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June 2, 2014

VIA ELECTRONIC FILING
AND UPS

Ms. Gail Mount
Chief Clerk
North Carolina Utilities Commission
430 North Salisbury Street
Dobbs Building
Raleigh, NC 27603-5918

RE: In the Matter of: Biennial Determination of Avoided Cost Rates for
Electric Utility Purchases from Qualifying Facilities – 2014
Docket No. E-100, Sub 140

Dear Ms. Mount:

Enclosed for filing in the referenced docket is the *corrected copy* of Response Testimony of Karl Rábago, which was originally filed and served on behalf of Southern Alliance for Clean Energy on Friday, May 30th, 2014. Upon notice from the Chief Clerk's Office, this Response Testimony is now formatted with the correct page numbering. Pursuant to Commission Rule R1-28(e), we are also submitting fifteen (15) corrected paper copies of the testimony via UPS, for delivery on June 3rd, 2014.

By copy of this letter, I am serving all parties of record on the service list. Please let me know if you have any questions about this filing.

Sincerely,

s/ Robin G. Dunn
Legal Assistant

SP
Enclosures
cc: Parties of Record

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION
DOCKET NO. E-100, SUB 140

In the Matter of:)
Biennial Determination of Avoided)
Cost Rates for Electric Utility) **RESPONSE TESTIMONY OF**
Purchases from Qualifying Facilities –) **KARL R. RÁBAGO**
2014)

1 **Q. PLEASE STATE YOUR NAME FOR THE RECORD.**

2 A. My name is Karl R. Rábago.

3 **Q. ARE YOU THE SAME KARL R. RÁBAGO WHO SUBMITTED DIRECT**
4 **TESTIMONY IN THIS DOCKET?**

5 A. Yes.

6 **Q. HAS YOUR CURRENT POSITION CHANGED SINCE YOU**
7 **SUBMITTED DIRECT TESTIMONY IN THIS DOCKET?**

8 A. Yes. Since filing my direct testimony, I have accepted a position as the Executive
9 Director of the Pace Law School Energy and Climate Center, located in White
10 Plains, New York. In my new capacity, I oversee the Center's policy, legal, and
11 analysis activities. The Center works to advance climate-responsible clean energy
12 policy and manages programs relating to renewable energy, energy efficiency,
13 combined heat and power, microgrids, and other distributed energy resources. My
14 new business address is 44 Briary Road, Dobbs Ferry, New York, 10522.

15 **Q. WHAT IS THE PURPOSE OF YOUR RESPONSE TESTIMONY?**

16 A. In its order initiating this proceeding, the Commission signaled its intention to
17 consider “changes to the methodology used to calculate avoided cost payments,
18 particularly capacity payments,” including, most pertinent to my response

1 testimony, “whether the methodologies historically relied upon by the
2 Commission to determine avoided cost capture the full avoided costs.”¹
3 Accordingly, the Commission directed parties to file direct testimony and
4 exhibits “regarding the proper methodology to determine avoided cost payments,
5 particularly capacity payments.”² The Commission also afforded the parties an
6 opportunity to file additional testimony and exhibits in response to the direct
7 testimony filed by other parties to this proceeding. The purpose of my response
8 testimony is to respond to the testimony filed by several other parties as follows:

- 9 • Review of my recommendations from my pre-filed direct testimony.
- 10 • Response to testimony from witnesses calling for Value of Solar analysis to
11 inform and improve avoided cost methodologies.
- 12 • Recommendations relating to addressing both Value of Solar analysis and
13 immediate improvements to avoided cost methodologies.
- 14 • Response to utility witness testimony regarding Value of Solar analysis.
- 15 • Response to North Carolina Sustainable Energy Association (“NCSEA”)
16 witness R. Thomas Beach’s recommendations for improvements to avoided
17 cost methodologies.
- 18 • Response to testimony relating to avoided environmental costs, including
19 testimony provided by witness Diane Munns on behalf of Environmental
20 Defense Fund.
- 21 • Response to testimony from NC WARN witness Nancy LaPlaca and NC
22 Hydro Group witness Andrew C. Givens relating to avoided coal ash
23 management and damage costs.

¹ Order Establishing Biennial Proceeding and Scheduling Hearing, Docket No. E-100, Sub 140 (Feb. 25, 2014) at 2.

² Id.

