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June 20, 2014

Gail Mount
Chief Clerk
North Carolina Utilities Commission
430 N. Salisbury Street
Raleigh, NC 27603 – 5918

**Re: NCUC Docket No. E-100, Sub 140
Rebuttal Testimony of NCSEA**

Dear Ms. Mount:

In connection with the above-referenced docket, enclosed for filing on behalf of NCSEA are the following:

1. The Rebuttal Testimony of Z. G. Hanes;
2. The Rebuttal Testimony of J. Gross; and
3. The Rebuttal Testimony of A. Maier.

Should you have any questions or comments, please do not hesitate to call me. Thank you in advance for your assistance and cooperation.

Kind Regards,

/s Charlotte Mitchell

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-100, SUB 140

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION:

In the Matter of:
Biennial Determination of Avoided
Cost Rates for Electric Utility Purchases
from Qualifying Facilities - 2014

REBUTTAL TESTIMONY

OF

K. ZOË GAMBLE HANES

ON BEHALF OF

NORTH CAROLINA SUSTAINABLE ENERGY ASSOCIATION

June 20, 2014

1 **Q. PLEASE STATE YOUR NAME, EMPLOYER AND TITLE.**

2 A. My name is K. Zoë Gamble Hanes. I am the Vice President and General
3 Counsel for FLS Energy.

4

5 **Q. HAVE YOU PRE-FILED OTHER TESTIMONY IN THIS**
6 **PROCEEDING?**

7 A. Yes. Pursuant to order of the North Carolina Utilities Commission (the
8 “Commission”) issued on May 29, 2014 in this docket, I adopted and
9 supplemented the direct testimony of Greg Ness pre-filed on behalf of the North
10 Carolina Sustainable Energy Association (“NCSEA”) in this docket on April 25,
11 2014. In addition, on May 30, 2014 I caused to be pre-filed response testimony.

12

13 **Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?**

14 A. The purpose of my rebuttal testimony is to respond to certain issues raised in the
15 supplemental direct testimonies of witnesses for Duke Energy Progress, Inc.
16 (“DEP”), Duke Energy Carolinas, LLC (“DEC”) and Dominion North Carolina
17 Power (“DNCP”) (collectively, the “Utilities”)

18

19 Specifically, my testimony responds to the points made by the Utilities to justify
20 their proposal to reduce eligibility for standard offer rates and terms to
21 qualifying facilities (“QFs”) 100 kW and smaller and to eliminate from the
22 standard offer the 15-year term.

1 **Q. HOW DO YOU RESPOND TO DNCP WITNESS WILLIAMS’**
2 **TESTIMONY RELATED TO ELIGIBILITY FOR STANDARD OFFER**
3 **RATES AND TERMS?**

4 A. On page 16, lines 8-9 of his responding testimony, DNCP witness Williams
5 reiterates DNCP’s position that standard rates and terms should be available to
6 QFs 100 kW and smaller. In support of this position, he testifies on page 16,
7 lines 13-14 of his responding testimony that “sophisticated developers of 5 MW
8 projects do not require the benefits of standard rates” and on page 17, lines 18-
9 21 of his responding testimony, he asserts that “companies that are developing
10 multiple facilities totaling well in excess of 20 MW can be presumed to have the
11 resources and capabilities necessary to negotiate a project specific contract. . . .”

12
13 A capacity to develop a 20 MW QF does not necessarily equate to a large,
14 heavily capitalized company. The disparity in size between a utility—certainly
15 the three regulated monopolies in North Carolina—and any QF developer, even
16 large solar developers, is still enormous. Because a QF developer has no choice
17 as to whom to sell energy and capacity, the developer has minimal leverage and
18 bargaining power when it comes to negotiating terms that provide the certainty
19 that its investors require.

20
21 Over the past six years, I have had many opportunities to interact with Duke
22 Energy Carolinas and Duke Energy Progress on a number of projects where we
23 collaborated to develop renewable energy projects. This included negotiating

1 REC purchase agreements, interconnecting projects, project development at
2 Camp Lejeune, the RFP process and, most recently, negotiating a PPA. There
3 are many diligent and extremely helpful individuals that work for these utilities,
4 and, in many instances, employees have gone out of their way to help and
5 facilitate project development for FLS and other project developers. Despite all
6 of that goodwill and the efforts of their personnel, at the end of the day, by
7 virtue of their regulated monopoly status and size, the utilities enjoy complete
8 negotiating power. Given that the utilities are the QFs' only customer, it is not
9 to our advantage to engage in adversarial conduct, and arbitration is costly and
10 time consuming.

11
12 Currently, whether a negotiated power purchase agreement will result in terms
13 and conditions under which an investor is willing to provide capital is uncertain.
14 In contrast to the standard offer contract, the negotiated power purchase
15 agreement does not provide the confidence and security that our financing
16 partners require in order to commit capital. Investors already regard QF
17 development as a non-standard, high risk investment, as highlighted by the
18 rebuttal testimony of NCSEA witness Gross. Injecting another layer of
19 uncertainty into the process will amplify this.

20
21 Additionally, the timing of the negotiation process has significant implications
22 for the project. As has been widely discussed in this docket, tax equity is one
23 source of financing for QFs. Because of timing issues related to the use of tax

1 credits on an annual basis, a QF must be put in service by year end. Any
2 possible delay in the development schedule has the potential to jeopardize
3 project finance for this reason. The utility retains significant control over the
4 timing of the negotiation process. I recognize that the Utilities' personnel who
5 are responsible for negotiating on behalf of the Utilities have responsibilities in
6 addition to dealing with QFs and that there are an increasing number of QFs
7 with which the Utilities must deal. However, if the Commission grants the
8 Utilities' request to reduce eligibility for the standard offer contract and the
9 Utilities are negotiating even more contracts, then it is reasonable to assume that
10 the negotiation process will take even longer.

