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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

4818-4115-3819, v. 1

OFFICIAL COPY

May 30 2014

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

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

2 A. My name is Michael Cohen. I am the Vice President of Business Development
3 of Strata Solar, LLC (“Strata” or “Company”). My business address for the
4 record is 50101 Governors Drive, Suite 280, Chapel Hill, North Carolina 27517.

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

8 A. Yes. I pre-filed direct testimony consisting of 13 pages and one exhibit on
9 behalf of the North Carolina Sustainable Energy Association (“NCSEA”) in this
10 docket on April 25, 2014.

11
12 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

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

17
18 Specifically, my testimony responds to: 1) the proposal by the Utilities to
19 reduce eligibility for standard offer rates and terms to qualifying facilities
20 (“QFs”) 100 kW and smaller; 2) the proposal by DNCP to eliminate from the
21 standard offer the 15-year term for levelized rates; and 3) the proposal by DNCP
22 to reduce the time horizon in which a QF must commence commercial
23 operation.

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

3
4 **Q. HOW DO YOU RESPOND TO THE UTILITIES' PROPOSAL TO**
5 **REDUCE ELIGIBILITY FOR STANDARD OFFER RATES AND**
6 **TERMS FROM 5 MW TO 100 kW?**

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

11
12 As justification for the Utilities' proposal, DNCP witness Williams indicates
13 that "because solar is easily scalable, companies pursuing very large scale solar
14 development, representing hundreds of millions of dollars in investment, are
15 simply building a multitude of sites in exactly five-MW increments to avail
16 themselves of the standard contract benefits." It is worth noting that nothing
17 prohibits the development of multiple sites by the same developer so long as
18 those sites are developed in accordance with applicable rules and regulations of
19 the Federal Energy Regulatory Commission ("FERC") and this Commission and
20 any limitations established in the terms and conditions of the Utilities that have
21 been approved by this Commission.

22

1 In stark contrast to this proposal by the Utilities, I recommended in my direct
2 testimony that the eligibility for standard offer rates and terms should be
3 increased to ten (10) MW. DNCP witness Williams, on p. 17, lines 2-6 of his
4 pre-filed direct testimony, highlights the primary justification for my
5 recommendation – under current policy, QF developers “forego efficiencies of
6 scale that come with larger developments, while generating increased
7 administrative burdens on the regulators and utilities by creating numerous five-
8 MW facilities instead of fewer, larger facilities.” The proposal by the Utilities
9 to reduce the eligibility limit will further frustrate the achievement of economies
10 of scale and, without question, will lead to increased administrative burdens on
11 the regulators and utilities.

12
13 **Q. WHY WILL THE UTILITIES’ PROPOSAL LEAD TO INCREASED**
14 **ADMINISTRATIVE BURDEN AND COST FOR ALL PARTIES,**
15 **INCLUDING RATEPAYERS?**

16 A. As the Commission has consistently provided, QFs not eligible for the standard
17 long-term levelized rates have two options if the utility does not have a
18 Commission-recognized active solicitation: (a) negotiating a contract and rates
19 with the utility or (b) selling energy at the utility’s Commission-established
20 variable energy rate. Further, the Commission has provided that any unresolved
21 issues arising during such negotiations will be subject to arbitration by the
22 Commission at the request of either the utility or the QF. Because financing a
23 project that sells power at a variable rate is difficult to impossible in my

1 experience, a QF that is not eligible for the standard offer has no choice but to
2 negotiate with the utility.

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

17
18 I am also aware of other developers that have had similar experience in
19 attempting to negotiate a PPA. Such a protracted process is almost always an
20 unnecessary waste of utility time and resources, QF developer time and
21 resources, often Public Staff time and resources, and, on occasion, Commission
22 time and resources.

¹ See generally, NCUC Docket No. SP-2040, Sub 0.

1

2 **Q. IN LIGHT OF STRATA’S EXPERIENCE WITH THE NEGOTIATION**
3 **PROCESS, WHY HAS STRATA NEVER RESORTED TO**
4 **PETITIONING THE COMMISSION TO SERVE AS AN ARBITRATOR?**

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

16

17 **Q. IN LIGHT OF UTILITY CONCERNS REGARDING THE NUMBER OF**
18 **SOLAR PROJECTS CURRENTLY PROPOSED TO BE DEVELOPED**
19 **(“THE QUEUE”), WHAT IS YOUR EXPERIENCE REGARDING THE**
20 **NUMBER OF PROJECTS THAT ARE PROPOSED VERSUS THE**
21 **NUMBER OF PROJECTS THAT ACTUALLY GET DEVELOPED?**

1 A. Approximately half of the projects which Strata initially proposes to develop do
2 not come to fruition.² A number of hurdles can cause a developer to abandon a
3 project. The hurdles include the following:

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

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

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.