- 1 • Response to testimony by witness Givens relating to the application of Value
2 of Solar analysis concepts to other types of energy resources, including
3 hydropower.
- 4 • Response to Public Staff witnesses Dr. Richard E. Brown and Dr. Laurence
5 D. Kirsch on various issues.
- 6 • Response to testimony from utility witnesses Kendal C. Bowman, Glen A.
7 Snider, Lawrence Makovich, and Bruce E. Petrie arguing for reducing market
8 opportunities for Qualifying Facilities (“QF”), especially renewable energy
9 QFs, and for various changes designed to reduce avoided cost values,
10 complicate QF contracting, and systematically limit the potential for fair and
11 full avoided cost payments.
- 12 • Response to testimony from NCSEA witnesses Michael Cohen and K. Zoe G.
13 Hanes relating to contract terms for QFs.

14 **Q. WHAT IS YOUR KEY RECOMMENDATION TO THE COMMISSION IN**
15 **THIS PHASE OF THE PROCEEDING?**

16 A. As in the 2012 avoided cost docket, I recommend a full avoided cost analysis for
17 solar technology, including both utility-scale and distributed solar technology.
18 This will have the benefit of revealing not only the full costs that can be avoided
19 by solar resources, but more significantly, of demonstrating a comprehensive
20 methodology suitable for assessing all manner of non-utility generation and
21 resources. In this response testimony, I call the Commission’s attention to
22 testimony of other intervenor witnesses that are consistent with this
23 recommendation. I also respond to the testimony and recommendations of the
24 utilities, which I urge the Commission to reject.

25

1 **Q. BRIEFLY SUMMARIZE THE EXPERIENCE YOU HAVE THAT GIVES**
2 **RISE TO YOUR CONTINUED ASSERTION THAT AVOIDED COSTS**
3 **FROM SOLAR AND OTHER ALTERNATIVE RESOURCES ARE**
4 **GREATER THAN TYPICALLY ASSESSED IN AVOIDED COST**
5 **PROCEEDINGS.**

6 A. I have personally been involved in distributed and alternative energy resource
7 valuation assessment for more than 24 years. My work—as a utility executive,
8 public utility commissioner, federal energy executive, researcher, and advocate—
9 has included advancement of integrated resource planning and line-extension
10 policies, the oversight and funding of research and development programs for
11 utility technologies, the co-authorship of a definitive text on the economic,
12 financial, operational, and engineering benefits of right-sized energy resources,
13 the use of Value of Solar analysis in rate setting and benchmarking, and most
14 recently, testimony and participation in regulatory, educational, and legislative
15 processes in 10 states around solar valuation. Where the analysis is objective and
16 complete, the value of solar is significant and is found to be greater than that
17 assessed under the assumptions that accompany traditional avoided cost
18 estimation processes.

19 **Q. SEVERAL INTERVENOR WITNESSES, INCLUDING WITNESSES FOR**
20 **NCSEA, NCWARN, ENVIRONMENTAL DEFENSE FUND, AND THE**
21 **ALLIANCE FOR SOLAR CHOICE ADVOCATE FOR A “VALUE OF**
22 **SOLAR” ANALYSIS IN THIS PROCEEDING. HOW DO YOU**
23 **RESPOND?**

24 A. Those witnesses are on the right track. The foundation for my testimony rests on
25 the growing body of empirical analysis that documents the additional value,
26 beyond and greater than that typically calculated and incorporated in past
27 approaches to avoided cost estimation, obtained by utilities and their ratepayers

1 when so-called “alternative generation” and other emerging resources operate on
2 the grid. These resources, which include renewable and distributed generators,
3 avoid significantly greater costs due to their nature as renewable generators and,
4 for distributed resources, as resources operating at or near the point of energy
5 consumption. I commend the testimony from those witnesses to the Commission
6 for additional points made and resources cited therein.

7 **Q. WHAT IS YOUR SPECIFIC RECOMMENDATION TO THE**
8 **COMMISSION REGARDING THE VALUE OF SOLAR PROPOSITION**
9 **AND HOW IT SHOULD BE USED TO SET RATES IN THE PRESENT**
10 **DOCKET?**

11 A. The process of developing, reviewing, and approving a Value of Solar
12 methodology requires several months. For that reason, the Commission should
13 require that this process start immediately. If the Value of Solar analysis and
14 methodology development timetable has an adverse impact on the timely
15 completion of this case, the process should operate in parallel to the existing case.