11
12 The development of QFs is not cheap. It is a very capital intensive process. The
13 negotiations between the developer and the utility come after the developer has
14 already sunk considerable capital into a project – through conducting
15 environmental assessments, creating initial engineering designs, seeking zoning
16 approval, etc. If a utility is slow to negotiate, or proffers terms that are
17 objectionable, the developer does not have the option of finding another utility
18 with which to work. If a deal cannot be reached, then the expenditures made for
19 that site are lost. That puts the developer, no matter its size or level of
20 sophistication, in a very weak negotiating position.

21
22 Therefore, while it is true that the solar industry is increasingly sophisticated,
23 that solar technology is increasingly efficient and cost effective, and that there

1 has been a significant increase in proposed QF capacity in recent years, the issue
2 of relative bargaining power remains.

3
4 **Q. HOW DO YOU RESPOND TO DEC/DEP WITNESS BOWMAN'S**
5 **TESTIMONY RELATED TO ELIGIBILITY FOR STANDARD OFFER**
6 **RATES AND TERMS?**

7 A. On page 15, line 1 of her supplemental direct testimony, DEC/DEP witness
8 Bowman mischaracterizes points I have previously made in justification of my
9 recommendation that the Commission consider raising the eligibility limit for
10 the standard rates and terms. She asserts that my justification for "raising the
11 eligibility cap would make it easier for developers to build larger QF facilities."
12 However, I have never indicated that increasing the eligibility for standard rates
13 and terms would make it easier and this is not my opinion. Rather, my point is
14 that increasing the eligibility would allow those projects that have a realistic
15 chance of being developed to do so at minimal transaction cost. Developing a
16 project to commercial operation is a difficult proposition, despite what the
17 Utilities would have the Commission believe. A successful project requires
18 available land, workable site conditions, and a feasible interconnection charge.
19 These things become increasingly complex and expensive, and the confluence
20 of all three rarer, as the size of the project increases. Increasing the eligibility
21 for the standard contract for project up to 10 MW does not guarantee that it can
22 satisfy the other necessary criteria for developing a project, but it should
23 facilitate development of feasible projects at a lesser transaction cost.

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On page 17, lines 5-9 of her supplemental direct testimony, DEC/DEP witness Bowman testifies that “[g]iven the cost and complexity of developing [larger] facilities, any developer that intends to construct a QF that is 5 MW or larger will undoubtedly be more sophisticated and well-informed.” Thus, like DNCP witness Williams, she suggests that as developers are becoming increasingly sophisticated, there is no longer a need for the standard contract in the context of projects of a material size and that power purchase agreement negotiation is a reasonable option for such developers.

Again, as I pointed out in response to DNCP witness Williams’ testimony, this position ignores the disparity in bargaining power that remains between the QF developer and the Utilities.

Witness Bowman makes the point, on page 17, lines 7-9 of her supplemental direct testimony, that the “transaction cost associated with bilateral negotiations would be small compared to the overall cost of the QF project.” However, I cannot agree that this will be the case. The longer the negotiation process, the greater the cost; in addition, if arbitration is necessary, the transaction cost will ratchet up quite significantly. In order to ensure that QF development is cost effective, a developer must look for any and every opportunity to decrease the cost of development. In the current environment, QF developers are looking for a means to reduce every cost associated with a project. Increasing the

1 transaction cost (on a per unit basis) associated with the power purchase
2 agreement has the very real potential to jeopardize the cost effectiveness of the
3 project.

4

5 **Q. GIVEN YOUR OBSERVATIONS, WHAT IS YOUR**
6 **RECOMMENDATION TO THE COMMISSION REGARDING**
7 **ELIGIBILITY FOR STANDARD RATES AND TERMS?**

8 A. In recognition of the unequal bargaining positions and in the interest of
9 encouraging the development of QFs, making the most efficient use of
10 Commission, Public Staff, Utility and QF resources and keeping transaction
11 costs to a minimum, the Commission should, at the very least, reject the
12 proposal by the Utilities to reduce eligibility for the standard offer and, instead,
13 adopt the proposal put forward by the NCSEA witnesses to increase the term of
14 the standard offer to 20 years and up to 10 MW in size.

15

16 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

17 A. Yes.

18 4829-2789-4811, v. 3

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-100, SUB 140

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION:

In the Matter of:
Biennial Determination of Avoided
Cost Rates for Electric Utility Purchases
from Qualifying Facilities – 2014

REBUTTAL TESTIMONY

OF

JONATHAN M. GROSS

ON BEHALF OF

NORTH CAROLINA SUSTAINABLE ENERGY ASSOCIATION

June 20, 2014

1 **Q. PLEASE STATE YOUR NAME, EMPLOYER, TITLE AND BUSINESS**
2 **ADDRESS.**

3 A. My name is Jonathan M. Gross. I am a Partner at CohnReznick LLP, a full-
4 services accounting firm. My business address is 525 North Tryon Street, Suite
5 1000, Charlotte, NC 28202.

