May 30, 2014

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

Re: Response Testimonies of M. Cohen, Z. Hanes, and K. Rever  
NCUC Docket No. E-100, Sub 140

Dear Ms. Mount:

Enclosed herewith please find the response testimonies of M. Cohen, Z. Hanes and K. Rever to be pre-filed in the above-referenced docket on behalf of NCSEA.

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

RESPONSE TESTIMONY

OF

M. COHEN

ON BEHALF OF

NORTH CAROLINA SUSTAINABLE ENERGY ASSOCIATION

May 30, 2014
Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.
A. My name is Michael Cohen. I am the Vice President of Business Development of Strata Solar, LLC (“Strata” or “Company”). My business address for the record is 50101 Governors Drive, Suite 280, Chapel Hill, North Carolina 27517.

Q. HAVE YOU PRE-FILED OTHER TESTIMONY IN THIS PROCEEDING?
A. Yes. I pre-filed direct testimony consisting of 13 pages and one exhibit on behalf of the North Carolina Sustainable Energy Association (“NCSEA”) in this docket on April 25, 2014.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?
A. The purpose of my testimony is to respond to certain issues raised in the pre-filed direct testimony of witnesses for Duke Energy Progress, Inc. (“Progress”), Duke Energy Carolinas, LLC (“Duke”) and Dominion North Carolina Power (“DNCP”) (collectively, the “Utilities”).

Specifically, my testimony responds to: 1) the proposal by the Utilities to reduce eligibility for standard offer rates and terms to qualifying facilities (“QFs”) 100 kW and smaller; 2) the proposal by DNCP to eliminate from the standard offer the 15-year term for levelized rates; and 3) the proposal by DNCP to reduce the time horizon in which a QF must commence commercial operation.
1. ELIGIBILITY FOR THE STANDARD OFFER RATES AND TERMS

Q. HOW DO YOU RESPOND TO THE UTILITIES’ PROPOSAL TO REDUCE ELIGIBILITY FOR STANDARD OFFER RATES AND TERMS FROM 5 MW TO 100 kW?

A. For the reasons set forth below, I strongly oppose the proposal set forth in the testimonies of Duke/Progress witness Bowman, Duke/Progress witness Snider and DNCP witness Williams to reduce eligibility for standard offer rates and terms from 5 MW to 100 kW.

As justification for the Utilities’ proposal, DNCP witness Williams indicates that “because solar is easily scalable, companies pursuing very large scale solar development, representing hundreds of millions of dollars in investment, are simply building a multitude of sites in exactly five-MW increments to avail themselves of the standard contract benefits.” It is worth noting that nothing prohibits the development of multiple sites by the same developer so long as those sites are developed in accordance with applicable rules and regulations of the Federal Energy Regulatory Commission ("FERC") and this Commission and any limitations established in the terms and conditions of the Utilities that have been approved by this Commission.
In stark contrast to this proposal by the Utilities, I recommended in my direct testimony that the eligibility for standard offer rates and terms should be increased to ten (10) MW. DNCP witness Williams, on p. 17, lines 2-6 of his pre-filed direct testimony, highlights the primary justification for my recommendation – under current policy, QF developers “forego efficiencies of scale that come with larger developments, while generating increased administrative burdens on the regulators and utilities by creating numerous five-MW facilities instead of fewer, larger facilities.” The proposal by the Utilities to reduce the eligibility limit will further frustrate the achievement of economies of scale and, without question, will lead to increased administrative burdens on the regulators and utilities.

Q. WHY WILL THE UTILITIES’ PROPOSAL LEAD TO INCREASED ADMINISTRATIVE BURDEN AND COST FOR ALL PARTIES, INCLUDING RATEPAYERS?

A. As the Commission has consistently provided, QFs not eligible for the standard long-term levelized rates have two options if the utility does not have a Commission-recognized active solicitation: (a) negotiating a contract and rates with the utility or (b) selling energy at the utility’s Commission-established variable energy rate. Further, the Commission has provided that any unresolved issues arising during such negotiations will be subject to arbitration by the Commission at the request of either the utility or the QF. Because financing a project that sells power at a variable rate is difficult to impossible in my
experience, a QF that is not eligible for the standard offer has no choice but to negotiate with the utility.

As I stated in my direct testimony, the negotiation process can be protracted. I am aware of PPA negotiations for Strata projects that have been on-going for many months. I am also aware of efforts by Strata to negotiate PPAs that were abandoned as futile and subsequent downsizing of those facilities to 5 MW in order not to lose sums already expended on the project. Strata’s Mount Olive Farm provides an example.¹ On November 29, 2012, the Commission issued a CPCN for the facility, which at that time was proposed to be 20 MW. Because of the prolonged negotiation process on another project, Strata made the decision to downsize Mount Olive Farm in order to avoid having to go through the negotiation process again. Pursuant to a request from Strata, the Commission issued an order on October 3, 2013 amending the CPCN and registration statement to reflect the downsizing of the facility to 5 MW. The Mount Olive Farm solar facility is scheduled for construction late this summer.

I am also aware of other developers that have had similar experience in attempting to negotiate a PPA. Such a protracted process is almost always an unnecessary waste of utility time and resources, QF developer time and resources, often Public Staff time and resources, and, on occasion, Commission time and resources.

¹ See generally, NCUC Docket No. SP-2040, Sub 0.
Q. IN LIGHT OF STRATA’S EXPERIENCE WITH THE NEGOTIATION PROCESS, WHY HAS STRATA NEVER RESORTED TO PETITIONING THE COMMISSION TO SERVE AS AN ARBITATOR?

A. Strata can ill afford to alienate the Utilities—they are the only game in town. Strata has worked assiduously to develop good working relationships with the utility staff who handle the contracting, engineering and construction tasks needed to bring a solar farm on-line. They work diligently on our behalf, and we appreciate the efforts of those tasked with dealing with QF development. Strata is concerned that arbitration has the potential to sour relationships, creating a rift with the utility and undermining the Company’s ability to do business going forward. For this reason, we strive to avoid arbitration. However, arbitration petitions will likely become a necessary fact of life if the proposal to reduce eligibility for the standard QF contract put forward by the Utilities were to be adopted in this proceeding.

Q. IN LIGHT OF UTILITY CONCERNS REGARDING THE NUMBER OF SOLAR PROJECTS CURRENTLY PROPOSED TO BE DEVELOPED (“THE QUEUE”), WHAT IS YOUR EXPERIENCE REGARDING THE NUMBER OF PROJECTS THAT ARE PROPOSED VERSUS THE NUMBER OF PROJECTS THAT ACTUALLY GET DEVELOPED?
A. Approximately half of the projects which Strata initially proposes to develop do not come to fruition. A number of hurdles can cause a developer to abandon a project. The hurdles include the following:

1. Environmental restrictions (typically wetlands) which make the available acres for a site too small;
2. Interconnection upgrade costs which make the project uneconomical;
3. Geological conditions (typically rock) which make the site unbuildable;
4. Local zoning, which either prevents the project outright or imposes restrictions making the project uneconomical;
5. Opposition of neighbors, which can influence a land owner’s decision to lease property for a solar farm; and

The inability to successfully surmount all of the hurdles whittles the number of viable projects considerably. Rather than use the gross number of projects in the queue to project and manage future growth, all parties would be better served by the development of a forecasting tool, based on the history of projects that secure CPCNs and file for interconnection and those that are actually developed, to provide a more realistic projection of the number of projects that will come

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2 In its comments filed in the 2013 IRP proceeding, the Public Staff notes that in response to data requests, Progress indicated that its interconnection queue contained 1,495 MW of solar as of September 1, 2013 and that Progress indicated that it has historically seen approximately one-quarter of the capacity in the queue come to fruition. See Comments of the Public Staff, N.C.U.C. Docket No. E-100, Sub 137, filed April 11, 2014, pp. 24-25. The Public Staff recommends that, in future IRP filings, DEP and DEC factor in reasonable estimates of solar generation based on issued RFPs and a percentage of the proposed facilities in the interconnection queue coming to fruition. Id., p. 25, p. 27.
online. This recommendation appears to be consistent with the Public Staff’s comments in the on-going 2013 IRP proceeding.