1 online. This recommendation appears to be consistent with the Public Staff's
2 comments in the on-going 2013 IRP proceeding.
3

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

9 A. In general, the PPA process—from request to execution—takes only weeks in
10 North Carolina, in the context of the standard offer contract. The experience for
11 projects not eligible for the standard offer is much different, as described above.
12

13 The most distinct difference, in other states where Strata is developing solar
14 facilities, is that, typically, there is a single point of contact within the utility
15 who shepherds projects through from the interconnection request submission all
16 the way to PPA execution. This allows the QF developer, and the utility, to
17 know where the project is in the development process and to have a realistic
18 expectation for completion of that process. I have observed that there is also a
19 more stringent focus on adhering to the specified time frames, particularly in the
20 context of interconnection agreements, in other states than is the case in North
21 Carolina.
22

1 **Q. WHY DOES A STANDARD OFFER TO QFS UP TO 10 MW MAKE**
2 **SENSE IN TERMS OF INTERCONNECTION?**

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

11

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

16 A. In the interest of encouraging the development of QFs, making the most
17 efficient use of Commission, Public Staff, Utility and QF resources and keeping
18 transaction costs to a minimum, the Commission should reject the proposal by
19 the Utilities to reduce eligibility for the standard offer and should, instead,
20 extend the standard offer to QFs up to 10 MW. I do not believe that this will
21 result in an onslaught of QF development; rather, it will allow those projects
22 that have a realistic chance of securing an interconnection agreement to be
23 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.

1 **Q. IN LIGHT OF THE UTILITY CONCERNS RELATED TO**
2 **OVERPAYMENT, WOULD A LONG-TERM CONTRACT WITH A**
3 **VARIABLE RATE ENCOURAGE THE DEVELOPMENT OF QFS?**

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

12
13 Solar generators do not make spread-type decisions. With high fixed costs and
14 near zero variable costs, solar generators are motivated to maximize production
15 whenever possible. Once constructed, there is little a solar generation facility
16 can do to change its costs. Any rate/term structure proposed must parallel the
17 cost structure of a solar facility (i.e., long-term, fixed) to ensure economic
18 feasibility and, therefore, the ability to secure financing. Thus, a variable energy
19 rate, even if included as part of a long-term standard purchase contract,
20 constitutes a barrier to finance.

21
22 **3. TIME TO COMMENCE COMMERCIAL OPERATIONS**
23

**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.

1 Second, DNCP's proposal to limit availability is problematic. Rates that have
2 been proposed by the utility, but not approved by the Commission, do not
3 provide an investor with sufficient certainty as to return on investment;
4 therefore, it is difficult, if not impossible, to secure financing for a project for
5 which final rates are not available. So, under DNCP's proposal, a developer
6 realistically would have 18 months to develop a project to commercial
7 operation, not 30.

8
9 DNCP witness Williams indicates that it is the Company's experience that a
10 solar facility can be constructed in as little as two (2) months. A solar facility
11 can be constructed quickly relative to conventional generation; in fact, Strata's
12 business model depends on developing facilities quickly. However, in my
13 experience, the average solar facility takes longer than two (2) months to
14 construct. On average, the time to construct the average solar facility – from
15 building permit to commercial operation – is four (4) to five (5) months.

16
17 The Commission should be aware, however, that construction is only part of the
18 development process. The interconnection process adds a significant amount of
19 time to the development timeline.

20
21 **Q: PLEASE DISCUSS YOUR EXPERIENCE WITH THE**
22 **INTERCONNECTION PROCESS AND THE IMPLICATIONS FOR**
23 **PROJECT DEVELOPMENT.**

1 A. The amount of time, and unpredictability with respect to same, associated with
2 the interconnection process in North Carolina is problematic. Specifically, it
3 can take 12-18 months to complete the interconnection process to get to an
4 executable interconnection agreement. The utility typically demands payment
5 shortly thereafter; we are invoiced usually right around the time we receive the
6 executed agreement and payment is required within 30 days of the invoice for
7 the one-time, up-front charge. Depending on the point of interconnection, this
8 charge can be fairly significant. In fact, it can range in the hundreds of
9 thousands of dollars. In the context of standard deals, the utility requires that
10 this payment be made before the PPA is provided for execution. This means
11 that the QF has to find a way to pay for the interconnection charge before it
12 secures financing for a project as, typically, financing cannot be secured until a
13 PPA has been executed.

14
15 Pursuant to the terms of the interconnection agreement, non-payment of
16 charges due under the agreement is a default that, if not cured, can result in
17 termination of the agreement and loss of position in the queue. However,
18 payment of the interconnection charge is non-refundable. So we can be in the
19 position of having to pay the non-refundable interconnection charge to preserve
20 a place in the queue before we have an executed PPA. This process
21 inappropriately shifts all risk to the QF because the QF is forced to pay the
22 non-refundable interconnection charge before it has the certainty that a project
23 will secure financing and move forward.

1

2 The difficulties we have experienced with the interconnection process cannot be
3 understated. The length of time to get through the process varies from project to
4 project, but in every case is long and often in excess of the specific time frames
5 set forth in the interconnection standards.