6

7 **Q. PLEASE DESCRIBE YOUR EDUCATION, EXPERIENCE AND**
8 **QUALIFICATIONS.**

9 A. I am a partner in CohnReznick's Charlotte office and lead the office's
10 Renewable Energy Transaction Advisory Group. I have more than 19 years of
11 public accounting and private industry experience and have provided financial
12 consulting, tax structuring, accounting, attestation, cost certification, and other
13 relevant financial and accounting services. My experience has been primarily
14 focused in the tax credit finance industry for the past 16 years or so with service
15 to renewable energy, affordable housing and other real estate clients.

16

17 In my current role at CohnReznick, I work with investors, developers, solar
18 project sponsors, general partners, and community development entities on all
19 aspects of their transactions. This work includes feasibility, transaction
20 structuring, financial projections and planning, cost certifications, equity
21 placement, and project disposition. I have been involved in the financing and
22 development of more than \$450 million of renewable energy facilities that have
23 been built in North Carolina since 2008, as well as approximately \$270 million

1 of projects currently under development and over \$350 million of projects
2 considered for development that were not ultimately built. CohnReznick’s
3 National Renewable Energy Practice has been involved with the financing and
4 development of over \$3 billion of renewable energy projects built across the
5 United States and is actively involved with transaction advisory or financing
6 services for another \$2 billion of projects currently in various stages of
7 development.

8

9 I earned a Bachelor degree in Business Administration from Temple University,
10 and hold Certified Public Accountant licenses in the State of North Carolina and
11 the Commonwealth of Pennsylvania.

12

13 **Q. HAVE YOU PREVIOUSLY PRE-FILED TESTIMONY IN THIS**
14 **PROCEEDING?**

15 A. No.

16

17 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

18 A. The purpose of my testimony is to rebut certain issues raised in the pre-filed
19 supplemental direct or response testimonies of witnesses for Duke Energy
20 Progress, Inc. (“Progress”), Duke Energy Carolinas, LLC (“Duke”) and
21 Dominion North Carolina Power (“DNCP”) (collectively, the “Utilities”), as
22 well as the response testimony of Public Staff witness John R. Hinton, related to
23 the length of term for the standard contract.

1 **Q. PLEASE PROVIDE A BRIEF OVERVIEW OF THE FINANCIAL**
2 **STRUCTURE OF A TYPICAL QF AND THE DIFFERENCE BETWEEN**
3 **THE DIFFERENT TYPES OF FINANCING.**

4 A. As has already been explained by NCSEA witnesses Cohen and Hanes, QFs are
5 typically financed with a combination of debt and equity.

6

7 As a general rule, and in my experience, debt financing is less expensive than
8 equity financing. Equity financing is the most expensive and difficult to secure
9 of all types of financing used for these projects, as I explain later in my
10 testimony. Therefore, the more debt a QF project is able to support, the more
11 likely the project is to be cost effective.

12

13 However, debt financing for QFs is very difficult to obtain. In my experience,
14 most commercial banks will not lend to QFs in North Carolina. These banks
15 consider such projects to be “non-standard” and high risk, despite the fact that
16 they generate steady and fairly reliable revenue streams. From my experience to
17 date, none of the larger national banks have provided permanent financing for
18 any renewable energy project in NC. Rather, at this point in time, only a
19 handful of smaller banks and other lending institutions that specialize in lending
20 to projects perceived to have higher risk or complexity are willing to provide
21 permanent debt for these projects. This reality makes securing debt financing
22 very challenging for the QF developer.

1 **Q. IN GENERAL, WHAT EFFECT DOES A LENGTH OF TERM FOR A**
2 **POWER PURCHASE AGREEMENT HAVE ON COST TO FINANCE A**
3 **QF?**

4 A. In the case of every renewable energy facility of which I am aware or have been
5 involved in North Carolina, the term of the Power Purchase Agreement (“PPA”)
6 has been a significant factor for both debt and equity investment underwriting.

7
8 Debt financing generally will not allow for terms greater than the term for
9 contracted revenues. In other words, a lender generally will not provide for a
10 loan term that is longer than the PPA term. With that in mind, the amount of
11 total project cost financed by debt decreases as the term of the PPA decreases
12 because the total debt service payments that the project can support is driven by
13 the amount of revenue that the project generates over the term, while the annual
14 debt service payment cannot change over the term of the PPA, assuming a long-
15 term levelized rate. Stated another way, the amount of permanent debt
16 financing that can be obtained to fund development costs is smaller for projects
17 with shorter PPAs than those with longer-term PPAs. An example of the
18 reduction in debt financing available when the term of the PPA is reduced can
19 be found on page 10 of the response testimony of NCSEA witness Hanes.

20
21 In my experience, equity investors also require long term PPAs, generally 15 -
22 20 years or more in order to consider an investment based on their underwriting
23 criteria. Uncontracted revenue potential—any revenue that a QF could earn

1 after the expiration of the PPA—generally is not considered in the underwriting,
2 as it is considered to be of a more speculative nature and cannot be relied upon
3 for a basis of return on their investment. In other words, when evaluating the
4 financial feasibility of a QF, an investor does not place much significance on
5 any revenue potential subsequent to the expiration of the PPA when estimating
6 the expected return on investment.

7
8 To reiterate, in my experience, because the loan term is tied to the PPA term and
9 because the annual revenue generated by a QF remains nearly constant over the
10 term of the PPA, a longer PPA term translates into a greater amount of total debt
11 service payments that can be made and the greater the amount of total project
12 cost that can be financed by the debt, which, in turn, makes the QF more
13 economically feasible.