Q. PLEASE COMPARE STRATA’S EFFORTS AND TIME EXPENDED IN ORDER TO SECURE A PPA IN NORTH CAROLINA WITH THE EFFORT AND TIME REQUIRED IN OTHER STATES WHERE STRATA OR ITS AFFILIATES HAVE DEVELOPED A SOLAR FACILITY.

A. In general, the PPA process—from request to execution—takes only weeks in North Carolina, in the context of the standard offer contract. The experience for projects not eligible for the standard offer is much different, as described above.

The most distinct difference, in other states where Strata is developing solar facilities, is that, typically, there is a single point of contact within the utility who shepherds projects through from the interconnection request submission all the way to PPA execution. This allows the QF developer, and the utility, to know where the project is in the development process and to have a realistic expectation for completion of that process. I have observed that there is also a more stringent focus on adhering to the specified time frames, particularly in the context of interconnection agreements, in other states than is the case in North Carolina.
Q. WHY DOES A STANDARD OFFER TO QFS UP TO 10 MW MAKE
SENSE IN TERMS OF INTERCONNECTION?

A. In my experience, solar QFs up to 20 MW can safely interconnect with the utility at distribution level. In drafting interconnection requirements associated with the fulfillment of Renewable Energy Portfolio Standard ("REPS") obligations, the General Assembly directed the Commission to establish interconnection standards for renewable energy facilities and other nonutility-owned generation with a capacity of 10 MW or less to an electric public utility’s distribution system, which suggests an intent to standardize the interconnection process for facilities 10 MW and smaller.

Q. GIVEN YOUR OBSERVATIONS REGARDING THE PPA NEGOTIATION PROCESS, COST EFFECTIVENESS AND ECONOMIES OF SCALE, WHAT IS YOUR RECOMMENDATION TO THE COMMISSION?

A. In the interest of encouraging the development of QFs, making the most efficient use of Commission, Public Staff, Utility and QF resources and keeping transaction costs to a minimum, the Commission should reject the proposal by the Utilities to reduce eligibility for the standard offer and should, instead, extend the standard offer to QFs up to 10 MW. I do not believe that this will result in an onslaught of QF development; rather, it will allow those projects that have a realistic chance of securing an interconnection agreement to be constructed and put into service more efficiently.
2. LONG-TERM STANDARD OFFER

Q. HOW DO YOU RESPOND TO DNCP’S PROPOSAL TO ELIMINATE THE 15-YEAR TERM FOR LEVELIZED RATES?

A. I oppose this proposal. DNCP takes the position that levelized rates overpay the QF in the early years of the contract and underpay the QF in the later years of the contract. In addition, DNCP insinuates that the risk of underpayment in the later years creates a risk of non-performance by the QF during those later years. However, the FERC has addressed the issue of over-payment and under-payment in a number of cases, each time making clear that the risks balance out over the term. Further, the insinuation that a QF will cease to perform in the later years of the contract ignores the realities of project finance. Because the QF is, under ordinary and customary circumstances, leveraged over the anticipated life of the facility, the QF cannot cease to perform without defaulting under its financing arrangements.

Therefore, the more appropriate change for the Commission to consider is requiring that the Utilities offer a 20-year term for levelized rates, in the interest of reducing the cost to finance facilities, and, therefore, encouraging the development of QFs.
Q. IN LIGHT OF THE UTILITY CONCERNS RELATED TO OVERPAYMENT, WOULD A LONG-TERM CONTRACT WITH A VARIABLE RATE ENCOURAGE THE DEVELOPMENT OF QFS?

A. No. Florida provides a good example of why this type of contract structure does not encourage the development of QFs. The standard offer to QFs from Florida Power and Light (“FP&L”) is for the purchase of energy on an “as-available” basis, based on the FP&L’s actual hourly avoided energy cost. “As-available” purchases, which amount to a variable energy rate, fit the cost structure of a conventionally-fueled generator, which has the capability to determine whether to operate or not based on the spread between the cost to operate and the revenue opportunity at any given moment.

Solar generators do not make spread-type decisions. With high fixed costs and near zero variable costs, solar generators are motivated to maximize production whenever possible. Once constructed, there is little a solar generation facility can do to change its costs. Any rate/term structure proposed must parallel the cost structure of a solar facility (i.e., long-term, fixed) to ensure economic feasibility and, therefore, the ability to secure financing. Thus, a variable energy rate, even if included as part of a long-term standard purchase contract, constitutes a barrier to finance.

3. TIME TO COMMENCE COMMERCIAL OPERATIONS
Q: HOW DO YOU RESPOND TO DNCP’S PROPOSAL TO REDUCE THE DEVELOPMENT TIMELINE FOR A QF?

A. DNCP witness Williams, on page 22, lines 17-18 of his direct testimony, proposes to reduce the development timeline for a QF to the later of: i) thirty (30) months from the filing of proposed rates; or ii) 18 months from the date the Commission approves rates in the pending biennial proceeding. First, it is worth pointing out that the Commission in the 2012 biennial proceeding, approved the following:

QFs should be given 30 months from the date of the Commission’s Order establishing avoided cost rates in the pending proceeding to begin delivering power in order to retain the fixed, long-term avoided cost rates in effect before November 1, 2014, and should be allowed additional time if the projects in question are nearly complete and the QF is making a good faith effort to complete the project in a timely manner. Absent further order of the Commission, this structure is to remain in place without any change in the rate schedules or standard contracts except for the relevant dates.

See Evidence and Conclusions for Findings 14-17, Order Establishing Standard Rates and Contract Terms for Qualifying Facilities, issued February 21, 2014, in N.C.U.C. Docket No. E-100, Sub 136, p. 38. Moreover, the Public Staff advocated for thirty (30) months on the basis that the Utilities have the ability to delay execution of the power purchase agreement (“PPA”). See Evidence and Conclusions for Findings 14-17, Public Staff’s Proposed Order, filed December 20, 2013 in N.C.U.C. Docket No. E-100, Sub 136. The Utilities also have the ability to delay execution of the interconnection agreement.
Second, DNCP’s proposal to limit availability is problematic. Rates that have been proposed by the utility, but not approved by the Commission, do not provide an investor with sufficient certainty as to return on investment; therefore, it is difficult, if not impossible, to secure financing for a project for which final rates are not available. So, under DNCP’s proposal, a developer realistically would have 18 months to develop a project to commercial operation, not 30.

DNCP witness Williams indicates that it is the Company’s experience that a solar facility can be constructed in as little as two (2) months. A solar facility can be constructed quickly relative to conventional generation; in fact, Strata’s business model depends on developing facilities quickly. However, in my experience, the average solar facility takes longer than two (2) months to construct. On average, the time to construct the average solar facility – from building permit to commercial operation – is four (4) to five (5) months.

The Commission should be aware, however, that construction is only part of the development process. The interconnection process adds a significant amount of time to the development timeline.

Q: PLEASE DISCUSS YOUR EXPERIENCE WITH THE INTERCONNECTION PROCESS AND THE IMPLICATIONS FOR PROJECT DEVELOPMENT.
A. The amount of time, and unpredictability with respect to same, associated with the interconnection process in North Carolina is problematic. Specifically, it can take 12-18 months to complete the interconnection process to get to an executable interconnection agreement. The utility typically demands payment shortly thereafter; we are invoiced usually right around the time we receive the executed agreement and payment is required within 30 days of the invoice for the one-time, up-front charge. Depending on the point of interconnection, this charge can be fairly significant. In fact, it can range in the hundreds of thousands of dollars. In the context of standard deals, the utility requires that this payment be made before the PPA is provided for execution. This means that the QF has to find a way to pay for the interconnection charge before it secures financing for a project as, typically, financing cannot be secured until a PPA has been executed.