6

7 **Q. GIVEN THE FOREGOING, WHAT IS YOUR RECOMMENDATION**
8 **REGARDING DNCP'S PROPOSAL?**

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

13

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

15 A. Yes.

16 4836-3473-3339, v. 3

17

18

19

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

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

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

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

8 A. Yes. Pursuant to order of the North Carolina Utilities Commission (the
9 “Commission”) issued on May 29, 2014 in this docket, I adopted and
10 supplemented the direct testimony of Greg Ness pre-filed on behalf of the North
11 Carolina Sustainable Energy Association (“NCSEA”) in this docket on April 25,
12 2014.

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

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

19
20 Specifically, my testimony responds to: 1) the proposal by the Utilities to
21 reduce eligibility for standard offer rates and terms to qualifying facilities
22 (“QFs”) 100 kW and smaller; 2) the proposal by DNCP to eliminate from the
23 standard offer the 15-year term for levelized rates; and 3) the proposal by DNCP

1 to reduce the time horizon in which a QF must commence commercial operation
2 from thirty (30) months—as was approved by the Commission in that Order
3 Establishing Standard Rates and Contract Terms for Qualifying Facilities,
4 issued on February 21, 2014 in N.C.U.C. Docket No. E-100, Sub 136—to
5 eighteen (18) months.

6
7 **1. ELIGIBILITY FOR THE STANDARD OFFER RATES AND TERMS**

8
9 **Q. HOW DO YOU RESPOND TO THE UTILITIES' PROPOSAL TO**
10 **REDUCE ELIGIBILITY FOR STANDARD OFFER RATES AND**
11 **TERMS FROM 5 MW TO 100 kW?**

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

21 As justification for the Utilities' proposal, DNCP witness Williams indicates
22 that “because solar is easily scalable, companies pursuing very large scale solar
23 development, representing hundreds of millions of dollars in investment, are

1 simply building a multitude of sites in exactly five-MW increments to avail
2 themselves of the standard contract benefits.” It is worth noting that nothing
3 prohibits the development of multiple sites by the same developer so long as
4 those sites are developed in accordance with applicable rules and regulations
5 promulgated by the Federal Energy Regulatory Commission (“FERC”) and this
6 Commission and any limitations established in the terms and conditions of the
7 Utilities that have been approved by this Commission. Nothing in PURPA or
8 the FERC regulations or FERC precedent prevents the development of multiple
9 facilities by the same developer, so long as they are more than one mile apart.

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

17 Currently, for projects greater than 5 MW there is no guarantee that a PPA
18 will have financeable terms. In contrast to the standard offer contract, the
19 negotiated contract does not provide the confidence and security our financing
20 partners need to commit capital, making it impossible to secure financing that is
21 necessary to develop the project and pay all interconnection charges. We have
22 requested that the Commission increase the standard offer to 10 MW for this

1 very reason—it captures economies of scale while maintaining FLS Energy’s
2 ability to secure financing for project development, construction and operation.

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

13
14 **Q. WHAT ARE YOUR OBSERVATIONS WITH RESPECT TO SIZE OF**
15 **THE QF?**

16 A. When FLS first began developing utility scale solar QFs in North Carolina in
17 2012, the company developed smaller facilities, primarily 1 MW or less.
18 However, over time, the size of the QF around which our business model
19 revolves has grown, primarily as a result of increased economies achieved
20 through scale and decreasing revenue streams—resulting from decreasing rates
21 and decreasing prices paid for RECs—and the need to spread certain fixed costs
22 over increased generation to improve cost effectiveness. As of the date of this

1 testimony, through a partnership agreement, FLS has five QFs larger than 5
2 MW under development.

3
4 **Q. WHAT WILL BE THE RESULT IF THE COMMISSION REDUCES**
5 **ELIGIBILITY FOR THE STANDARD OFFER?**

6 A. If the Commission grants the request of the Utilities to limit eligibility for
7 standard offer rates and terms to QFs 100 kW and smaller, any QF larger than
8 100 kW will be in the position of negotiating a PPA with the purchasing utility.
9 While FLS has not yet had to negotiate a PPA, my understanding is that the
10 process is protracted and takes many months, as compared to the standard offer
11 process that can be completed in a matter of weeks. Additionally, as a result of
12 my experience in participating in the Duke solar RFP for projects greater than 5
13 MW, the PPA that Duke has provided as part of the negotiated process has
14 significantly different terms and conditions from the standard offer.

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

1 resources, QF developer time and resources, often Public Staff time and
2 resources, and, likely, Commission time and resources.

3
4 The Utilities justify their request on the assertion that QF developers have
5 changed. Specifically, Duke/Progress witness Bowman testifies, on page 18 of
6 her pre-filed direct testimony, that “[i]n today’s environment, developers of
7 even smaller projects tend to be well-experienced and sophisticated entities.
8 Currently, in North Carolina, developers of QFs are routinely planning and
9 developing projects both inside and outside the standard tariff parameters.”
10 DNCP witness Williams, on page 16 of his pre-filed direct testimony, testifies
11 that “QF development activities in DNCP’s service territory have changed
12 dramatically in the past year. Now, in most instances, these development
13 projects are not ‘mom-and-pop’ operations; they are owned by sophisticated
14 companies backed by sophisticated financing, often with broad portfolios of
15 renewable generation, that do not require the simplicity and benefits of a
16 standard tariff.”