14
15 **Q. WOULD A SHORTER TERM CONTRACT PROVIDE SUFFICIENT**
16 **OPPORTUNITY FOR A QF TO OBTAIN FINANCING?**

17 A. No. On page 29 of his testimony, Public Staff witness Hinton testifies as
18 follows:

19
20 It is appropriate for the Commission to consider whether a shorter
21 term structure provides sufficient opportunities for QFs to obtain
22 financing. This would serve to reduce the risk borne by ratepayers for
23 overpayments over a longer term, and the Public Staff believes that
24 the financing of projects may be possible with ten-year fixed PPAs.
25 However, it is likely that a higher interest rate or a higher level of
26 equity investment may be required. In addition, it is reasonable to

1 expect that some projects that are marginally viable would not be able
2 to secure reasonable financing.
3

4 Hinton is correct that reducing the term would involve a higher level of equity
5 investment. A ten-year term would typically lower the principal amount for the
6 debt available and, in turn, increase the amount of more expensive equity
7 necessary to cover the project cost. Hinton acknowledges that a reduced term
8 would mean that some projects would not be able to secure financing.
9 However, I believe that many projects would not be able to secure financing as a
10 result. In my experience, the economics of a typical QF in North Carolina
11 would not support the increase in annual debt service required for a ten-year
12 term loan versus the annual debt service required for a fifteen-year term loan,
13 assuming the same amount of loan principal had to be borrowed. This is the
14 case across generation types.
15

16 **Q. HOW DO YOU RESPOND TO THE ASSERTION THAT QF**
17 **DEVELOPMENT ACTIVITY TO DATE INDICATES THAT TERMS**
18 **BEYOND 15 YEARS ARE NOT NECESSARY?**

19 A. On page 15, lines 9-11 of his responding testimony, DNCP witness Williams
20 suggests that QF development activity to date indicates that a term longer than
21 15 years is not necessary to secure financing. However, we cannot look to past
22 QF development activity as an indication of whether a longer term is necessary
23 or unnecessary. In fact, as DEC/DEP witness Bowman points out on page 19,
24 lines 4-6 of her supplemental direct testimony, the Commission has recognized

1 that the issue of contract term “warrants regular evaluation in light of changing
2 circumstances.”

3
4 Financing QFs is becoming increasingly difficult, particularly arranging equity
5 investors. In North Carolina, the development of renewable energy facilities is
6 dependent upon the availability and efficient utilization of the North Carolina
7 Renewable Energy (Investment) Tax Credit (“NCRETC”). Equity investors that
8 have interest in investing in renewable energy facilities in order to obtain the
9 NCRETC (an “NC Investor”) are increasingly rare. In addition, arranging
10 equity investor financing is a lengthy process. It is becoming more common for
11 an NC Investor to have little or no experience with the NCRETC and,
12 consequently, must be educated on and become comfortable with this tax credit
13 before investing. This process requires a significant amount of time and effort
14 by the developer and its financing team to accomplish. Also, many new NC
15 Investors only have interest in one QF project or project portfolio and will not
16 be available to invest in future projects, causing the long NC Investor search,
17 learning process and closing cycle to begin again. The difficulties in utilizing
18 the benefits of NCRETC is an obstacle to QF development in NC and is one of
19 the reasons that only the most experienced and/or financially strongest
20 developers have had success in financing QFs in recent years. Similar to other
21 investors, NC Investors only place significance on contracted revenues when
22 evaluating return on investment.

23

1 Additionally, I have been involved in deals in which the presence of an NC
2 Investor in addition to a federal investment tax credit (“ITC”) equity investor
3 has discouraged the lender from providing debt financing because similar to the
4 NC Investor learning process, the lender was not familiar with the NCRETC and
5 could not be made sufficiently comfortable with associated laws and regulations
6 to lend. Also the NC Investor may and often does have investment
7 requirements that conflict with the lender’s requirements, such as the lender’s
8 foreclosure rights on the facility, which could jeopardize the NCRETC
9 installments not yet claimed. Therefore, securing a lender that is willing to
10 provide permanent debt on a project that involves equity investor financing has
11 been a challenge.

12
13 In my opinion, based on my experience in advising project developers to
14 structure finance in the current market, the availability of a 15-year term is a
15 very significant factor and, even then, in some cases will not be of sufficient
16 length to allow for adequate financing to cover project cost. Therefore, the
17 Commission should consider increasing the 15-year term in light of the
18 changing circumstances of today rather than decreasing it

19

20 **Q. HOW DO YOU RESPOND TO THE OBSERVATION THAT LONG**
21 **TERM CONTRACTS POSE A RISK OF NON-PERFORMANCE**
22 **AND/OR STRANDED COSTS?**

1 A. On pages 14-16 of his responding testimony, DNCP witness Williams sets forth
2 the reasons why DNCP does not support extending the term offered to small
3 QFs. Williams suggests that risk to the utility related to counterparty and/or
4 equipment performance increases as the term of the contract increases. The risk
5 of non-performance for the reason set forth by the utilities is simply non-
6 existent. As discussed above, in the usual case, a QF is financed over the term
7 of the PPA. Therefore, if an owner of a facility were to cease performance
8 during the term of the PPA, it would be in default under its financing
9 arrangements, which could involve any number of consequences. For example,
10 non-performance could trigger change of control rights of equity investors.
11 Non-performance could expose the owner to penalties and/or liquidated
12 damages under equity finance arrangements.

13
14 Additionally, in the typical situation, the generating facility is pledged as
15 security for the debt financing. In most of the deals I have been involved with
16 in North Carolina, the developer is also required to provide a corporate and/or
17 personal guaranty, in addition to a security interest in the facility.