16 While a comprehensive Value of Solar methodology is developed, I
17 strongly recommend that the Commission adopt the recommendations for
18 immediate improvements offered by NCSEA witness Beach. These changes
19 involve several specific amendments to the peaker method to improve its
20 application in North Carolina and to ensure that it better reflects the full and fair
21 estimation of costs avoided by solar generation. While we have not yet developed
22 a methodology for assessing the full value of solar in North Carolina, Mr.
23 Beach’s recommended changes serve as a baseline for such an analysis, and there
24 is no reason why the Commission should not adopt these limited changes now.

25 Mr. Beach’s testimony illustrates that failing to incorporate these proven

1 additional avoided costs from solar would result in avoided cost rates that do not
2 reflect full avoided costs, in contravention of the Public Utility Regulatory Policy
3 Act of 1978 (“PURPA”) and the interests of economic efficiency in the provision
4 of electric services. Mr. Beach’s recommendations are supported by analytical
5 evidence, are easy for utilities to implement in the near term, and will serve as an
6 immediate corrective measure while a more comprehensive valuation
7 methodology is developed.

8 **Q. HOW DOES THE VALUE OF SOLAR ANALYSIS YOU RECOMMEND**
9 **IN THIS AVOIDED COST PROCEEDING RELATE TO OTHER ISSUES**
10 **THAT ARISE BEFORE THE COMMISSION?**

11 A. My recommendation remains that improving the methodology for determining
12 and the setting of avoided costs is the first and most important context in which to
13 apply Value of Solar analysis. The potential benefits in other proceedings and
14 processes is another, supporting reason for the Commission to direct the utilities
15 to conduct such analysis at this time. There are many ways in which the questions
16 at issue in this avoided cost proceeding directly and indirectly relate to other
17 dockets pending or that will be filed at the Commission and other matters that
18 will be considered by the Commission, Staff, and utilities. Again, my testimony
19 was designed to address the issues of solar valuation as they are directly relevant
20 to this avoided cost proceeding.

21 **Q. DID ANY OF THE UTILITIES ADDRESS VALUE OF SOLAR**
22 **ANALYSIS?**

23 A. No. In spite of the Commission’s provision of this important opportunity to
24 address these issues, I find no reference to the concept in utility testimony
25 submitted at this stage. Duke Energy Progress, Inc. (“DEP”) and Duke Energy

1 Carolinas, LLC (“DEC”) did cite a technical study of solar integration issues
2 (hereinafter “Duke Integration Study”). Mr. Beach addresses implications of that
3 limited study in his testimony.

4 **Q. NCSEA WITNESS BEACH PROPOSES SEVERAL CHANGES TO THE**
5 **COMMISSION’S AVOIDED COST METHODOLOGY. DO YOU WISH**
6 **TO RESPOND TO ANY POINTS MADE IN MR. BEACH’S**
7 **TESTIMONY?**

8 A. I sponsored Mr. Beach’s study titled “The Benefits and Costs of Solar Generation
9 for Electric Ratepayers in North Carolina” (hereinafter “Crossborder Study”) in
10 the previous docket. I continue to support the approach and conclusions in that
11 report. Mr. Beach’s testimony in this proceeding amplifies the basis for his
12 conclusions and includes specific recommendations suitable for adoption by the
13 Commission that I also support. In my view, Mr. Beach’s recommendations
14 should be adopted immediately in order to prevent improper discrimination
15 against solar generators in North Carolina. These recommendations should also
16 be incorporated into the broader Value of Solar methodology development
17 process that I recommend that the Commission order.

18 **Q. DO YOU WANT TO RESPOND TO ANY PARTICULAR FEATURES OF**
19 **MR. BEACH’S TESTIMONY?**

20 A. Yes. I offer my support for Mr. Beach’s finding that modification to the avoided
21 cost calculation is appropriate and necessary in order to more accurately and
22 fairly capture the full range of costs avoided by solar energy resources, in
23 particular:

- 24
- Avoided energy credits should be calculated with greater granularity.