17 It is true that industry is increasingly sophisticated, that technology is
18 increasingly efficient and cost effective and that there has been a significant
19 increase in proposed QF capacity in recent years. However, industry is not
20 “routinely . . . developing projects . . . outside of the standard tariff parameters.”
21 The limited number of larger QFs in commercial operation is telling. Moreover,
22 since 2010 Duke has executed six PPAs with QFs larger than 5 MW, two of
23 which are solar QFs. Progress has executed eight PPAs with QFs larger than 5

1 MW, none of which are solar. And, as Williams testified, of DNCP's 58 MW of
2 executed contracts with solar projects, 40 MW represents QFs greater than 5
3 MW—which, upon information and belief, are only two (2) QFs.

4
5 **Q. GIVEN YOUR OBSERVATIONS REGARDING COST**
6 **EFFECTIVENESS AND THE PPA NEGOTIATION PROCESS, WHAT**
7 **IS YOUR RECOMMENDATION TO THE COMMISSION?**

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

1 will minimize transaction costs and enable those QFs that have a realistic chance
2 of being developed to do so more efficiently.

3
4 **2. LONG-TERM STANDARD OFFER**

5
6 **Q. HOW DO YOU RESPOND TO DNCP'S PROPOSAL TO ELIMINATE**
7 **THE 15-YEAR TERM FROM THE STANDARD OFFER?**

8 A. I oppose this proposal. DNCP bases its request on the assertion that levelized
9 rates overpay the QF in the early years of the contract and underpay the QF in
10 the later years of the contract. DNCP insinuates that the risk of underpayment
11 in the later years creates a risk of non-performance by the QF during those later
12 years of a long term contract. However, the FERC has addressed the issue of
13 over-payment and under-payment in a number of cases, each time making clear
14 that the risks balance each other out. Further, the insinuation that a QF will
15 cease to perform in the later years of the contract ignores the realities of project
16 finance. Because the QF is, under ordinary and customary circumstances,
17 leveraged over the anticipated life of the facility, the QF cannot cease to perform
18 without defaulting under its financing arrangements.

19
20 **Q. WHAT EFFECT DOES A LONGER TERM PPA HAVE ON COST TO**
21 **FINANCE A PROJECT?**

22 A. My experience in North Carolina and beyond dictates that a 20-year term would
23 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		
Project Metrics	10 Year Amortizing Loan	20 Year Amortizing Loan
Project Value	50,000,000	50,000,000
Available Cash Flows for Debt Service Coverage	100,000	100,000
Available Loan Principal	9,007,345	13,958,077
Permanent Debt Funding Interest Rate	6.00%	6.00%
Term (Months)	120	240
Permanent Debt Capital Stack Allocation	18%	28%
Weighted Cost of Capital	12.95%	11.82%
Project Comparisons (15 Year vs. 20 Year Amortizing Loan)		
Net Leverage Increase	55%	
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:

Initial Development Activities	Securing Interconnection and PPA	Securing and closing financing	Construction Schedule	Interconnection and receipt of PTO by utility
1-2 months	12-18 months	16-24 weeks	90-120 days	30-60 days

1

2 Construction is only part of developing a project to commercial operation.

3 Under usual circumstances, as I have already explained, a developer cannot

4 secure financing for a facility until both the interconnection agreement and PPA

5 have been executed. Although the execution of the standard PPA takes only a

6 matter of weeks, the execution of an interconnection agreement can take many

7 months, in some cases longer than a year. In my experience, giving the timing of

8 the interconnection process and increasing challenges associated with securing

9 financing, it is not reasonable to expect that a facility could achieve commercial

10 operation within 18 months.

11

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

13 A. Yes.

14 4835-9580-4187, v. 2

15

16

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.

Name/Location	In-Service Date	Capacity (AC)	PV Panels	Power Offtake
Blue Wing San Antonio, TX	Nov. 2010	14 MW	214,500	CPS Energy
Sunset Reservoir San Francisco, CA	Dec. 2010	4.5 MW	24,000	San Francisco Public Utilities Commission
Ajo Pima County, AZ	Sept. 2011	5 MW	21,168	Arizona Public Service Co.
Bagdad Yavapai County, AZ	Dec. 2011	15 MW	71,512	Arizona Public Service Co.
Stanton Orange County, FL	Dec. 2011	6 MW	25,172	Orlando Utilities Commission
Murfreesboro Murfreesboro, NC	Dec. 2011	5 MW	19,960	NCEMC (Power) GreenCo (RECs)
Black Mountain Mohave County, AZ	Nov. 2012	10 MW	40,000	UniSource Energy Services
Gato Montes Tucson, AZ	Dec. 2012	6 MW	48,000	Tucson Electric Power Company
Washington Whitepost I & II Beaufort County, NC	Dec. 2012 Nov. 2013	12.5 MW 5 MW	53,000 27,450	North Carolina Eastern Municipal Power Agency
Highlander Twentynine Palms, CA	June 2013	21 MW	100,188	Southern California Edison

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

Name/Location	Power Offtake
Holiness Martins Creek Murphy Farm Wingate Murphy, NC	Tennessee Valley Authority through Blue Ridge Mountain EMC
Shelby Shelby, NC	North Carolina Municipal Power Agency Number 1
Taylorsville Taylorsville, NC	EnergyUnited

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 Joint Venture

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.



