

Why does Duke Energy hate solar in North Carolina?

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Summary

A growing solar power movement has already begun to reduce demand for electricity from Duke Energy's two utility subsidiaries in North Carolina. Solar prices have dropped drastically and the market has grown despite Duke's increasing efforts to slow progress.

Now, the world's largest electricity corporation has quietly begun to ramp up its attack on solar, posing a serious threat to both rooftop and large-scale solar in North Carolina.

Duke actually likes solar. It has very profitably invested \$3.5 billion in solar and wind energy in other states where it has to compete for customers. But in monopoly-controlled North Carolina, Duke's business plan is to continue raising electricity rates to build power plants we don't need.

Duke vigorously claims to support solar power in this state, but its official, long-term plans prove that all renewables would make up only 3% of its total generation in the Carolinas in 2028.

Whereas solar power beats other energy sources on economics – especially when pollution, coal ash waste and other externalized costs are considered – Duke's anti-solar actions are creating doubt among investors and customers, thus harming solar businesses.

Solar companies say Duke's actions are designed to stall the industry until the state renewable energy tax credit expires at the end of 2015. The industry's NC trade association recently referred to Duke's attempts to "destroy an industry that is thriving in North Carolina ... attacking net metering and rooftop solar to protect their bottom line and monopoly control," and Duke's "efforts to undermine the success of solar energy."¹

Specifically, Duke is proposing to weaken net metering for rooftop solar customers by reducing the credit for excess power generation by customers and/or adding a solar fee. That's despite the fact that, as more rooftops become solarized, it helps *all* customers by reducing electricity demand – especially during peak periods – thus reducing the need for new power plants and rate hikes.

Duke argues against solar's tremendous benefits. But recently, Minnesota utilities were ordered to reimburse net metering customers at a rate higher than the retail price of

electricity. The high value of solar power at peak times, and zero environmental and fuel costs, means it can pay for itself quickly – with the right policies.

Also at the rooftop level, Duke’s years-long blockade against competitive “third party sales” prevents North Carolina customers from accessing solar power at no up-front cost.

For large-scale solar installations, Duke Energy is also attempting to reduce the amount it pays for power, making projects less attractive to investors. Both within and outside its service areas, Duke Energy is making it hard for 2,000 MW worth of projects already “in the pipeline” to move forward in a variety of ways. Duke has also said it will no longer pay capacity credits – a large component of revenue – for large-scale projects not directly connected to Duke lines.

Duke Energy should evolve its regulated utilities to participate in the renewable energy industry in its home state. If nothing else, Duke needs to get out of the way and allow the strong North Carolina solar industry to move forward.

Why Would Duke Energy Hate Solar?

I. Solar is threatening utility profits around the US

Across the country, as the rapid growth of solar power challenges the profitability of coal, natural gas and nuclear plants, large utilities, along with the Koch Brothers, ALEC and other fossil fuel interests have been pushing to limit or even kill the US solar industry.² In Arizona, Minnesota, California and Colorado, customers have had to fight to protect their right to put solar on their own roofs while avoiding crippling solar taxes and fees – and consistently, the customers have won. Now the fight has come to North Carolina.

With over 210 sunny days every year, solar has been growing into big business in North Carolina. In 2013 alone, nearly \$800 million was invested in solar, and from 2007 to 2013 the total economic benefit from clean energy was over \$4.7 billion. Since 2007, clean energy has generated over \$236 million in state and local government revenues.³

Solar prices have dropped drastically – 70% in five years.⁴ The North Carolina market has grown despite Duke’s increasing efforts to slow progress. In fact, installers report that they can install wholesale solar for costs as low as \$2 per Watt. Now, Duke has quietly begun to attack solar on all fronts, posing a serious threat to both rooftop and large-scale solar in North Carolina.

Many states are doing far more to fund clean energy than North Carolina⁵, and the reason is Duke Energy. In fact, although North Carolina ranked third in the US in adding solar in 2013, the entire state has fewer than 2,000 solar roofs out of a population of 9.7 million people.⁶ The problem for Duke is that clean energy is not part of its monopoly business plan.

II. Dukes’s monopoly is threatened by solar

Duke actually likes solar – just not for North Carolina solar companies. It has very profitably invested \$3.5 billion in solar and wind energy in other states where it has to compete for customers.⁷ But Duke’s goal of a miniscule 3% clean energy in North Carolina by 2028 is a perfect reflection of the old-school monopoly mindset in its home state.⁸

Duke Energy is the largest electric utility in the world, with monopoly control over 95% of North Carolina's electricity customers. Although Duke is required by law to provide reliable service to any customers in its service area, this does not mean that what benefits Duke's bottom line also benefits Duke's customers.

Duke's monopoly business model relies on annual exaggeration of electricity demand to justify building large, expensive fossil fuel and nuclear power plants. The cost can then be added to customers' rates – along with a considerable guaranteed profit.

A growing solar power movement, helped by increasing energy efficiency measures, has already begun to reduce the demand for electricity from Duke Energy's two regulated utility subsidiaries in North Carolina – Duke Energy Carolinas and Duke Energy Progress. More solar installations added to the grid would further reduce the need for Duke to build new power plants and raise rates. So, while more solar on the grid has tremendous benefits to all customers, it is an existential threat to Duke Energy's business model and profits.