- 1 • Avoided carbon costs should be included in the calculation of the utilities’
2 avoided energy costs.
- 3 • The same data should be used to calculate avoided capacity as is used in the
4 calculation of capacity cost in the utilities’ Integrated Resource Plan (“IRP”)
5 and the generation reserve margin study.
- 6 • When data other than IRP data is used to calculate capacity cost, that data
7 should be unadjusted from publicly available sources.
- 8 • The cost components for the installed cost of a combustion turbine (“CT”)
9 should be identical in avoided cost, IRP, and reserve margin calculations.
- 10 • The installed cost of a CT should not be adjusted for economies of scale.
- 11 • The calculation of avoided transmission costs should be adjusted to account for
12 reductions in transmission line losses and the increase in integration costs, as
13 supported by the Duke Integration Study, and for avoided transmission capacity
14 costs as supported by the Crossborder Study.
- 15 • Additional data should be collected and shared by the utilities relating to
16 avoided distribution costs in order to properly quantify the costs avoided by
17 distributed solar and other distributed generation resources.
- 18 • A levelized QF contract term of at least 20 years is appropriate for QFs in North
19 Carolina.
- 20 • The peak hour ranges in Option B pricing should be modified to align more
21 accurately with utility system peaks and to provide greater benefits to the
22 utilities and ratepayers.

23 **Q. HOW DO YOU RESPOND TO TESTIMONY REGARDING AVOIDED**
24 **ENVIRONMENTAL COSTS?**

25

26 A. As I have previously testified, the Commission enjoys significant and broad
27 authority to ensure that utilities fully incorporate all verifiable avoided costs

1 into rates set for QFs. These costs may also include real costs incurred by a
 2 utility in complying with environmental regulations. Avoided environmental
 3 costs are an important element of fair evaluation for renewable QFs.

4 **Q. MS. MUNNS STATES THAT FEDERAL GREENHOUSE GAS RULES**
 5 **ON EXISTING FOSSIL FUEL PLANTS WOULD FALL INTO THIS**
 6 **CATEGORY. DO YOU AGREE?**

7
 8 A. Yes. Greenhouse gas regulations will, with certainty, impose costs on utilities
 9 and their ratepayers that can definitively be avoided by solar energy resources.
 10 These costs are not limited to mere compliance costs, nor are they impossible to
 11 quantify in the absence of a compliance regime. Many utilities, including those
 12 participating in this proceeding, use greenhouse gas emissions cost values in
 13 their planning processes, especially when justifying nuclear plant investments.
 14 Setting avoided costs requires estimation in a number of categories, such as
 15 expected availability, estimates of reliability, the value of shorter lead times, the
 16 value of energy and capacity, and so on. So it is with costs relating to
 17 greenhouse gas emissions. I differ from Ms. Munns to the extent that she takes
 18 the position that setting an avoided cost relating to greenhouse gas emissions-
 19 related costs must wait for the implementation of the federal regulatory regime.
 20 I note that setting no value for these avoided costs sets a value of zero—
 21 something factually at odds with reality and with utility planning best practices.

22 **Q. CONTINUING ON THE TOPIC OF AVOIDED ENVIRONMENTAL**
 23 **COSTS, NCWARN WITNESS LAPLACA AND HYDRO GROUP**
 24 **WITNESS GIVENS BOTH ARGUE THAT COAL ASH COSTS**
 25 **SHOULD BE INCLUDED IN AVOIDED COST RATES. HOW DO YOU**
 26 **RESPOND?**

1 A. The testimony provided relating to coal ash management costs stands as a stark
2 and current reminder of the need to better incorporate considerations of risk,
3 including environmental and regulatory compliance risk, in setting avoided
4 costs. I would be extremely surprised if those who built coal generation plants
5 fully considered the economic, financial, and environmental costs associated
6 with coal ash management when those projects were proposed in lieu of
7 alternatives. Very real avoided costs, even if of uncertain probability, do not
8 cease to exist simply if they are ignored. Resources without those potential
9 costs are a better buy, and avoided cost methods can and should address that
10 reality.

11 Nonetheless, I do not necessarily agree that under methods currently
12 employed by the Commission, coal ash management costs should be included
13 in evaluating the costs avoided when displacing a natural gas peaking unit, per
14 se, and would have to carefully evaluate methodology modifications that would
15 have that result. Because of the Commission's approval of the natural gas
16 peaking unit as a proxy for any additional generation, the full and true costs of
17 coal are not incorporated into the peaker method's evaluation of avoided costs,
18 even if coal is ultimately being displaced by solar in real operations. It is
19 important that decision makers understand that while these risks and potential
20 costs are not reflected in avoided cost rates under the peaker method, they are
21 real costs to ratepayers in the real world that solar can help avoid.