Pursuant to the terms of the interconnection agreement, non-payment of charges due under the agreement is a default that, if not cured, can result in termination of the agreement and loss of position in the queue. However, payment of the interconnection charge is non-refundable. So we can be in the position of having to pay the non-refundable interconnection charge to preserve a place in the queue before we have an executed PPA. This process inappropriately shifts all risk to the QF because the QF is forced to pay the non-refundable interconnection charge before it has the certainty that a project will secure financing and move forward.
The difficulties we have experienced with the interconnection process cannot be understated. The length of time to get through the process varies from project to project, but in every case is long and often in excess of the specific time frames set forth in the interconnection standards.

Q. GIVEN THE FOREGOING, WHAT IS YOUR RECOMMENDATION REGARDING DNCP’S PROPOSAL?

A. For the reason given above, DNCP’s proposal provides an unreasonably short time to develop a project to commercial operation, and the Commission should reject this proposal and maintain the timeline established in the 2012 biennial proceeding.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.
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

RESPONSE TESTIMONY

OF

K. ZOË GAMBLE HANES

ON BEHALF OF

NORTH CAROLINA SUSTAINABLE ENERGY ASSOCIATION

May 30, 2014
Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.

A. My name is K. Zoë Gamble Hanes. I am the Vice President and General Counsel for FLS Energy. My business address is 130 Roberts Street, Asheville, North Carolina 28801 and 831 E. Morehead 6th Floor, Charlotte, NC 28202.

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

A. Yes. Pursuant to order of the North Carolina Utilities Commission (the “Commission”) issued on May 29, 2014 in this docket, I adopted and supplemented the direct testimony of Greg Ness pre-filed on behalf of the North Carolina Sustainable Energy Association (“NCSEA”) in this docket on April 25, 2014.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to respond to certain issues raised in the pre-filed direct testimony of witnesses for Duke Energy Progress, Inc. (“Progress”), Duke Energy Carolinas, LLC (“Duke”) and Dominion North Carolina Power (“DNCP”) (collectively, the “Utilities”)

Specifically, my testimony responds to: 1) the proposal by the Utilities to reduce eligibility for standard offer rates and terms to qualifying facilities (“QFs”) 100 kW and smaller; 2) the proposal by DNCP to eliminate from the standard offer the 15-year term for levelized rates; and 3) the proposal by DNCP
to reduce the time horizon in which a QF must commence commercial operation from thirty (30) months—as was approved by the Commission in that Order Establishing Standard Rates and Contract Terms for Qualifying Facilities, issued on February 21, 2014 in N.C.U.C. Docket No. E-100, Sub 136—to eighteen (18) months.

1. **ELIGIBILITY FOR THE STANDARD OFFER RATES AND TERMS**

Q. **HOW DO YOU RESPOND TO THE UTILITIES’ PROPOSAL TO REDUCE ELIGIBILITY FOR STANDARD OFFER RATES AND TERMS FROM 5 MW TO 100 kW?**

A. For the reasons set forth below, I strongly oppose the proposal set forth in the testimonies of Duke/Progress witness Bowman, Duke/Progress witness Snider and DNCP witness Williams to reduce eligibility for standard offer rates and terms from 5 MW to 100 kW. The overarching purpose of PURPA is to encourage QF development. The current environment—decreasing rates and REC prices and increasing uncertainty related to tax incentives—necessitates maximizing efficiencies of scale and lowering the per unit cost of QFs in order for a project to be economically feasible and cost effective. In this type of environment, feasibility is improved by increasing the size of the facility.

As justification for the Utilities’ proposal, DNCP witness Williams indicates that “because solar is easily scalable, companies pursuing very large scale solar development, representing hundreds of millions of dollars in investment, are
simply building a multitude of sites in exactly five-MW increments to avail
themselves of the standard contract benefits.” It is worth noting that nothing
prohibits the development of multiple sites by the same developer so long as
those sites are developed in accordance with applicable rules and regulations
promulgated by the Federal Energy Regulatory Commission (“FERC”) and this
Commission and any limitations established in the terms and conditions of the
Utilities that have been approved by this Commission. Nothing in PURPA or
the FERC regulations or FERC precedent prevents the development of multiple
facilities by the same developer, so long as they are more than one mile apart.

More importantly, the extremely long delays experienced in securing
interconnection agreements and power purchase agreements (12-18 months) has
made it necessary for FLS Energy to create a business strategy that focuses on
first securing financing and then acquiring projects with executed
interconnection agreements and PPAs already in place. Our financing partners
are willing to proceed with commitments of capital because of the confidence
and security that the standard form of PPA provides.

Currently, for projects greater than 5 MW there is no guarantee that a PPA
will have financeable terms. In contrast to the standard offer contract, the
negotiated contract does not provide the confidence and security our financing
partners need to commit capital, making it impossible to secure financing that is
necessary to develop the project and pay all interconnection charges. We have
requested that the Commission increase the standard offer to 10 MW for this
very reason—it captures economies of scale while maintaining FLS Energy’s

ability to secure financing for project development, construction and operation.

DNCP witness Williams, on p. 17, ll 2-6 of his pre-filed direct testimony, highlights the primary justification for the Utilities’ recommendation to reduce eligibility for the standard offer to 100 kW – under current policy, QF developers “forego efficiencies of scale that come with larger developments, while generating increased administrative burdens on the regulators and utilities by creating numerous five-MW facilities instead of fewer, larger facilities.” However, my experience leads me to conclude that the proposal by the Utilities to reduce the eligibility limit will further frustrate the achievement of economies of scale and financing and will lead to increased administrative burdens on the regulators and utilities.

Q. WHAT ARE YOUR OBSERVATIONS WITH RESPECT TO SIZE OF THE QF?

A. When FLS first began developing utility scale solar QFs in North Carolina in 2012, the company developed smaller facilities, primarily 1 MW or less. However, over time, the size of the QF around which our business model revolves has grown, primarily as a result of increased economies achieved through scale and decreasing revenue streams—resulting from decreasing rates and decreasing prices paid for RECs—and the need to spread certain fixed costs over increased generation to improve cost effectiveness. As of the date of this
testimony, through a partnership agreement, FLS has five QFs larger than 5 MW under development.

Q. WHAT WILL BE THE RESULT IF THE COMMISSION REDUCES ELIGIBILITY FOR THE STANDARD OFFER?

A. If the Commission grants the request of the Utilities to limit eligibility for standard offer rates and terms to QFs 100 kW and smaller, any QF larger than 100 kW will be in the position of negotiating a PPA with the purchasing utility. While FLS has not yet had to negotiate a PPA, my understanding is that the process is protracted and takes many months, as compared to the standard offer process that can be completed in a matter of weeks. Additionally, as a result of my experience in participating in the Duke solar RFP for projects greater than 5 MW, the PPA that Duke has provided as part of the negotiated process has significantly different terms and conditions from the standard offer.

As pointed out by Duke/Progress witness Snider, 1000 MW of proposed capacity in the queue falls in the 100 kW to 5 MW range. This means that these projects, as well as the remaining 1000+ MW of proposed capacity in the queue, would have to negotiate a PPA with the purchasing utility. Commission rules allow the negotiating parties to ask the Commission to serve as an arbitrator if negotiations reach an impasse. It seems logical to me that requiring a greater number of parties to negotiate necessarily will result in an increased number of arbitration proceedings. This seems an inefficient use of utility time and
resources, QF developer time and resources, often Public Staff time and resources, and, likely, Commission time and resources.

The Utilities justify their request on the assertion that QF developers have changed. Specifically, Duke/Progress witness Bowman testifies, on page 18 of her pre-filed direct testimony, that “[i]n today’s environment, developers of even smaller projects tend to be well-experienced and sophisticated entities. Currently, in North Carolina, developers of QFs are routinely planning and developing projects both inside and outside the standard tariff parameters.”