North Carolina

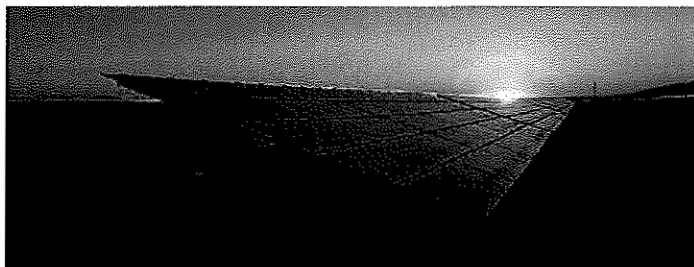
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Investors

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 \(/commercial-renewables/highlander.asp\)](/commercial-renewables/highlander.asp), CA (21 MW)
- [Bagdad \(/commercial-renewables/bagdad-solar.asp\)](/commercial-renewables/bagdad-solar.asp), AZ (15 MW)
- [Blue Wing \(/commercial-renewables/blue-wing-solar.asp\)](/commercial-renewables/blue-wing-solar.asp), TX (14 MW)
- [Washington White Post \(/commercial-renewables/washington-white-post.asp\)](/commercial-renewables/washington-white-post.asp), NC (12.5 MW)
- [Black Mountain \(/commercial-renewables/black-mountain-solar.asp\)](/commercial-renewables/black-mountain-solar.asp), AZ (10 MW)
- [Gato Montes \(/commercial-renewables/gato-montes.asp\)](/commercial-renewables/gato-montes.asp), AZ (6 MW)
- [Stanton \(/commercial-renewables/stanton.asp\)](/commercial-renewables/stanton.asp), FL (6 MW)
- [Dogwood \(/commercial-renewables/dogwood-solar.asp\)](/commercial-renewables/dogwood-solar.asp), NC (20 MW)
- [Millfield \(/commercial-renewables/millfield-solar.asp\)](/commercial-renewables/millfield-solar.asp), NC (5 MW)
- [Bethel Price \(/commercial-renewables/bethel-price.asp\)](/commercial-renewables/bethel-price.asp), NC (5 MW)
- [Washington Airport \(/commercial-renewables/washington-airport.asp\)](/commercial-renewables/washington-airport.asp), NC (5 MW)
- [Ajo \(/commercial-renewables/ajo-solar.asp\)](/commercial-renewables/ajo-solar.asp), AZ (5 MW)
- [Murfreesboro \(/commercial-renewables/murfreesboro.asp\)](/commercial-renewables/murfreesboro.asp), NC (5 MW)
- [Holiness \(/commercial-renewables/holiness.asp\)](/commercial-renewables/holiness.asp), NC (1 MW)
- [Shelby \(/commercial-renewables/shelby-solar.asp\)](/commercial-renewables/shelby-solar.asp), NC (1 MW)
- [Martins Creek \(/commercial-renewables/martins-creek-solar.asp\)](/commercial-renewables/martins-creek-solar.asp), NC (1 MW)
- [Murphy Farm \(/commercial-renewables/murphy-solar.asp\)](/commercial-renewables/murphy-solar.asp), NC (1 MW)
- [Taylorsville \(/commercial-renewables/taylorsville-solar.asp\)](/commercial-renewables/taylorsville-solar.asp), NC (1 MW)
- [Wingate \(/commercial-renewables/wingate.asp\)](/commercial-renewables/wingate.asp), NC (1 MW)
- [Sunset Reservoir \(/commercial-renewables/sunset-solar.asp\)](/commercial-renewables/sunset-solar.asp), CA (4.5 MW)
- [Windsor Cooper Hill \(/commercial-renewables/windsor-cooper-hill.asp\)](/commercial-renewables/windsor-cooper-hill.asp), NC (5 MW)

If you are interested in contacting Duke Energy Renewables about a commercial solar power project, please [email us \(mailto:commercial solar@duke-energy.com\)](mailto:commercial solar@duke-energy.com).