22

1 **Q. MR. GIVENS ALSO REFERS TO THE BENEFITS OF SOLAR**
2 **IDENTIFIED IN THE CROSSBORDER STUDY AND STATES THAT**
3 **THESE BENEFITS APPLY TO HYDRO AS WELL. DO YOU AGREE?**

4 A. Absolutely. Mr. Givens points out that while the Crossborder Study focused on
5 the value of solar generation, the benefits provided by solar result from other
6 renewable energy resources, particularly those interconnected at the distribution
7 level. A core principle of my testimony is that the methodologies used by the
8 utilities in setting avoided costs in North Carolina are incomplete. More
9 granular and robust evaluation methodologies would improve economic
10 efficiency in the provision of electric service and would reduce unfair
11 discrimination against various types of renewable QFs.

12 **Q. WHAT IS YOUR RESPONSE TO THE TESTIMONY OF PUBLIC**
13 **STAFF WITNESS BROWN?**

14 A. Dr. Brown raises a wide range of issues that should be addressed in the Value
15 of Solar analysis and methodology development process that I have
16 recommended. In that process, it will be important to not just describe the
17 various costs and benefits, but to fully characterize them. Questions that are
18 raised by Dr. Brown's testimony and that need to be addressed include:

- 19 • Does the cost or benefit arise at low and/or high rates of solar penetration?
20 • Are the cost or benefit impacts cumulative or incremental in nature?
21 • Who receives the benefit or bears the particular cost under discussion?
22 • What are geographical and system boundaries for the evaluation of costs and
23 benefits?
24 • Can the particular benefit or cost be reasonably estimated even if not precisely
25 calculated?

1 • How can risk be quantified and monetized, including risks associated with
2 integration costs, but also, as I have discussed previously, risks of
3 environmental regulation, fuel price fluctuation, and other factors?

4 Given the scope of the work that is required, Mr. Brown’s testimony
5 strengthens my argument that a Value of Solar assessment process should begin
6 very soon.

7 **Q. PUBLIC STAFF WITNESS KIRSCH DISCUSSES THE RISKS OF**
8 **MISQUANTIFYING AVOIDED COSTS. DO YOU AGREE WITH HIS**
9 **POSITION?**

10 A. Yes. Dr. Kirsch’s testimony echoes my own points in this regard. The goal of
11 economic regulation is economic efficiency. Obtaining that result is
12 complicated by market realities and the fact that, as Dr. Kirsch points out,
13 electricity markets are often in disequilibrium. While the goal of setting
14 avoided costs is to get the “right price,” it is wise to recognize the potential
15 need for correction and improvements in rate setting methodologies. Our
16 improved knowledge and tools for calculating the benefits and costs of non-
17 utility generation should be reflected in an improved avoided cost approach in
18 North Carolina.

19 I further agree with Dr. Kirsch that, given a number of factors
20 associated with non-utility generation, the relative risk of overestimating
21 avoided costs for non-utility renewable energy generation is offset by a number
22 of additional benefits. These benefits relate to the smaller size increments
23 associated with QF resources, the fact that QFs rely on non-utility financing,

1 that QFs typically represent more innovative technologies and approaches, and
2 that most QFs are clean and renewable energy generators.

3 **Q. DO YOU AGREE WITH PUBLIC STAFF WITNESS KIRSCH'S**
4 **FINDING THAT RESOURCE SPECIFIC AVOIDED COSTS SHOULD**
5 **BE CONSIDERED?**

6 A. Yes. Fair and accurate estimation of avoided costs requires analysis of the
7 operating characteristics of various technology options. I note that while the
8 avoided cost value of technologies may differ, there is a significant opportunity
9 for efficiency in developing a robust valuation methodology applicable to
10 various types of generating technologies. A Value of Solar proceeding for solar
11 electric generation is a good place to start because these systems are often
12 embedded in the distribution system, are highly available, and have strong
13 environmental and other benefits.