DNCP witness Williams, on page 16 of his pre-filed direct testimony, testifies that “QF development activities in DNCP’s service territory have changed dramatically in the past year. Now, in most instances, these development projects are not ‘mom-and-pop’ operations; they are owned by sophisticated companies backed by sophisticated financing, often with broad portfolios of renewable generation, that do not require the simplicity and benefits of a standard tariff.”

It is true that industry is increasingly sophisticated, that technology is increasingly efficient and cost effective and that there has been a significant increase in proposed QF capacity in recent years. However, industry is not “routinely . . . developing projects . . . outside of the standard tariff parameters.”

The limited number of larger QFs in commercial operation is telling. Moreover, since 2010 Duke has executed six PPAs with QFs larger than 5 MW, two of which are solar QFs. Progress has executed eight PPAs with QFs larger than 5
MW, none of which are solar. And, as Williams testified, of DNCP’s 58 MW of executed contracts with solar projects, 40 MW represents QFs greater than 5 MW—which, upon information and belief, are only two (2) QFs.

Q. GIVEN YOUR OBSERVATIONS REGARDING COST EFFECTIVENESS AND THE PPA NEGOTIATION PROCESS, WHAT IS YOUR RECOMMENDATION TO THE COMMISSION?

A. In the interest of encouraging the development of QFs, making the most efficient use of Commission, Public Staff, Utility and QF resources and keeping transaction costs to a minimum, the Commission should reject the proposal by the Utilities to reduce eligibility for the standard offer and should, instead, extend the standard offer to QFs up to 10 MW. I do not believe this will create a QF “gold rush.” As we have seen, not all capacity that has been proposed will be developed. What is true is that securing financing involves complicated financial transactions that some developers are not capable of completing, and most developers cannot begin the process of securing financing until the PPA has been executed or clearly will be issued as a matter of right. Therefore, even an executed PPA does not guarantee that a proposed QF will be developed. Developer balance sheet, the rates offered for the purchase of energy and capacity, as well as the terms of the PPA, dictate whether a proposed project is financeable and, ultimately, constructed. For these reasons, extending eligibility for the standard offer will not result in an onslaught of development but rather
2. LONG-TERM STANDARD OFFER

Q. HOW DO YOU RESPOND TO DNCP’S PROPOSAL TO ELIMINATE THE 15-YEAR TERM FROM THE STANDARD OFFER?
A. I oppose this proposal. DNCP bases its request on the assertion that levelized rates overpay the QF in the early years of the contract and underpay the QF in the later years of the contract. DNCP insinuates that the risk of underpayment in the later years creates a risk of non-performance by the QF during those later years of a long term contract. However, the FERC has addressed the issue of over-payment and under-payment in a number of cases, each time making clear that the risks balance each other out. Further, the insinuation that a QF will cease to perform in the later years of the contract ignores the realities of project finance. Because the QF is, under ordinary and customary circumstances, leveraged over the anticipated life of the facility, the QF cannot cease to perform without defaulting under its financing arrangements.

Q. WHAT EFFECT DOES A LONGER TERM PPA HAVE ON COST TO FINANCE A PROJECT?
A. My experience in North Carolina and beyond dictates that a 20-year term would reduce cost to finance by 3-5%, as a project is typically financed over the same
term as the PPA. Specifically, the table below depict financial models for a hypothetical QF, generally representative of those developed by my company, and indicates the decrease in cost to finance as the term over which a project is financed is increased from 10 years to 20 years.

![Hypothetical Project Funding Example](image)

<table>
<thead>
<tr>
<th>Project Metrics</th>
<th>10 Year Amortizing Loan</th>
<th>20 Year Amortizing Loan</th>
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<tbody>
<tr>
<td>Project Value</td>
<td>50,000,000</td>
<td>50,000,000</td>
</tr>
<tr>
<td>Available Cash Flows for Debt Service Coverage</td>
<td>100,000</td>
<td>100,000</td>
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<tr>
<td>Available Loan Principal</td>
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<td>13,958,077</td>
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<tr>
<td>Permanent Debt Funding Interest Rate</td>
<td>6.00%</td>
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<td>Term (Months)</td>
<td>120</td>
<td>240</td>
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<tr>
<td>Permanent Debt Capital Stack Allocation</td>
<td>12.95%</td>
<td>11.82%</td>
</tr>
<tr>
<td>Weighted Cost of Capital</td>
<td>55%</td>
<td>55%</td>
</tr>
</tbody>
</table>

### Project Comparisons (15 Year vs. 20 Year Amortizing Loan)

- Net Leverage Increase: 8.72%
- Net Weighted Cost of Capital Reduction: 1.13%
- Relative Cost of Capital Reduction: 8.72%

Q. DO THE UNREGULATED DIVISIONS OF DUKE AND DOMINION TAKE ADVANTAGE OF LONGER TERMS FOR COMPANY-OWNED SOLAR PROJECTS?

A. Yes. A 20-year term would be consistent with the PPAs that the unregulated divisions of Duke Energy and Dominion Resources have entered into, in the context of owned solar generation. See Duke Energy Carolinas, LLC and Duke Energy Progress, Inc. Annual Report on Corporate Governance, For Year Ended December 31, 2013, N.C.U.C. Docket Nos. E-7, Sub 986B and E-2, Sub 998B, filed March 31, 2014, p. 3 (providing that “[m]ost contracts have a term which approximates the estimated useful life of the underlying generation project.”).

Web pages for Duke Energy Renewables indicate a 20-year term for a solar project is fairly routine these days. Specifically, Duke Energy Renewables
owns and operates more than 150 MW of solar facilities at more than 20 solar farms across the country. As indicated on the project webpage, Shelby Solar supplies electricity to the North Carolina Municipal Power Agency Number 1 under the terms of a 20-year PPA. See http://www.duke-energy.com/commercial-renewables/shelby-solar.asp. Murfreesboro Solar supplies electricity to North Carolina Electric Membership Corporation under the terms of a 20-year PPA. See http://www.duke-energy.com/commercial-renewables/murfreesboro.asp. Many of the projects located outside of North Carolina supply electricity under terms longer than 20 years. The webpages from the Duke Energy Renewables website, last accessed on May 29, 2014, are attached as Exhibit 1. Similarly, web pages for Dominion Resources indicate that the company enters into PPAs with terms longer than 15 years. The Somers Solar Center, owned by Dominion, sells power to Connecticut Light & Power under the terms of a 20-year PPA. See https://www.dom.com/about/stations/renewable/solar/connecticut-solar-power-project.jsp, last accessed May 29, 2014.

Therefore, the more appropriate change for the Commission to consider is requiring that the Utilities offer a 20-year term for standard offer rates, in the interest of reducing the cost to finance facilities and, therefore, encouraging the development of QFs.

3. TIME TO COMMENCE COMMERCIAL OPERATIONS
Q: HOW DO YOU RESPOND TO DNCP’S PROPOSAL TO REDUCE THE DEVELOPMENT TIMELINE FOR A QF FROM 30 MONTHS TO 18 MONTHS?

A. DNCP witness Williams, on page 22, lines 17-18 of his direct testimony, proposes to reduce the development timeline for a QF from thirty (30) months from the final order in the biennial proceeding to 18 months. First, it is worth pointing out that the Commission just approved the thirty (30) month timeline in the previous biennial proceeding. Moreover, the Public Staff advocated for thirty (30) months on the basis that the Utilities have the ability to delay execution of the power purchase agreement (“PPA”). See Evidence and Conclusions for Findings 14-17, Public Staff’s Proposed Order, filed December 20, 2013 in N.C.U.C. Docket No. E-100, Sub 136.