18
19 However, renewable energy projects involving emerging or unconventional
20 technologies—such as anaerobic digesters for a swine waste generating
21 facility—are considered higher risk investments, and as a result, a lender may
22 require collateralization of the debt obligation with assets of the developer
23 beyond the project generating facility and the guaranties required in a more

1 typical situation. Put another way, to provide financing for a higher risk
2 renewable energy project, a lender may require not only an unsecured guaranty
3 but additional security in pledged assets above and beyond the generating
4 facility. In this scenario, were the owner to cease performance, it risks losing
5 the generating facility as well as the other assets pledged as security for the loan.
6 I have been involved with at least one deal in which the developer had to pledge
7 assets above and beyond the generating facility, in addition to the generating
8 facility and unsecured personal guaranties.

9
10 As a worst case scenario, if the owner of a facility were to cease performance,
11 the secured creditor would step into the shoes of the owner to continue operating
12 the facility, generating revenue paying for the capital, and still could potentially
13 exercise its right to seize the other pledged assets.

14
15 For these reasons, the developer of a renewable energy facility has a significant
16 vested interest in the success of the generating facility and will clearly not cease
17 performance after the tax benefits have been realized because of the serious
18 consequences of such actions.

19

20 **Q. HOW DO YOU RESPOND TO THE ASSERTION OF THE UTILITIES**
21 **THAT THE CHANGES ADVOCATED FOR BY INDUSTRY AMOUNT**
22 **TO PROFIT SEEKING?**

1 A. On page 25, lines 4-7 of her testimony, DEC/DEP witness Bowman indicates
2 that NCSEA's recommendations amount to "proposing that the Commission
3 impose additional risk on utilities and their customers through longer term
4 standard contracts so that QF developers can obtain improved profit margins."
5 Encouragement of QF development, not profit seeking, is the real issue.

6
7 In my experience, QF developers earn a profit, much like any business. If there
8 were no opportunity to earn a reasonable profit, it appears to me that there
9 would be no motivation to develop. However, I do not believe that the
10 recommendations of industry are aimed at improving profit margins; rather, they
11 are aimed at what is necessary in light of current conditions to encourage QF
12 development. My experience dictates that a long-term PPA is very significant
13 to the developers' securing sufficient and cost effective financing to cover
14 project cost and allow QF development.

15
16 Solar PV developers, for example, generally earn pre-tax yields of
17 approximately 6 – 9 % annually over a 30-year expected useful life of the
18 facility, depending on the rates paid by the utility under the PPA. Pre-tax yields
19 of approximately 6 – 6.5% are common for projects selling at 2012 rates, while
20 projects that sell at 2010 rates might achieve a pre-tax yield of approximately
21 9%. Developers that have project portfolios with a combination of the higher
22 and lower rates could typically experience pre-tax yields of 7 – 8 %. While the
23 higher rates certainly benefit the developers and make these facilities more

1 economically viable, these pre-tax yields are by no means excessive, and are
2 actually lower than the Commission-authorized returns on equity for the
3 Utilities.

4

5 Based on my experience with these projects as described above, I do not believe
6 the pre-tax yields achieved by their developers are excessive. To the contrary,
7 achieving pre-tax yields of 6 – 9% would seem to be a reasonable return for
8 assuming the risks of developing a QF, and extending the PPA term would only
9 help to adjust for the reduction in project financing lost due to the lower tariff
10 rates currently available.

11

12

13 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

14 A. Yes.

15 4848-5904-4891, v. 5

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-100, SUB 140

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION:

In the Matter of:
Biennial Determination of Avoided
Cost Rates for Electric Utility Purchases
from Qualifying Facilities – 2014

REBUTTAL TESTIMONY

OF

ANGELA WHITENER MAIER

ON BEHALF OF

NORTH CAROLINA SUSTAINABLE ENERGY ASSOCIATION

June 20, 2014

1 **Q. PLEASE STATE YOUR NAME, TITLE, AND BUSINESS ADDRESS.**

2 A. My name is Angela Whitener Maier. I am presently employed with the North
3 Carolina Pork Council (“Pork Council”). I joined the Pork Council in 2007 and
4 have been its Director of Policy Development and Communications since
5 joining. My business address is 2300 Rexwoods Drive, Suite 340, Raleigh,
6 North Carolina 27607.

7

8 **Q. ON WHOSE BEHALF ARE YOU TESTIFYING?**

9 A. The North Carolina Sustainable Energy Association (“NCSEA”) is proffering
10 my testimony, but I am testifying as a representative of the Pork Council.

11

12 **Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND
13 WORK EXPERIENCE.**

14 A. Prior to joining the Pork Council, I was a policy analyst for the Speaker of the
15 House in the North Carolina General Assembly. Prior to that, I was a legislative
16 assistant to two state senators and, before that, I worked as the campaign
17 manager for several state legislators. I have a bachelors and masters degree in
18 political science from North Carolina State University.

19

20 **Q. PLEASE BRIEFLY DESCRIBE PORK COUNCIL AND ITS MISSION.**

21 A. The Pork Council is a non-profit organization with a mission to ensure a socially
22 responsible and profitable pork industry in North Carolina. It seeks to achieve
23 these objectives through promotion and education. Our efforts center on

1 promoting the industry, educating consumers and producers, conducting
2 research and advancing sound public policy. Our goals include producing a safe
3 food product, protecting and promoting animal well-being and safeguarding the
4 environment through industry practices. North Carolina is a leading state in
5 livestock and poultry production, specifically ranking second in hog farming.
6 The Pork Council represents those industry interests and the individual interests
7 of more than 46,000 North Carolina citizens who work full-time in pork
8 production, processing and related industries. Over 80 percent of North
9 Carolina's hog farms are owned and operated by individual farm families.
10 Many of these farms have been passed on from generation to generation. These
11 operations contribute directly to the quality of life in their respective
12 communities. Pork production is a vital part of North Carolina's economy and
13 way of life. The Pork Council provides meaningful leadership for this very
14 important and dynamic industry.