14 **Q. HOW DO YOU RESPOND TO THE TESTIMONY OF DUKE ENERGY**
15 **CAROLINAS AND DUKE ENERGY PROGRESS WITNESS**
16 **BOWMAN?**

17
18 A. Witness Bowman makes policy arguments for the Companies'
19 recommendations regarding modifications to avoided cost methodologies in
20 North Carolina. These policy arguments are founded on two core assumptions:
21 First, that growth in the QF sector as a result of State policy and technological
22 advancement constitutes a threat to the utilities and their operations when those
23 facilities are not owned and operated by the utilities; and, second, that QFs have
24 been over-compensated by the avoided cost process in North Carolina. Witness
25 Bowman proposes these assumptions as justification for the Companies'
26 numerous recommendations to reduce avoided costs paid to QFs, to add

1 significant contract negotiation burdens to QFs between 100 kW and 5 MW in
2 size, and to reduce the opportunities for QFs to receive fair compensation for
3 the capacity value they create.

4 As set forth in my testimony, and obliquely acknowledged by witness
5 Bowman, there are strong policy foundations in North Carolina and federal law
6 supporting non-utility generation, especially renewable energy generation. As
7 my testimony and that of Mr. Beach and other witnesses makes clear, there is
8 substantial empirical evidence that QF rates in North Carolina under-
9 compensate QFs, with a resulting economic efficiency penalty. Finally, witness
10 Bowman's recommendations to impose additional administrative and
11 negotiation burdens on QFs and reduce compensation based on avoided costs
12 are therefore unsupported by broader policy.

13 **Q. HOW DO YOU RESPOND TO THE TESTIMONY OF DEC AND DEP**
14 **WITNESS SNIDER?**

15 A. Witness Snider offers several arguments supporting witness Bowman, and, in
16 general, seeking to reduce avoided cost values for qualifying facilities. At the
17 heart of Mr. Snider's testimony is a hypothetical table exercise in which
18 qualifying facilities are seen to displace between 20% and 60% of utility
19 generation assets. Of course, the solar generation penetration rate in North
20 Carolina is not yet even 2% of summer peak capacity.

21 **Q. HOW DOES WITNESS SNIDER ADDRESS THE PERFORMANCE**
22 **ADJUSTMENT FACTOR ("PAF")?**

23 A. Witness Snider seeks a change in the PAF setting process that is at odds with
24 the original purposes of the adjustment. My understanding of the original

1 justification for the PAF is that while the utility always recovers 100% of
2 capacity costs from ratepayers for its own capacity investments, whether those
3 investments are highly utilized or excess, the QF receives capacity payments
4 only during the hours when QF output matches with the relatively narrow range
5 of peak hours established by the utility. The PAF was, therefore, designed to
6 correct for improper discrimination in rates for QF facilities as compared to
7 utility-owned assets. Mr. Snider seeks to change the PAF so that it becomes an
8 instrument for enforcement of availability factors in QF operating contracts,
9 justified by the availability and not the hours of on-peak operation for the utility
10 fleet of generation units. In essence, Mr. Snider seeks to change the PAF from
11 an adjustment factor to an instrument for advancing the very capacity payment
12 discrimination it was intended to remedy.

13 **Q. DO YOU AGREE WITH MR. SNIDER'S RECOMMENDATION TO**
14 **REDUCE QF CAPACITY PAYMENTS IN SITUATIONS OF EXCESS**
15 **UTILITY SYSTEM CAPACITY?**

16 A. No. This approach has two major flaws. First, it has the effect of amplifying
17 pervasive existing incentives for the utility to over-plan and over-build in order
18 to maximize revenues and profits. Second, it effectively precludes ratepayers
19 from ever receiving the benefits of more cost-effective energy from QFs except
20 during the imperceptibly small window between a condition of excess capacity
21 and the failure to load utility capacity into the resource plan at some point in the
22 future. That is, QF capacity will almost always be either too early or too late to
23 receive value for its capacity contribution. Under Mr. Snider's recommended

1 approach, even capacity at a lower price than utility planned capacity will not
2 be fully or fairly compensated.

3 **Q. WHAT IS YOUR OPINION OF MR. SNIDER’S RECOMMENDATION**
4 **TO REDUCE AVOIDED COST VALUES BY THE VALUE OF “LOST**
5 **PRODUCTION BENEFITS”?**

6 A. Mr. Snider’s recommendation seems to conflate the concept of sunk costs with
7 the goal of setting fair and non-discriminatory avoided cost rates. Under Mr.
8 Snider’s formulation, avoided costs should be reduced in the situation where
9 the QF displaces the operation of a utility generation unit that would itself have
10 displaced the operation of non-cost effective older additional utility generation
11 unit that shouldn’t have run anyway. So, even where the QF is economical
12 compared to the avoided unit, it must also be cost effective against all the
13 hypothetical costs that the avoided unit avoided by being part of the utility fleet.
14 There is no logical limit to the extent to which Mr. Snider’s lost production
15 benefits argument can be used to aggregate these hypothetical costs. The
16 concept should be summarily rejected.