DNCP witness Williams indicates that it is the Company’s experience that a solar facility can be constructed in as little as two (2) months. A solar facility can be constructed quickly relative to conventional generation; in fact, one of the benefits of solar generation is that it can be constructed fairly quickly, helping to smooth out the matching of loads and resources and reduce the effects of “lumpiness” that results from the addition of large central plants, as was touted by the Public Staff in the previous biennial proceeding. However, in FLS’ experience, the average solar facility takes longer than two (2) months to construct. Specifically, the table below indicates the average development and construction timeline for facilities developed to commercial operation by FLS:
Construction is only part of developing a project to commercial operation. Under usual circumstances, as I have already explained, a developer cannot secure financing for a facility until both the interconnection agreement and PPA have been executed. Although the execution of the standard PPA takes only a matter of weeks, the execution of an interconnection agreement can take many months, in some cases longer than a year. In my experience, giving the timing of the interconnection process and increasing challenges associated with securing financing, it is not reasonable to expect that a facility could achieve commercial operation within 18 months.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.
Solar Power Projects
Duke Energy Renewables

Duke Energy Renewables, part of Duke Energy's Commercial Businesses, is a leader in developing innovative wind and solar energy generation projects throughout the United States. The company began building and operating photovoltaic (PV) solar projects for commercial business customers in 2009 and now owns more than 100 megawatts (MW) of generating capacity at 17 U.S. solar farms.

Since 2007, Duke Energy has invested more than $3 billion to grow its commercial wind and solar power businesses.

Duke Energy Renewables is investing in more than just clean energy. Our wind and solar farms:

- Create jobs, particularly during construction.
- Provide valuable tax revenue year after year to the communities that host our renewable power projects.
- Provide a steady, supplemental source of revenue for participating landowners.
- Help reduce dependence on conventional sources of electricity.

Duke Energy Renewables owns and operates six 1-megawatt solar farms for customers in Shelby, Taylorsville, and Murphy, N.C.:

<table>
<thead>
<tr>
<th>Name/Location</th>
<th>In-Service Date</th>
<th>Capacity (AC)</th>
<th>PV Panels</th>
<th>Power Offtake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Wing</td>
<td>Nov. 2010</td>
<td>14 MW</td>
<td>214,500</td>
<td>CPS Energy</td>
</tr>
<tr>
<td>San Antonio, TX</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sunset Reservoir</td>
<td>Dec. 2010</td>
<td>4.5 MW</td>
<td>24,000</td>
<td>San Francisco Public Utilities Commission</td>
</tr>
<tr>
<td>San Francisco, CA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pima County, AZ</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Yavapai County, AZ</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stanton</td>
<td>Dec. 2011</td>
<td>6 MW</td>
<td>25,172</td>
<td>Orlando Utilities Commission</td>
</tr>
<tr>
<td>Orange County, AZ</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Murfreesboro</td>
<td>Dec. 2011</td>
<td>5 MW</td>
<td>19,960</td>
<td>NC EMC (Power) GreenCo (RECs)</td>
</tr>
<tr>
<td>Murfreesboro, NC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Mountain</td>
<td>Nov. 2012</td>
<td>10 MW</td>
<td>40,000</td>
<td>UniSource Energy Services</td>
</tr>
<tr>
<td>Mohave County, AZ</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gato Montes</td>
<td>Dec. 2012</td>
<td>6 MW</td>
<td>48,000</td>
<td>Tucson Electric Power Company</td>
</tr>
<tr>
<td>Tucson, AZ</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whitepost I &amp; II</td>
<td>Nov. 2013</td>
<td>5 MW</td>
<td>27,450</td>
<td></td>
</tr>
<tr>
<td>Beaufort County, NC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highlander</td>
<td>June 2013</td>
<td>21 MW</td>
<td>100,188</td>
<td>Southern California Edison</td>
</tr>
<tr>
<td>Twentynine Palms, CA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In addition, Duke Energy Renewables owns and operates six 1-megawatt solar farms for customers in Shelby, Taylorsville, and Murphy, N.C.:

<table>
<thead>
<tr>
<th>Name/Location</th>
<th>Power Offtake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holiness</td>
<td>Tennessee Valley Authority through Blue Ridge Mountain EMC</td>
</tr>
<tr>
<td>Martins Creek</td>
<td></td>
</tr>
<tr>
<td>Murphy Farm</td>
<td></td>
</tr>
<tr>
<td>Wingate</td>
<td></td>
</tr>
<tr>
<td>Murphy, NC</td>
<td></td>
</tr>
<tr>
<td>Shelby</td>
<td>North Carolina Municipal Power Agency Number 1</td>
</tr>
<tr>
<td>Shelby, NC</td>
<td></td>
</tr>
<tr>
<td>Taylorsville</td>
<td>EnergyUnited</td>
</tr>
<tr>
<td>Taylorsville, NC</td>
<td></td>
</tr>
</tbody>
</table>
Through a partnership with Integrys Energy, Duke Energy Renewables has developed more than 18 MW of small, rooftop and ground-mounted distributed solar installations in Arizona, California, New Jersey, Pennsylvania and Massachusetts.

Who We Are

Duke Energy is the largest electric power company in the United States, with more than $100 billion in total assets. The company supplies and delivers electricity to approximately 7 million customers in the Southeast and Midwest. Headquartered in Charlotte, N.C., Duke Energy is a Fortune 250 company traded on the New York Stock Exchange under the symbol DUK.

Duke Energy Renewables, part of Duke Energy's Commercial Businesses, is a leader in developing innovative wind and solar solutions for customers throughout the United States. The company’s growing portfolio of commercial renewable assets includes 15 wind farms and 17 solar farms in operation in 12 states, totaling more than 1,700 megawatts in electric-generating capacity. The business is dedicated to helping utilities, electric cooperatives and municipalities deliver affordable, reliable and clean energy to their customers.

To learn more about Duke Energy Renewables, visit duke-energy.com/renewables.

Committed to Sustainability

For seven consecutive years, Duke Energy has been named to the elite Dow Jones Sustainability North America Index for excellence in environmental, social and financial performance. The company also has been recognized as one of Corporate Responsibility Magazine’s “100 Best Corporate Citizens” for five consecutive years.

A Century of Experience

Duke Energy draws upon more than 100 years of experience designing, building and operating power plants. We got our start in renewable energy—hydroelectricity—in 1904 on the banks of the Catawba River in North Carolina. Today, our investments in wind and solar energy help Duke Energy Renewables customers meet their renewable energy requirements and long-term goals.

A Long-term Approach to Solar

We develop solar power projects with the intent to own and operate our facilities for years to come, setting us apart from many others in our industry.
Solar Energy

Project highlights

Duke Energy Renewables owns and operates more than 150 megawatts (MW) of photovoltaic (PV) solar power projects at more than 20 solar farms across the country, delivering customized solar solutions for utilities, municipalities and large business customers. Since 2009, Duke Energy has invested more than a half billion dollars to grow its solar power business.

INDU: a joint venture between Duke Energy Renewables and Integrys Energy Services

Through its 50-50 partnership with Integrys Energy, Duke Energy Renewables has also developed more than 15 MW of small-scale, rooftop and ground-mounted distributed solar installations in Arizona, California, New Jersey, Pennsylvania, and Massachusetts.

Our solar farms

View our Solar Energy Projects fact sheet for a summary of Duke Energy Renewables' commercial solar farms, or click on one of the links below for an overview of each project.