15

16 **Q. WHAT ARE YOUR CURRENT RESPONSIBILITIES AT THE PORK**
17 **COUNCIL?**

18 A. As Director of Policy Development & Communications, I am the Pork
19 Council's principal liaison with the North Carolina General Assembly. I am
20 also responsible for the council's interaction with state agencies administering
21 programs that implicate the industry's interests. It is my job to help formulate
22 the Pork Council's position on various issues and to present that position or
23 otherwise represent the Council's interests as those matters are advanced in

1 various forums. I also oversee the efforts of others representing the Council's
2 interests in various proceedings and coordinate those efforts as they proceed.
3

4 **Q. HAVE YOU TESTIFIED BEFORE THE NORTH CAROLINA**
5 **UTILITIES COMMISSION (“COMMISSION”) BEFORE?**

6 A. Yes. I testified last year in Commission Docket No. E-100, Sub 113 in
7 connection with the electric suppliers' joint motion to delay their 2013
8 compliance obligations with the swine and poultry waste-to-energy set-asides
9 set out in N.C. Gen. Stat. § 62-133.8, a law that is often referred to as the REPS
10 law.
11

12 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

13 A. My testimony responds to the proposals of Duke Energy Carolinas, LLC,
14 (“DEC”) Duke Energy Progress, Inc., (“DEP”) and Dominion North Carolina
15 Power (collectively, the “Companies”) to reduce the eligibility cap for the
16 standard offer PPA from 5 megawatts (“MW”) to 100 kilowatts (“kW”), to
17 eliminate the 15-year fixed term payment option, and to reduce capacity
18 payments. My testimony ultimately recommends that the Commission reject the
19 Companies' proposals to reduce the standard offer eligibility threshold to 100
20 kW, reject the Companies' proposals to eliminate the 15-year fixed term
21 payment option, and reject the Companies' proposals to reduce their capacity
22 payments to qualified facilities (QFs) by rejecting, for example, the proposals to

1 reduce the performance adjustment factor applicable to swine waste-fueled
2 qualified QFs from 1.2 to 1.05.

3

4 **Q. WHY IS THE PORK COUNCIL INTERESTED IN THIS**
5 **PROCEEDING?**

6 A. As I've already mentioned, the REPS law contains a swine waste-to-energy set
7 aside. The Pork Council fully supports the set aside. We supported including
8 the set aside in the REPS law when Senate Bill 3 was being considered and our
9 support for the set aside has not waned over the years. It is good public policy
10 and in the public's interest. I am testifying in this proceeding because: 1) to
11 date, the swine waste-to-energy set aside has not been met; 2) the Pork Council
12 wants to see the swine waste-to-energy set aside achieved; and 3) the Pork
13 Council believes the Companies' proposals will make it more difficult for swine
14 waste-fueled QFs to be developed, become operational, and generate the
15 necessary swine waste renewable energy certificates ("RECs") for compliance
16 to occur.

17

18 **Q. WHEN YOU SAY THE SWINE WASTE-TO-ENERGY SET-ASIDE IS**
19 **GOOD POLICY AND IN THE PUBLIC INTEREST, WHAT DO YOU**
20 **MEAN?**

21 A. The swine waste-to-energy set aside is good policy because it encourages using
22 a readily available and abundant resource that is largely underutilized, and
23 provides an opportunity for one of North Carolina's largest industries to remain

1 viable despite the industry's inability to grow due to a ban on expansion.
2 Historically, the prevailing approach to on-farm swine waste management
3 involved collecting manure in lagoons and intermittently spraying it on growing
4 crops in agronomic proper proportions as fertilizers. As the industry expanded,
5 this waste management method came under extreme scrutiny and in 2007, a 10-
6 year old moratorium on the construction of new hog farms and the expansion of
7 existing farms that use a lagoon/spray field waste treatment system became
8 permanent. Economic growth and jobs have been directly impacted. The
9 industry has spent millions of dollars to develop alternative waste management
10 technologies that meet strict environmental criteria and are economically viable
11 to employ. The swine waste-to-energy set aside is a key component of this
12 effort. Today, to build or expand a hog farm in North Carolina, the farm's waste
13 management system must meet five (5) performance standards. The system
14 must control inadvertent discharges to surface waters and groundwater, control
15 atmospheric emissions of ammonia, control odor, eliminate the release of
16 airborne pathogens and eliminate nutrient loading to 10' surface water or
17 groundwater. Nearly all waste management systems that meet these standards
18 use a lagoon cover and/or methane capture process. These systems are the
19 foundation for the processes being used to create electricity from biogas and it
20 would be inordinately wasteful not to take advantage of this resource. At this
21 early stage in development, however, the economics of a waste-to-energy
22 management system require the ability to take full advantage of all available

1 revenue streams, *e.g.*, the ability to sell the electricity and RECs and monetize
2 certain tax incentives.