17 **Q. HOW DO YOU RESPOND TO THE TESTIMONY OF DEC AND DEP**
18 **WITNESS MAKOVICH?**

19 A. Dr. Makovich reprises traditional arguments against the PURPA requirements
20 relating to QFs and against non-utility solar generation. In expounding his
21 treatise about what he calls “the PURPA problem,” he focuses on efficient
22 marginal power supply costs, but ignores the other policy justifications for
23 PURPA and the QF purchase obligations. In addition to its goal of seeking
24 economic neutrality around an indifference rate, PURPA had the important goal
25 of encouraging alternative energy development by providing QF status to

1 eligible cogeneration and small renewables with rights to sell to utilities. Dr.
 2 Makovich extends his single-minded focus on marginal power supply cost to
 3 make an asymmetrical argument about why externality values should be
 4 recognized when they are attributable to utility activities (like coal generation
 5 research and development), but not when they are attributable to renewable or
 6 other QF generation. He also sets out his support for reducing capacity
 7 payments for QF facilities except in the narrow and unlikely moment that the
 8 utility is both short on capacity and has failed to include any new capacity in its
 9 resource plans. Finally, he argues from a highly-constrained example that if
 10 nothing else changes in North Carolina in the meantime, and if the amount of
 11 installed solar capacity is increased to 3,000 MW—at least six times the current
 12 installed solar capacity—then new solar will contribute no additional capacity
 13 value. Based on this highly constrained example, Dr. Makovich argues that any
 14 solar installed today should receive reduced capacity credit for contributing to
 15 the situation where some future incremental unit of solar capacity beyond 3,000
 16 MW is installed.

17 **Q. DO YOU HAVE ANY ADDITIONAL RESPONSE TO TESTIMONY BY**
 18 **DOMINION NORTH CAROLINA POWER (“DNCP”) WITNESS**
 19 **PETRIE?**
 20

21 A. Witness Petrie’s testimony aligns with that of DEC and DEP witnesses
 22 regarding the PAF, capacity payments, and other arguments aimed at reducing
 23 avoided cost value. My response to that testimony is essentially the same.

24 **Q. NCSEA WITNESSES COHEN AND HANES EACH RAISE ISSUES AND**
 25 **MAKE RECOMMENDATIONS REGARDING CONTRACT RATES,**
 26 **PAYMENTS, AND TERMS. DO YOU BELIEVE THE ISSUES THEY**
 27 **RAISE ARE VALID?**

1
2 A. Mr. Cohen and Ms. Hanes, who bring the perspective of solar energy
3 developers active in the North Carolina QF market, each recommend that the
4 Commission require DEC, DEP and DNCP to offer long-term levelized
5 capacity payments and energy payments for five-, ten-, 15- and 20-year terms to
6 QFs as standard options. This recommendation is consistent with the
7 justification offered by witness Snider regarding assumptions about book life
8 for the avoided generation unit. Each witness also recommends that standard
9 rates and terms approved by the Commission should be extended to QFs up to
10 10 MW, a view that I support given the physical and operating characteristics
11 of solar generation facilities.

12 **Q. WHAT IS YOUR RECOMMENDATION AT THIS TIME?**

13 A. I recommend that the Commission order the development of a comprehensive
14 Value of Solar methodology in a parallel proceeding to this docket and in the
15 current docket, and that the Commission adopt the recommendations for
16 immediate improvements to the peaker methodology offered by NCSEA
17 witness Beach. I further recommend that the Commission summarily reject the
18 self-serving recommendations proffered by utility witnesses in this docket,
19 which would have the effect of undermining the objectives of PURPA, prevent
20 QFs from receiving just and reasonable rates based on full avoided costs, and
21 unfairly and improperly discriminate against Qualifying Facilities.

22 **Q. DOES THAT CONCLUDE YOUR RESPONSE TESTIMONY?**

23 A. Yes.

CERTIFICATE OF SERVICE

I certify that the persons on the service list have been served with the foregoing Response Testimony of Karl R. Rábago either by electronic mail or by deposit in the U.S. Mail, postage prepaid.

This the 2nd day of June, 2014.

s/ Robin G. Dunn
Robin G. Dunn