- **Highlander** (commercial-renewables/highlander.asp), CA (21 MW)
- **Bagdad** (commercial-renewables/bagdad-solar.asp), AZ (16 MW)
- **Blue Wing** (commercial-renewables/blue-wing-solar.asp), TX (14 MW)
- **Washington White Post** (commercial-renewables/washington-white-post.asp), NC (12.5 MW)
- **Black Mountain** (commercial-renewables/black-mountain-solar.asp), AZ (16 MW)
- **Gato Montes** (commercial-renewables/gato-montes.asp), AZ (6 MW)
- **Stanton** (commercial-renewables/stanton.asp), FL (6 MW)
- **Dogwood** (commercial-renewables/dogwood-solar.asp), NC (20 MW)
- **Mifflinfield** (commercial-renewables/mifflinfield-solar.asp), NC (5 MW)
- **Bethel Price** (commercial-renewables/bethel-price.asp), NC (6 MW)
- **Washington Airport** (commercial-renewables/washington-airport.asp), NC (5 MW)
- **Alco** (commercial-renewables/al-solar.asp), AZ (5 MW)
- **Murfreesboro** (commercial-renewables/murfreesboro.asp), NC (5 MW)
- **Holiness** (commercial-renewables/holiness.asp), NC (1 MW)
- **Shelby** (commercial-renewables/shelby-solar.asp), NC (1 MW)
- **Martins Creek** (commercial-renewables/martins-creek-solar.asp), NC (1 MW)
- **Murphy Farm** (commercial-renewables/murphy-solar.asp), NC (1 MW)
- **Taylorsville** (commercial-renewables/taylorsville-solar.asp), NC (1 MW)
- **Wingate** (commercial-renewables/wingate.asp), NC (1 MW)
- **Sunset Reservoir** (commercial-renewables/sunset-solar.asp), CA (4.5 MW)
- **Windsor Cooper Hill** (commercial-renewables/windsor-cooper-hill.asp), NC (5 MW)
- **Gallatin Mones** (commercial-renewables/gallatin-mones.asp), FL (6 MW)
- **Stanton** (commercial-renewables/stanton.asc), FL (6 MW)
- **Washington Airport** (commercial-renewables/washington-airport.asp), NC (5 MW)
- **Highlander** (commercial-renewables/highlander.asp), CA (21 MW)
- **Bagdad** (commercial-renewables/bagdad-solar.asp), AZ (16 MW)
- **Blue Wing** (commercial-renewables/blue-wing-solar.asp), TX (14 MW)
- **Washington White Post** (commercial-renewables/washington-white-post.asp), NC (12.5 MW)
- **Black Mountain** (commercial-renewables/black-mountain-solar.asp), AZ (16 MW)
- **Gato Montes** (commercial-renewables/gato-montes.asp), AZ (6 MW)
- **Stanton** (commercial-renewables/stanton.asp), FL (6 MW)
- **Dogwood** (commercial-renewables/dogwood-solar.asp), NC (20 MW)
- **Mifflinfield** (commercial-renewables/mifflinfield-solar.asp), NC (5 MW)
- **Bethel Price** (commercial-renewables/bethel-price.asp), NC (6 MW)
- **Washington Airport** (commercial-renewables/washington-airport.asp), NC (5 MW)

If you are interested in contacting Duke Energy Renewables about a commercial solar power project, please email us at commercial-solar@duke-energy.com.

Solar Energy Industries Association (http://www.seia.org)
Photos: Duke Energy Wind and Solar Farms (Flicker) (http://www.flickr.com/photos/dukeenergy/collections/72157634053112354/)
Supplier Registration (/suppliers/supplier-registration.asp)
Customer Programs in Our Regulated Service Areas (http://www.duke-energy.com/environment/customer-programs.asp)
Shelby Solar
Project highlights

- Located in Shelby, North Carolina
- Generates 1 megawatt of electricity, enough to power approximately 140 homes
- Began commercial operation in May 2010
- Supplies electricity to the North Carolina Municipal Power Agency Number 1 under the terms of a 20-year power purchase agreement
- Consists of 4,522 ground-mounted crystalline silicon panels
Located in Taylorsville, North Carolina
Generates 1 megawatt of electricity, enough to power approximately 150 homes
Began commercial operation in October 2010
Supplies electricity to EnergyUnited under the terms of a 20-year power purchase agreement
Consists of 4,224 photovoltaic (PV) panels
Blue Wing Solar

Project highlights

- Located in San Antonio, Texas
- Generates 14 megawatts of energy, enough to power nearly 2,800 households
- Began commercial operation in November 2010
- Supplies electricity to CPS Energy under the terms of a 30-year power purchase agreement
- Consists of 214,500 solar photovoltaic (PV) modules
- The emissions-free power generated from the site is equivalent to taking 3,800 cars off the road.
Murphy Farm Solar

Project highlights

- Located near Murphy, North Carolina
- Generates 1 megawatt of electricity, enough to power approximately 150 homes
- Began commercial operation in May 2011
- Supplies electricity to the Tennessee Valley Authority through Blue Ridge Mountain Electric Membership Corporation under the terms of a 10-year power purchase agreement
- Consists of 4,298 solar photovoltaic (PV) modules
Wingate Solar

Project highlights

- Located in Murphy, North Carolina
- Generates 1 megawatt of electricity, enough to power about 200 homes
- Began commercial operation in August 2011
- Supplies electricity to the Tennessee Valley Authority through Blue Ridge Mountain Electric Membership Corporation under the terms of a 10-year power purchase agreement
- Consists of 4,340 solar photovoltaic (PV) modules
Ajo Solar

- Located in Pima County, Arizona
- Generates 5 megawatts of electricity, enough to power about 1,000 homes
- Began commercial operation in September 2011
- Supplies electricity to Arizona Public Service Company under the terms of a 25-year power purchase agreement
- Consists of 21,168 solar photovoltaic (PV) modules
Holiness Solar
Project highlights

- Located in Murphy, North Carolina
- Generates 1 megawatt of electricity, enough to power about 200 homes
- Began commercial operation in November 2011
- Supplies electricity to the Tennessee Valley Authority through Blue Ridge Mountain Electric Membership Corporation under the terms of a 10-year power purchase agreement
- Consists of 4,242 solar photovoltaic (PV) modules
Murfreesboro Solar

Project highlights

- Located in Murfreesboro, North Carolina
- Generates 5 megawatts of electricity, enough to power about 700 homes
- Began commercial operation in December 2011
- Supplies electricity to North Carolina Electric Membership Corporation under the terms of a 20-year power purchase agreement
- GreenCo will purchase all renewable energy certificates (RECs) generated by the facility under the terms of a 20-year purchase agreement.
- Consists of 19,960 solar photovoltaic (PV) modules
Stanton Solar

Project highlights

- Located in Orange County, Florida
- Generates 6 megawatts of electricity, enough to power about 1,200 homes
- Began commercial operation in December 2011
- Supplies electricity to Orlando Utilities Commission under the terms of a 20-year power purchase agreement
- Consists of 25,175 solar photovoltaic (PV) modules
Bagdad Solar

- Located in Yavapai County, Arizona
- Generates 15 megawatts of electricity, enough to power about 3,000 homes
- Began commercial operation in December 2011
- Supplies electricity to Arizona Public Service Company under the terms of a 25-year power purchase agreement
- Consists of 71,512 solar photovoltaic (PV) modules
Gato Montes Solar

Project highlights

- Located in Tucson, Arizona, at the University of Arizona's Science and Technology Park
- Generates 6 megawatts of electricity, enough to power about 1,200 homes
- Began commercial operation in December 2012
- Supplies electricity to Tucson Electric Power Company under the terms of a 20-year power purchase agreement
- Consists of 48,000 solar photovoltaic (PV) modules using thin-film, amorphous technology — unique in the Duke Energy Renewables fleet
Black Mountain Solar

- Located near Kingman in Mohave County, Arizona
- Generates 10 megawatts of electricity, enough to power about 2,000 homes
- Began commercial operation in December 2012
- Supplies electricity to UniSource Energy Services under the terms of a 20-year power purchase agreement
- Consists of 42,000 solar photovoltaic (PV) modules
Washington White Post Solar

Project highlights

- Located in Beaufort County, North Carolina
- Generates 12.5 megawatts of electricity, enough to power about 3,000 homes
- Began commercial operation in December 2012
- Supplies electricity to North Carolina Eastern Municipal Power Agency under the terms of a 15-year power purchase agreement
- Consists of 53,000 solar photovoltaic (PV) modules
Bethel Price Solar

Project highlights

Located in Pfall County, North Carolina

- Generates 5 megawatts of electricity, enough to power about 1,000 homes
- Construction completed in 2013
- Supplies electricity to Dominion NC Power
- Consists of approximately 23,000 solar photovoltaic (PV) modules
Windsor Cooper Hill Solar
Project highlights

Located in Bertie County, North Carolina

- Generates 5 megawatt of electricity, enough to power about 1,000 homes
- Construction completed in 2013
- Supplies electricity to Dominion NC Power
- Consists of approximately 23,000 solar photovoltaic (PV) modules
Highlander Solar
Project highlights

Located in Twentynine Palms, California, the twin projects - Highlander Solar 1 and 2 - run as a single operation.