[Solar Energy Projects \(/pdfs/Solar-Power-Projects-Fact-Sheet.pdf\)](/pdfs/Solar-Power-Projects-Fact-Sheet.pdf) (pdf, 771 KB)

[Solar Power Projects Map \(/pdfs/RenewablesSolarPowerProjectsMap.pdf\)](/pdfs/RenewablesSolarPowerProjectsMap.pdf) (pdf, 3890 KB)

[Solar Power: Educational Information for Kids \(/pdfs/Solar-Energy-Brochure-For-Kids.pdf\)](/pdfs/Solar-Energy-Brochure-For-Kids.pdf) (pdf, 1328 KB)

[North Carolina Solar Distributed Generation \(/north-carolina/renewable-energy/nc-solar-distributed-generation-program.asp\)](/north-carolina/renewable-energy/nc-solar-distributed-generation-program.asp)

[U.S. Department of Energy - Solar \(http://www.eere.energy.gov/basics/renewable_energy/solar.html\)](http://www.eere.energy.gov/basics/renewable_energy/solar.html)

[Solar Energy Industries Association \(http://www.seia.org/\)](http://www.seia.org/)

[Photos: Duke Energy Wind and Solar Farms \(Flickr\) \(http://www.flickr.com/photos/dukeenergy/collections/72157624055211234/\)](http://www.flickr.com/photos/dukeenergy/collections/72157624055211234/)

[Supplier Registration \(/suppliers/supplier-registration.asp\)](/suppliers/supplier-registration.asp)

[Customer Programs in Our Regulated Service Areas \(http://www.duke-energy.com/environment/customer-programs.asp\)](http://www.duke-energy.com/environment/customer-programs.asp)





North Carolina

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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

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Taylorsville Solar

Project highlights

- 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

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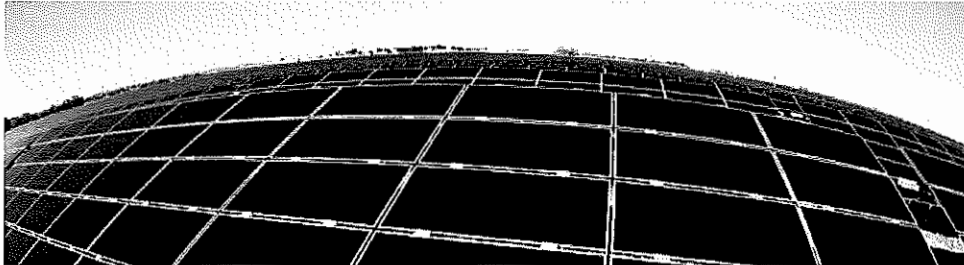


North Carolina

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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.

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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

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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

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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

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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

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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) module

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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) module

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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

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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

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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

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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

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Bethel Price Solar

Project highlights

Located in Pitt 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

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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

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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

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Sunset Reservoir Solar

Project highlights



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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

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Millfield 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 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

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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

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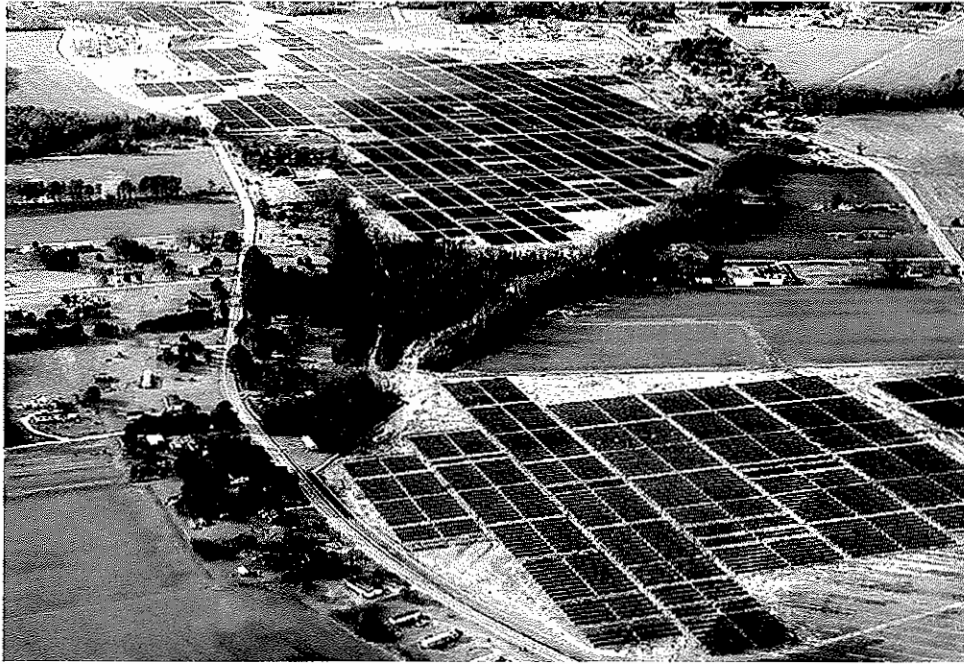


North Carolina

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Dogwood Solar

Project highlights



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

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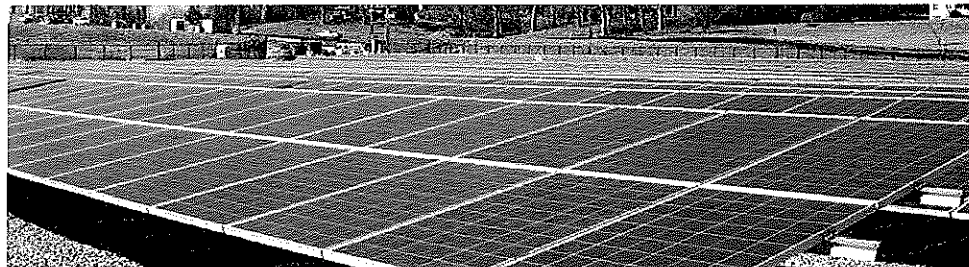
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Martins Creek Solar

Project highlights

- 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

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.