3

4 **Q. WHAT BENEFITS WOULD COME FROM A SWINE WASTE-TO-
5 ENERGY SYSTEM.**

6 A. Viable waste management systems are essential to the future growth of the pork
7 industry in North Carolina. The swine waste-to-energy set-aside promotes an
8 environmentally sustainable means to manage the waste stream from pork
9 production. In turn, this results in a variety of real benefits. First, the biogas
10 produced provides an alternative source of energy. Studies show that North
11 Carolina has the second highest capacity for swine biogas in the nation with a
12 potential to generate 1.1 million megawatts of electricity per year. This energy
13 comes from “indigenous energy resources” and diversifies the resources used to
14 reliably meet the energy needs of consumers in the State, all of which is
15 consistent with the policy goals pronounced by the General Assembly in
16 enacting the REPS. *See*. N.C. Gen. Stat. 62-2(a)(10). Second, swine waste-to-
17 energy systems provided significant environmental benefits. These include an
18 enhanced nutrient management system, odor control and the elimination of
19 pathogens. Indeed, the U.S. EPA’s AgSTAR program identifies three
20 exceptional benefits from the anaerobic digestion of swine waste: odor control,
21 water quality protection and greenhouse gas reduction. Moreover, the by-
22 product of anaerobic digestion is a digestate slurry that increases the bio-
23 availability of nutrients thereby enhancing its use as a fertilizer. Third, the

1 swine waste-to-energy industry has a huge up-side and the potential to grow and
2 create more jobs in North Carolina. Each swine waste-to-energy project injects
3 substantial revenue into the community in the form of large capital investments,
4 creating both jobs and a secondary source of revenue to farm operators from
5 waste feedstock needed for fuel. Research has shown that meeting just the first
6 stages of the REPS law's swine waste-to-energy set aside will have a one-time
7 impact on the state's economy of \$155.9 million in new construction and an on-
8 going impact of up to \$12.9 million annually. Thus, we see the swine waste-to-
9 energy set aside as addressing a number of issues in a very beneficial manner.
10 That, in our view, is good public policy.

11

12 **Q. YOU INDICATED EARLIER THAT “THE ECONOMICS OF A WASTE-**
13 **TO-ENERGY MANAGEMENT SYSTEM REQUIRE THE ABILITY TO**
14 **TAKE FULL ADVANTAGE OF ALL AVAILABLE INCENTIVES, E.G.,**
15 **THE ABILITY TO SELL THE ELECTRICITY AND RECS AND**
16 **MONETIZE CERTAIN TAX INCENTIVES.” YOU HAVE ALSO**
17 **INDICATED THAT “THE SWINE WASTE-TO-ENERGY SET-ASIDE**
18 **HAS NOT BEEN MET.” CAN YOU COMMENT ON PROJECT**
19 **VIABILITY AND WHAT IS NEEDED FOR COMPLIANCE?**

20 A. First, I would like to report that great strides are being made toward compliance
21 with the swine waste set-aside. While it seems unlikely that compliance will be
22 achieved by the electric suppliers this year, by the end of the year there will be
23 significantly more RECs generated than last year. The General Assembly's

1 goals for the REPS -- creating a diverse energy source, using indigenous
2 resources and encouraging private investment – are being achieved. In
3 November 2013, a 1.3 megawatt operation in Magnolia North Carolina became
4 fully operational. This facility will produce 10,000 MWh or 10,000 RECs each
5 year. The developer of this facility anticipated having two additional similarly
6 sized facilities operating at the end of December 2013; however, the commercial
7 operation date for these facilities was delayed due to problems securing an
8 adequate, uninterrupted flow of feedstock. It is our understanding that this
9 problem is close to being resolved and that these plants will be running by the
10 end 2014 in one case, and sometime in 2015 in the other. These plants will
11 provide a significant number of RECs for compliance. This year, another on-
12 farm project began operation and will generate an estimated 4,500 RECs
13 annually. Another developer has proposed a centralized digesting operation that
14 potentially will overcome some of the problems facing on-farm systems like
15 distances from interconnection and increased costs. It is our understanding that
16 this developer is presently looking for a site where the advantages of a
17 centralized system can be optimized and, once located and running, also will
18 provide a significant number of RECs. We are assisting the electric power
19 suppliers in locating on-farm systems and the electric power suppliers continue
20 to evaluate the use of directed biogas as an off-set to natural gas and a potential
21 source of RECs. We are optimistic about the future of the swine waste-to-
22 energy program here in North Carolina. However, there are several critical
23 conditions that will determine whether this program becomes a success.

1 **Q. CAN YOU ELABORATE ON THE CRITICAL CONDITIONS YOU**
2 **JUST MENTIONED?**

3 A. Yes. According to the electric suppliers, the high cost of swine waste-to-energy
4 projects and the risks presented by those projects make it uneconomical for most
5 individual utilities and small collaborations of utilities to “self-generate” swine
6 waste RECs by undertaking their own project or being the sole sponsor of a
7 third-party project.¹ These electric power suppliers assert that the economics
8 require that they collaborate with large utilities or large groups of electric power
9 suppliers to “sponsor” a project and then share the RECs produced by the
10 project. At the same time, typical hog farmers frequently do not have the time
11 or expertise to operate complex anaerobic digestion systems and some have
12 shown reluctance to engage in an activity they consider ancillary to their core
13 business. Given these hurdles to utility-owned and farmer-owned systems, a
14 business model that is emerging in the industry is a “third-party build-own and
15 operate scenario.” Here, a third party designs the system, oversees construction
16 and operates it for the duration of the system. The hog farmer sees benefits
17 from rent paid, improved waste management and in some cases avoided heat or
18 electricity costs. The third party benefits from the sale of electricity and RECs
19 and earning certain tax incentives. This model, however, is heavily dependent

¹ Conversely, the economics of a swine waste-to-energy project require that the producer monetize all potential incentives, particularly RECs. Thus, as one electric power supplier reported, producers are reluctant to enter into contracts with an electric power supplier that needs only a small quantity of RECs but need to assure that all of the RECs are sold to make the project viable. This circumstance may change if other markets for RECs develop, but for now the fact that a producer has limited outlets for swine waste-to-energy RECs, also forces collaboration among electric power suppliers and producers and the wide-spread downstream impact if the producer runs into delays or production problems.