- Generates 21 megawatts of electricity, enough to power about 4,000 homes
- Began commercial operation in June 2013
- Supplies electricity to Southern California Edison under the terms of a 20-year power purchase agreement
- Consists of 100,188 solar photovoltaic (PV) modules
Sunset Reservoir Solar

The Sunset Reservoir Solar Power Project is located in San Francisco, Calif. The project generates 4.5 megawatts of solar energy and helps power San Francisco's municipal services and facilities, including public buses, the San Francisco International Airport, health clinics, and other vital city services.

- Duke Energy Renewables acquired the project from Recurrent Energy in August of 2013
- The facility supplies solar energy to the San Francisco Public Utilities Commission under a 25-year power purchase agreement
- The project includes 24,000 photovoltaic solar panels
- Sunset Reservoir is the largest solar generation facility in San Francisco
Millfield Solar

Located in Beaufort County, North Carolina

- Generates 5 megawatt of electricity, enough to power about 1,000 homes
- Began commercial operation in November 2013
- Supplies electricity to North Carolina Eastern Municipal Power Agency under the terms of a 15-year power purchase agreement
- Consists of 27,450 solar photovoltaic (PV) modules
Washington Airport Solar Project highlights

Located in Beaufort County, North Carolina

- Generates 5 megawatt of electricity, enough to power about 1,000 homes
- Began commercial operation in December 2013
- Supplies electricity to North Carolina Eastern Municipal Power Agency
- Consists of 23,000 solar photovoltaic (PV) modules
Dogwood Solar

Located in Halifax County, North Carolina

- Generates 20 megawatt of electricity, enough to power about 4,000 homes
- Construction completed in December of 2013
- Supplies electricity to Dominion NC Power
- Consists of approximately 93,000 solar photovoltaic (PV) modules
This solar project site is located on the grounds of an elementary school. The power purchase agreement enables the elementary school to share in revenue created by the site's electric generation, which is equivalent to the cost of staffing two full-time teachers.

- Located in Murphy, North Carolina
- Generates 1 megawatt of electricity, enough to power approximately 150 homes
- Supplies electricity to the Tennessee Valley Authority through Blue Ridge Mountain Electric Membership Corporation under the terms of a 10-year power purchase agreement
- Consists of 4,400 ground-mounted photovoltaic (PV) panels
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

RESPONSE TESTIMONY

OF

KATIE B. REVER

ON BEHALF OF

NORTH CAROLINA SUSTAINABLE ENERGY ASSOCIATION

May 30, 2014
Q. PLEASE STATE YOUR NAME, TITLE, AND BUSINESS ADDRESS.

A. My name is Katie Bolcar Rever. I am a Director of State Affairs for the Solar Energy Industries Association (“SEIA”). My business address is 505 9th Street NW, Suite 800, Washington, DC 20004.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING?

A. I am testifying on behalf of the North Carolina Sustainable Energy Association (“NCSEA”).

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE.

A. Prior to joining SEIA, I was a Presidential Management Fellow with the U.S. Department of Energy where I worked on U.S. and international deployment issues for solar and energy efficiency technologies. I have a Masters in Public Policy and a Masters in Environmental Management from Duke University where I focused on energy policy and economics. My undergraduate degree is in Biology and Environmental Sciences from the University of Virginia. My curriculum vitae is attached to this testimony as KBR-1.

Q. PLEASE BRIEFLY DESCRIBE SEIA, ITS MISSION, AND THE JURISDICTIONS IN WHICH IT OPERATES.

A. Established in 1974, SEIA is the national trade association of the United States solar energy industry, encompassing all solar technologies, including
photovoltaic, concentrating solar power, and solar heating and cooling. Through advocacy and education, SEIA and its 1,000 member companies work to make solar energy a mainstream and significant energy resource by expanding markets, strengthening the industry, and educating the public on the benefits of solar energy. The positions expressed herein are the positions of SEIA and not the positions of any individual member company.

Q. WHAT ARE YOUR CURRENT RESPONSIBILITIES AT SEIA?
A. In my capacity as Director of State Affairs, I am responsible for SEIA’s regulatory and legislative activities in the mid-Atlantic and southeastern states, which includes developing and advocating for positions that balance the diverse needs of our membership.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?
A. My testimony responds to the proposals of Duke Energy Carolinas, LLC, (“DEC”) Duke Energy Progress, Inc., (“DEP”) and Dominion North Carolina Power (collectively, the “Companies”) to reduce the eligibility cap for the standard offer PPA from 5 megawatts (“MW”) to 100 kilowatts (“kW”). My testimony ultimately recommends that the North Carolina Utilities Commission (“Commission”): 1) reject the Companies’ proposals to reduce the eligibility threshold; and 2) consider increasing the eligibility threshold to 10MW.
Q. CAN YOU PROVIDE A BRIEF SUMMARY OF THE COMPANY DIRECT TESTIMONY TO WHICH YOU ARE RESPONDING?

A. Yes. DEC/DEP witnesses Bowman and Snider and DNCP witness Williams recommend that the eligibility limit for the standard offer rates and terms be reduced from 5MW to 100kW. These witnesses assert that the reduction is warranted given the state of the marketplace and industry in North Carolina. See, e.g., Williams direct testimony, p. 16 (larger solar “development projects . . . do not require the simplicity and benefits of a standard tariff”). The witnesses seem to be arguing that QFs seeking to develop larger projects should endure a resource-inefficient “negotiation” process to secure a PPA simply because these QFs may be able to endure such a process. Specifically, the witnesses argue that QFs larger than 100kW are “sophisticated,” such that they can “bear the transactional costs of negotiating individualized bilateral rates” and therefore do “not require the advantages that the [current] standard tariff contains[.]” See, e.g., Bowman direct testimony, pp. 18-19; Williams direct testimony, p. 17.

Q. DO YOU AGREE WITH THIS RECOMMENDATION?

A. No. I believe this recommendation overlooks the primary benefit or advantage of standard offer rates and terms, which is the elimination of the need to negotiate a PPA. Elimination of the transactional costs associated with negotiating a PPA further enhances the efficiencies of scale inherent in larger solar developments. This is uncontroverted by the Companies. DEC/DEP witness Bowman acknowledges that standard rates eliminate the “cost and
effort” of negotiating separate rates, Bowman direct testimony, p. 19, and
DNCP witness Williams recognizes the “efficiencies of scale that come with

DEC/DEP witness Bowman alleges that developers of QFs are seizing these
efficiencies of scale by “routinely . . . developing projects . . . outside the
[current] standard tariff parameters” Bowman direct testimony, p. 18. As I
understand it, however, developers of QFs are not routinely developing 5MW+
solar projects because it is very difficult to negotiate a financeable PPA for such
a project. Indeed, as shown in its response to NCSEA Data Request No 2
Questions 6 and 7, DEC has entered into only three PPAs with solar QFs – one
in December 2009, one in January 2013, and one in October 2013 and DEP has
entered into no such PPA. Additionally, DEC/DEP received four (4) requests
for a PPA in 2011, fifteen (15) in 2012, twenty-nine (29) in 2013, and fourteen
(14) in 2014 as of the date of the discovery request.¹ Not counting the 2014
applications, this is a conversion rate of 3 out of 48 – or about 6%. Consistent
with this, at least one QF developer has indicated in the pre-filed testimony
proffered by NCSEA, the utilities have executed very few PPAs for solar QFs
larger than 5MW.

