 50+ years. Many of this patent concepts include the technologies I speak of. One such patent which was allowed to be issued (#3,146,396), describes a Nikola Tesla related technology which is described as a power supply including two tank circuits. This patent was issued in 1993. As further evidence of the existence of this virtually free energy technology, I would refer you to the Keshe Foundation, spelled Keshe. This Foundation has released recently a home energy unit called the Magrav Unit to the public worldwide. The Magrav Power system uses an Alekz system consisting of a Double Layer Gans Cell (DLGC). Their website is: www.keshfoundation.org

Those of you who do not understand that this technology has been available on this planet for at least 40 years, and has been developed further during that period of time, are caught in a matrix that has been created by those that have had control over our society for more than a century. This Elite has been referred to by many names including the Shadow Government, the Committee of 300, the Bilderbergers, and the Illuminati. Their control has stunted not only the spiritual growth of our society, but also its technological growth by preventing non destructive environmentally benign technologies to be publicly developed and made available to the public. The purpose in this prevention of new technology was to continue to exert their control over our planet by controlling the carbon based resources we burn as fuels. That control is now being lifted and ended. There will be considerable paradigm shift as this occurs. There will be much dislocation and adjustment necessary on a grand scale as people psychologically adjust to the new paradigm.

So in summary, I believe that our society is about to make a transition into a new paradigm, wherein energy will be available on demand at the point of need or point of use. The shadow government controlled by a very small elite have had and have been utilizing many of the new technologies for many years. It is time to make them public. I look forward to the time when this occurs, and energy production will no longer be a monopoly, and will no longer require a Public Utilities Commission to regulate that portion of our society. When these sequestered technologies are released and energy is virtually free and available to all, we will have taken a giant step towards sustainability of our planetary environment.

Thus, it is my wish that the Public Utilities Commission encourage Duke Energy to spend the research and development money to bring this new paradigm into reality and to make the transition, no matter how difficult it may be to those invested mentally and financially in the old paradigm. I understand that very seldom do the existing entrenched industries bring forth the new technology that will destroy the old technology. However I think it is time to recognize that if it is not done by the existing companies with funds already available to them, then someone else, an outsider, will do it for them, and in this case it may very well be the likes of Elon Musk and his Tesla Motor Company.

Submitted by

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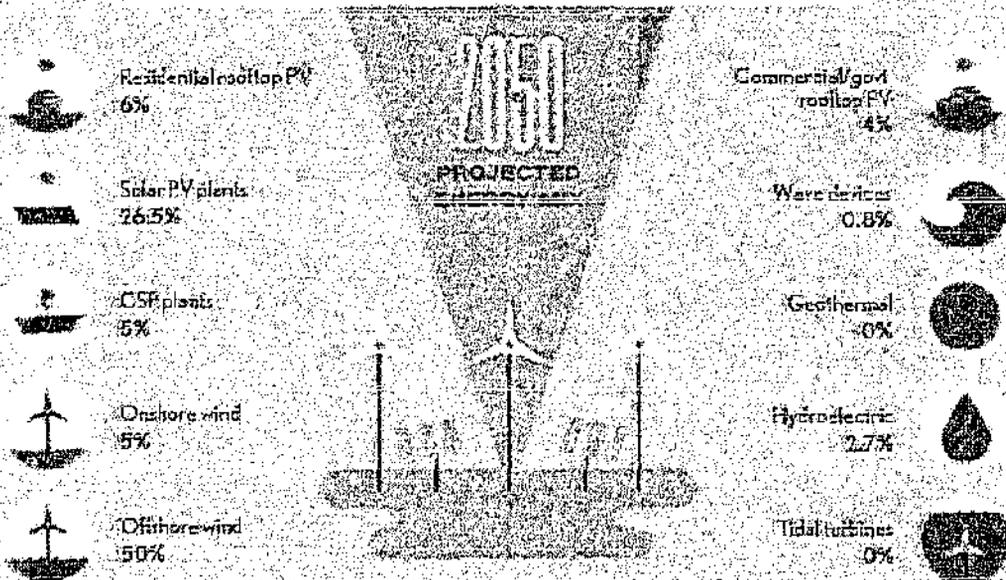


**ALLIANCE
FOR ENERGY
DEMOCRACY**
POWER BY THE PEOPLE & FOR THE PEOPLE

Marc Jacobson, et al, 100% Clean and Renewable Wind, Water, and Sunlight (WWS) All-Sector Energy Roadmaps for 139 Countries of the World, August 2015, *Atmosphere/Energy Program, Dept. of Civil and Env. Engineering, Stanford University*

100% NORTH CAROLINA

Transition to 100% wind, water, and solar (WWS) for all purposes
(electricity, transportation, heating/cooling, industry)



40-Year Jobs Created

Number of jobs where a person is employed for 40 consecutive years

Construction jobs:

99,676

Operation jobs:

63,199

Using WWS electricity for everything, instead of burning fuel, and improving energy efficiency means you need much less energy

Annual energy, health and climate cost savings per year, 2050 = \$6623