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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

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

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

5
6 **Q. ON WHOSE BEHALF ARE YOU TESTIFYING?**

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

9
10 **Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND**
11 **WORK EXPERIENCE.**

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

19
20 **Q. PLEASE BRIEFLY DESCRIBE SEIA, ITS MISSION, AND THE**
21 **JURISDICTIONS IN WHICH IT OPERATES.**

22 A. Established in 1974, SEIA is the national trade association of the United States
23 solar energy industry, encompassing all solar technologies, including

1 photovoltaic, concentrating solar power, and solar heating and cooling. Through
2 advocacy and education, SEIA and its 1,000 member companies work to make
3 solar energy a mainstream and significant energy resource by expanding
4 markets, strengthening the industry, and educating the public on the benefits of
5 solar energy. The positions expressed herein are the positions of SEIA and not
6 the positions of any individual member company.
7

8 **Q. WHAT ARE YOUR CURRENT RESPONSIBILITIES AT SEIA?**

9 A. In my capacity as Director of State Affairs, I am responsible for SEIA's
10 regulatory and legislative activities in the mid-Atlantic and southeastern states,
11 which includes developing and advocating for positions that balance the diverse
12 needs of our membership.
13

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

15 A. My testimony responds to the proposals of Duke Energy Carolinas, LLC,
16 ("DEC") Duke Energy Progress, Inc., ("DEP") and Dominion North Carolina
17 Power (collectively, the "Companies") to reduce the eligibility cap for the
18 standard offer PPA from 5 megawatts ("MW") to 100 kilowatts ("kW"). My
19 testimony ultimately recommends that the North Carolina Utilities Commission
20 ("Commission"): 1) reject the Companies' proposals to reduce the eligibility
21 threshold; and 2) consider increasing the eligibility threshold to 10MW.
22

1 **Q. CAN YOU PROVIDE A BRIEF SUMMARY OF THE COMPANY**
2 **DIRECT TESTIMONY TO WHICH YOU ARE RESPONDING?**

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

16
17 **Q. DO YOU AGREE WITH THIS RECOMMENDATION?**

18 A. No. I believe this recommendation overlooks the primary benefit or advantage
19 of standard offer rates and terms, which is the elimination of the need to
20 negotiate a PPA. Elimination of the transactional costs associated with
21 negotiating a PPA further enhances the efficiencies of scale inherent in larger
22 solar developments. This is uncontroverted by the Companies. DEC/DEP
23 witness Bowman acknowledges that standard rates eliminate the “cost and

1 effort” of negotiating separate rates, Bowman direct testimony, p. 19, and
2 DNCP witness Williams recognizes the “efficiencies of scale that come with
3 larger [5MW+ solar] developments,” Williams direct testimony, p. 17.

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

20
21 The Companies’ current track record with respect to negotiated PPAs calls into
22 question one of their central premises for their proposals – that 100kW+ “QFs . .

¹ NCSEA Data Request No 2 Question 10.

1 . would receive [full] avoided cost rates through bilateral negotiations with the
2 purchasing utility,” Bowman direct testimony, p. 20. I have trouble believing
3 that, if the Companies’ proposals were approved, more PPAs would be executed
4 at rates and terms agreed upon “bilaterally.” For these reasons, I do not think
5 adoption of the Companies’ recommendation is prudent.
6

7 **Q. ARE THERE ANY OTHER REASONS YOU BELIEVE REDUCTION OF**
8 **THE ELIGIBILITY LIMIT FOR THE STANDARD OFFER RATES AND**
9 **TERMS WOULD BE IMPRUDENT?**

10 A. Yes. As the Commission is aware, developers of QFs must sign several critical
11 contracts with utilities in order to bring a project into commercial operation.
12 The PPA is one such critical contract. The interconnection agreement (“IA”) is
13 another critical contract. The utilities’ proposal to reduce the eligibility limit for
14 the standard offer PPA would essentially “slow-track” PPA negotiations for
15 100kW+ projects at the same time that the Federal Energy Regulatory
16 Commission (“FERC”) has evidenced its intent that larger solar projects be fast-
17 tracked for purposes of IA negotiation.
18

19 **Q. PLEASE EXPLAIN.**

20 A. In FERC Order No. 2006, the FERC established a *pro forma* IA for the
21 interconnection of generation resources up to 20MW, noting that advances in
22 technology had created a burgeoning market for small power plants that may
23 offer economic, reliability, or environmental benefits. On February 16, 2012,