1 on complex funding strategies and securing financing is virtually always the
2 most critical step in the process particularly where, as here, investors tend to be
3 very sensitive to perceived risks and changes that potentially could affect the
4 success of the project or their return on investment. The key then is to create an
5 environment in which these third party projects are likely to be successful.
6

7 **Q. WHAT DO YOU SEE AS THE KEY TO SUCCESS?**

8 A. Recent studies undertaken by the Greta Plains Institute, the Energy Center of
9 Wisconsin and UNC-Chapel Hill have all determined that the most critical
10 barriers to the adoption of anaerobic digestion as a method of waste handling are
11 economic – high upfront costs, operational demands on farms, the addition of
12 additional structures and a failure to monetize external benefits such as, reduced
13 odor and air emissions, and improved nutrient management. *See, Kramer, Joe*
14 *and Bilek, Amanda Anaerobic Digestion on Swine Operations: Assessing*
15 *Current Barriers and Future Opportunities* Energy Center of Wisconsin (2013)
16 (the “foremost change needed [to advance this resource and the benefits] is to
17 improve the economics” to the operators). While some of the issues I’ve
18 mentioned may seem to be outside the scope of this proceeding, they are very
19 important to comprehending that any change that affects the economics of swine
20 waste-to-energy systems will affect the ability to site such systems in North
21 Carolina. **The changes to the avoided cost scheme proposed by the**
22 **Companies will have a negative impact on the economics of swine waste-to-**
23 **energy systems and will thus negatively impact all of the electric power**

1 **suppliers' ability to comply with the REPS set-aside and, ultimately, this**
2 **could undermine the policy goals underlying the program.**

3
4 **Q. CAN YOU MORE FULLY EXPLAIN THAT LAST STATEMENT?**

5 A. As we understand it, the electric power suppliers are requesting the following
6 changes, among others:

- 7 (1) to reduce the eligibility cap for the standard offer PPA from 5
8 megawatts ("MW") to 100 kilowatts ("kW");
- 9 (2) to eliminate the 15-year fixed term payment option under the standard
10 offer, and
- 11 (3) to reduce their capacity payments to qualified facilities ("QFs") by,
12 for example, reducing the performance adjustment factor ("PAF")
13 applicable to swine waste-fueled qualified QFs from 1.2 to 1.05.

14 Each of these proposals will inject uncertainty in project development and has
15 the potential to reduce the return on investment. Swine waste-to-energy projects
16 already operate on small margins and are difficult to finance given a number of
17 risks involved. Any added uncertainty or costs (like the cost of negotiating a
18 PPA for a project larger than 100kW) or reduction on the return on investment
19 will make siting projects much harder. Lowering the eligibility cap for the
20 standard offer PPA from 5 MW to 100 kW means added cost and uncertainty
21 regarding the terms for any project over 100 kW. Generally, as NCSEA's other
22 witnesses have explained, financing a project without the availability of a 15-
23 year fixed term option will be extremely difficult. Similarly, reduction of the

1 PAF to 1.05 will lower revenue and make project viability more difficult to
2 achieve.²

3

4 **Q. WHAT IS YOUR RECOMMENDATION TO THE COMMISSION?**

5 A. In the interest of: 1) encouraging the development of swine waste-fueled QFs;
6 2) making the most efficient use of resources; and 3) keeping transaction costs
7 to a minimum, we believe the Commission should:

8 A. Reject the Companies' proposals to reduce the standard offer
9 eligibility threshold to 100 kW;

10 B. Reject the Companies' proposals to eliminate the availability of a 15-
11 year fixed term financing option under the standard offer; and

12 C. Reject the Companies' proposals to reduce their capacity payments to
13 QFs by rejecting, for example, the proposals to reduce the PAF
14 applicable to swine waste-fueled qualified QFs from 1.2 to 1.05.

15

16 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

17 A. Yes.

18

19 4817-8763-7531, v. 1

² Both DEP and DEC have urged that while the PAF in general should be reduced from 1.2 to 1.05, the 2.0 PAF for small hydroelectric QFs should remain at the current 2.0. *See* Direct Testimony of Kendal C. Bowman. The rationale asserted is "the companies understand[ing] that these facilities occupy a special place in the State's energy policy . . . [as evidenced by] North Carolina Gen. Stat. § 62-156 [which] codifies the State's policy to promote and support these facilities." One need not look too far to see similar statutory provisions promoting solar, and animal waste, *See e.g.*, N.C. Gen. Stat. § 62-138(d), (e) and (f). Thus, as DEC and DEP state, "given this policy" it would be simply counterintuitive to reduce the PAF in light of the swine waste set-aside.

CERTIFICATE OF SERVICE

The undersigned certifies that she has served a copy of the foregoing **REBUTTAL TESTIMONY OF HANES, REBUTTAL TESTIMONY OF MAIER,** and **REBUTTAL TESTIMONY OF GROSS** upon the parties of record in this proceeding, or their attorneys, by electronic mail.

This 20th day of June, 2014.

/s Charlotte A. Mitchell