The Companies’ current track record with respect to negotiated PPAs calls into
question one of their central premises for their proposals – that 100kW+ “QFs . .

¹ NCSEA Data Request No 2 Question 10.
would receive [full] avoided cost rates through bilateral negotiations with the purchasing utility,” Bowman direct testimony, p. 20. I have trouble believing that, if the Companies’ proposals were approved, more PPAs would be executed at rates and terms agreed upon “bilaterally.” For these reasons, I do not think adoption of the Companies’ recommendation is prudent.

Q. ARE THERE ANY OTHER REASONS YOU BELIEVE REDUCTION OF THE ELIGIBILITY LIMIT FOR THE STANDARD OFFER RATES AND TERMS WOULD BE IMPRUDENT?
A. Yes. As the Commission is aware, developers of QFs must sign several critical contracts with utilities in order to bring a project into commercial operation. The PPA is one such critical contract. The interconnection agreement (“IA”) is another critical contract. The utilities’ proposal to reduce the eligibility limit for the standard offer PPA would essentially “slow-track” PPA negotiations for 100kW+ projects at the same time that the Federal Energy Regulatory Commission (“FERC”) has evidenced its intent that larger solar projects be fast-tracked for purposes of IA negotiation.

Q. PLEASE EXPLAIN.
A. In FERC Order No. 2006, the FERC established a pro forma IA for the interconnection of generation resources up to 20MW, noting that advances in technology had created a burgeoning market for small power plants that may offer economic, reliability, or environmental benefits. On February 16, 2012,
SEIA filed a Petition to Initiate Rulemaking requesting the FERC to revise the *pro forma* IA set forth in FERC Order No. 2006. On November 22, 2013, the FERC issued a Final Rule amending six aspects of the *pro forma* Small Generator Interconnection Procedures (“SGIP”) and *pro forma* IA. See FERC Order No. 792. The aspect of the Final Rule revisions most relevant to the instant proceeding is an upward revision of the existing threshold for participation in the Fast Track Process from 2MW to 5MW in certain circumstances.² As the FERC states in FERC Order No. 792, “With these modifications, the [FERC] concludes that the package of reforms adopted in this Final Rule will reduce the time and cost to process small generator interconnection requests for Interconnection Customers and Transmission Providers, maintain reliability, increase energy supply, and *remove barriers to the development of new energy resources.*” (Emphasis added). FERC Order No. 792 was intended to reduce time and costs to process small generator interconnection requests.

² Prior to FERC Order No. 792, the threshold for participating in the Fast Track Process was 2MW. The FERC revised the 2MW threshold for participation in the Fast Track Process to be based instead on individual system and generator characteristics up to a limit of 5MW, as shown in the following table:

<table>
<thead>
<tr>
<th>Line Voltage</th>
<th>Fast Track Eligibility Regardless of Location</th>
<th>Fast Track Eligibility on a Mainline and ≤ 2.5 Miles from Substation</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5 kilovolt (kV)</td>
<td>≤ 500 kW</td>
<td>≤ 500 kW</td>
</tr>
<tr>
<td>≥ 5 kV and &lt; 15 kV</td>
<td>≤ 2 MW</td>
<td>≤ 3 MW</td>
</tr>
<tr>
<td>≥ 15 kV and &lt; 30 kV</td>
<td>≤ 3 MW</td>
<td>≤ 4 MW</td>
</tr>
<tr>
<td>≥ 30 kV and &lt; 70 kV</td>
<td>≤ 4 MW</td>
<td>≤ 5 MW</td>
</tr>
</tbody>
</table>
interconnection requests and to remove barriers to the development of new
energy resources.\(^3\)

The Companies’ recommendation to reduce the eligibility limit of the standard
offer PPA would work to thwart the FERC’s desire to remove barriers to
development – reducing the eligibility cap to 100kW would increase the “cost
and effort” associated with solar QF development. The Companies’
recommendation runs counter to the spirit of FERC Order No. 792, and because
the reduced eligibility recommendation seeks to erect a barrier to QF
development, it would run counter to the intent of PURPA as well.

In short, the FERC is moving to increase the size limit of projects that are
eligible to participate in a less costly Fast Track Process for interconnection. If
the Commission were to adopt the Companies’ proposals and “slow track”
projects over 100kW by requiring such projects to “bear the transactional costs
of negotiating individualized bilateral rates[,]” it would serve to thwart the cost
reductions in the Fast Track interconnection process and run counter to the
FERC’s stated goal of reducing time and costs to process small generator
interconnection requests.

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\(^3\) It is my understanding that the Companies have not challenged/appealed FERC Order No. 792 and
that this Commission has re-opened Commission Docket No. E-100, Sub 101 to consider
incorporating the changes to the FERC-jurisdictional SGIP and pro forma IA into North Carolina’s
Commission-jurisdictional SGIP and pro forma IA.
Q. GIVEN YOUR OBSERVATIONS REGARDING THE PPA NEGOTIATION PROCESS AND FERC ORDER NO. 792, WHAT IS YOUR RECOMMENDATION TO THE COMMISSION?

A. In the interest of: 1) encouraging the development of solar QFs; 2) making the most efficient use of resources; 3) keeping transaction costs to a minimum, and 4) following the FERC’s trend of reducing transaction costs and increasing efficient time to operation, the Commission should not reduce the eligibility cap for standard offer PPAs. In fact, I believe the Commission should give serious consideration to increasing the standard offer eligibility cap to 10MW for the reasons provided in the direct and response testimonies of the QF developers proffered by NCSEA.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.
KATIE BOLCAR REVER
krever@seia.org

PROFESSIONAL EXPERIENCE
Director, State Affairs, Solar Energy Industries Association (7/11 – current)
- Responsible for regulatory and legislative activities in the Mid-Atlantic and Southeastern states.

- Managed multi-year strategic planning efforts for SunShot Initiative, including compiling the multi-year plan, researching and writing the Quadrennial Technology Review, and organizing the 2011 SunShot Summit.
- Authored a $27m multi-year grant opportunity to address workforce development needs of the solar industry. Led planning efforts to assess stakeholder needs and identify barriers to workforce development in the solar industry. Managed 10 workforce development grantees in implementing first year of program activity.
- Contributed to development of the portfolio of activities under Solar Market Transformation subprogram, including state outreach, local government outreach, and reducing permitting and interconnection costs.
- During 6 month detail to US Embassy, New Delhi, India, assisted US companies in entering the Indian solar market and developed DOE activities to support Government of India efforts to develop the Indian solar market.
- Led strategic planning for Weatherization Program activities in response to funding increase from $6m to $146m, with focus on training and technical assistance needs of state Weatherization programs.

EDUCATION
Duke University, Durham, NC
Master of Public Policy, August 2007; Master of Environmental Management, August 2007
Select Coursework: Microeconomics for Policy Analysis; Microeconomics for International Development; Electricity, Technology and Climate Change; Statistical Program Evaluation; Business Strategy; Biogeochemistry
Internships:
Cambridge Energy Research Associates, Summer 2005
United Nations Environment Program, Summer 2006

University of Virginia, Charlottesville, VA
B.A. in Biology, B.A. in Environmental Sciences, May 2000

LEGISLATIVE AND PUBLIC TESTIMONY; STAKEHOLDER PROCEEDINGS


Public Testimony. (2011) Regarding the September 15, 2011 stakeholder meeting to discuss next steps – Solar Transition. New Jersey BPU.


FELLOWSHIPS AND AWARDS


Climate Change Research Fellow. Wrote white paper on barriers to incorporating renewable energy in the utility industry.