1 SEIA filed a Petition to Initiate Rulemaking requesting the FERC to revise the
2 *pro forma* IA set forth in FERC Order No. 2006. On November 22, 2013, the
3 FERC issued a Final Rule amending six aspects of the *pro forma* Small
4 Generator Interconnection Procedures (“SGIP”) and *pro forma* IA. See FERC
5 Order No. 792. The aspect of the Final Rule revisions most relevant to the
6 instant proceeding is an upward revision of the existing threshold for
7 participation in the Fast Track Process from 2MW to 5MW in certain
8 circumstances.² As the FERC states in FERC Order No. 792, “With these
9 modifications, the [FERC] concludes that the package of reforms adopted in this
10 Final Rule *will reduce the time and cost to process small generator*
11 *interconnection requests* for Interconnection Customers and Transmission
12 Providers, maintain reliability, increase energy supply, and *remove barriers to*
13 *the development of new energy resources.*” (Emphasis added). FERC Order
14 No. 792 was intended to reduce time and costs to process small generator

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:

Line Voltage	Fast Track Eligibility Regardless of Location	Fast Track Eligibility on a Mainline and ≤ 2.5 Miles from Substation
< 5 kilovolt (kV)	≤ 500 kW	≤ 500 kW
≥ 5 kV and < 15 kV	≤ 2 MW	≤ 3 MW
≥ 15 kV and < 30 kV	≤ 3 MW	≤ 4 MW
≥ 30 kV and < 70 kV	≤ 4 MW	≤ 5 MW

1 interconnection requests and to remove barriers to the development of new
2 energy resources.³

3
4 The Companies' recommendation to reduce the eligibility limit of the standard
5 offer PPA would work to thwart the FERC's desire to remove barriers to
6 development – reducing the eligibility cap to 100kW would increase the “cost
7 and effort” associated with solar QF development. The Companies'
8 recommendation runs counter to the spirit of FERC Order No. 792, and because
9 the reduced eligibility recommendation seeks to erect a barrier to QF
10 development, it would run counter to the intent of PURPA as well.

11
12 In short, the FERC is moving to increase the size limit of projects that are
13 eligible to participate in a less costly Fast Track Process for interconnection. If
14 the Commission were to adopt the Companies' proposals and “slow track”
15 projects over 100kW by requiring such projects to “bear the transactional costs
16 of negotiating individualized bilateral rates[.]” it would serve to thwart the cost
17 reductions in the Fast Track interconnection process and run counter to the
18 FERC's stated goal of reducing time and costs to process small generator
19 interconnection requests.

20

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.

1 **Q. GIVEN YOUR OBSERVATIONS REGARDING THE PPA**
2 **NEGOTIATION PROCESS AND FERC ORDER NO. 792, WHAT IS**
3 **YOUR RECOMMENDATION TO THE COMMISSION?**

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

12

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

14 A. Yes.

15

16 4842-3885-2123, v. 4

17

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.

Solar Energy Program Specialist, US Dept. of Energy (DOE), Office of Energy Efficiency and Renewable Energy, Washington, DC (9/07 – 6/11)

- 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

Concentrations: Energy Policy, Economics, International Development, Business Strategy

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

Expert Testimony. BPU Docket No. EO12080721 (2013) Before the New Jersey Board of Public Utilities. In the Matter of the Petition of PSE&G for Approval of an Extension of a Solar Generation Investment Program. On behalf of the Solar Energy Industries Association. Issues: Impact of a regulated entity participating in a competitive market;

Expert Testimony. BPU Docket No. EO12080726 (2013) Before the New Jersey Board of Public Utilities. In the Matter of the Petition of PSE&G for Approval of a Solar Loan III Program. On behalf of the Solar Energy Industries Association. Issues: changes in programmatic structure to facilitate broad industry participation.

Legislative Testimony. (2012) Testimony on behalf of the Solar Energy Industries Association on S.B 1925, the Solar Advancement Act. Before the New Jersey Senate.

Public Testimony. (2012) On behalf of the Solar Energy Industries Association. Regarding NJ BPU Staff Proposal from Solar Transition Working Group, on need for long-term financing opportunities for SRECs. Testimony before BPU President Hanna.

Public Testimony and Written Comments. On behalf of the Solar Energy Industries Association. Regarding the Implementation of the Solar Advancement Act of 2012. Testimony before Commissioner Fiordaliso. Issues: Implementation of legislative requirements on: aggregated net metering requirements; treatment of grid-connect solar projects; incentives and certification of projects on landfills and brownfields; additional incentives for projects over 3MW.

Participant in NJ BPU Solar Transition Working Group. On behalf of the Solar Energy Industries Association. Fall 2011 – Spring 2012.

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

Written Comments. (2012) On the subject of the Investigation of Pennsylvania's Retail Electricity Market, Docket No. I--2011--2237952, including need for long-term contracts and net metering. Before the Pennsylvania Public Utility Commission.

Written Comments. (2011) On the subject of Net Metering and the Use of Third Party Operators; Docket Number M-2011-2249441. Before the Pennsylvania Public Utility Commission.

FELLOWSHIPS AND AWARDS

Presidential Management Fellow; U.S. Department of Energy, September 2007 – September 2009

Duke University Scholar; Duke University, 2005. Chosen for interdisciplinary interests and academic excellence.

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