Duke recently announced that its subsidiary Duke Renewables is building 52 MW of solar photovoltaics in Eastern NC.⁹ However, the power will be sold into the D.C. market, likely because Washington D.C. is paying \$480 per MWh for each Renewable Energy Credit (REC).¹⁰ In other words, Duke will be selling solar power to other markets in the U.S. right now – Washington D.C. – at contract terms that it denies North Carolina solar developers.

Duke Wants to Weaken Rooftop Solar “Net Metering”

I. Duke is trying to weaken net metering for rooftop solar by reducing the credit for excess power generation by customers or adding a solar fee

Duke Energy's two North Carolina subsidiaries are required by state regulators to offer residential and business customers who have rooftop solar photovoltaic systems an option known as net metering. Net metering allows customers with rooftop PV solar to use the power created by their system, and to be reimbursed at the full retail rate for their excess electricity put back onto the grid for Duke to sell to neighboring customers.

In January, Duke executives told the North Carolina legislature that the company will seek to weaken net metering rules and pay a lower price for the clean energy customers add to the grid.¹¹

Duke and other utilities around the US argue that net metering customers are “not paying their fair share” for fixed costs of service and infrastructure such as power plants, and that, by reducing the amount of their power bills, solar customers are being subsidized by customers who do not have solar power. Duke argues that this particularly harms low-income households.

But Duke's arguments against net metering are flawed. Here's why:

i. Adding solar reduces the need for new power plants

More customers going solar helps *all* customers by reducing overall electricity demand and chipping away at the utility's argument to build new power plants that would increase everyone's rates.

ii. Duke’s actions would make solar less accessible to average customers

If Duke convinces the North Carolina Utilities Commission (NCUC) to weaken net metering, regulators will have made solar *less* accessible to residential and small business customers by making system paybacks longer. If Duke and the NCUC had true concern for low-income ratepayers, there are legitimate and effective avenues to pursue. Innovative low-income energy efficiency programs are exploding around the US. NC WARN has pressed for increased energy efficiency and more customer-friendly cut-off policies in multiple NCUC proceedings, unsuccessfully due to Duke’s opposition.

iii. Duke and the NC Utilities Commission need to allocate costs more fairly

If Duke cared about customers, it would use a far more fair system to allocate costs among customer groups. Duke’s Summer Coincident Peak method shifts costs from big customers to residential and small businesses by allocating system-wide costs based on the single hottest hour of the year, rather than an accurate representation of energy usage throughout the day and year.¹²

More rooftop solar would offset some of the injustice of Summer Coincident Peak because solar homes and businesses would reduce the electricity demand of these customer classes as a whole during the hottest hours of the year.

iv. Solar customers add value to the grid – and already pay their fair share

All customers, regardless of how much electricity they use, are required to pay a flat basic facilities charge to Duke Energy that is meant to cover various costs that are “exclusive of demand or energy consumption”.¹³ Duke Energy’s claim that net metering customers are “not paying their fair share” also fails to acknowledge that such customers are providing high-value power to the utility, often at the most high-demand, “peak” time of day when it costs Duke the most to generate electricity. Duke Energy then sells the high-value power solar systems generate to the customer next door.

v. Minnesota’s recent “value of solar” proceeding recognized solar’s true value

Recently, Minnesota utilities were ordered to reimburse net metering customers at a rate *higher* than the retail price of electricity. The Minnesota Commission recognized that grid-tied solar added value for both customers and the utility.¹⁴ The high value of solar power at peak times, and zero environmental and fuel costs, means it can pay for itself quickly – with the right policies. Duke openly admits solar negatively impacts its bottom line, while ignoring the multiple ways more solar can benefit customers, utilities and the grid.

NC WARN is concerned because negative statements about solar in sunny states like Arizona have resulted in the number of new installations cut by half.¹⁵ North Carolina’s clean energy industry is already adding nearly \$800 million per year to the state economy. Duke’s anti-solar actions and threats have the potential to deter solar investors from North Carolina and hurt local installers.

The North Carolina Sustainable Energy Association, the trade organization for the North Carolina solar industry, is urging legislators and Governor McCrory to, “protect customer

choice and free enterprise by not allowing Duke Energy's monopoly to destroy an industry that is thriving in North Carolina."¹⁶

II. Duke's years-long blockade against competitive "third party sales" prevents North Carolina customers from accessing solar power at no up-front cost

Companies in other states are allowed to install roof-top solar systems at no up-front cost to the customer. So-called "third party sales" are not currently allowed in North Carolina because laws in place specify that *only* electric utilities designated by the Utilities Commission are allowed to sell electricity to customers.¹⁷

Well-capitalized solar companies want to move into the North Carolina market, but monopoly Duke Energy has lobbied for years against this type of competition because it would result in rooftop solar taking off even faster in North Carolina.

Duke is Harming Large-scale Solar in NC

I. Duke Energy is attempting to reduce the amount that companies are paid for the power from large-scale solar installations, making projects less economical and therefore less attractive to investors

When a new large-scale solar PV system is proposed – which can include solar "farms" or large-roofed factories or retailers – it qualifies for payment from Duke under a federal law known as PURPA.¹⁸

Under certain circumstances, Duke is required to contract with the project developer so that all power produced by the solar system is put onto the grid and purchased by the utility. The rate that Duke Energy or any other utility must pay for the power is known as the avoided cost rate, which is currently in the range of 6.5 cents/kWh.¹⁹ The avoided cost, roughly speaking, is approximately the price a utility would pay to generate electricity from one of its other plants if it were not buying solar power.

The method by which utilities and regulators calculate the avoided cost has been criticized as inconsistent, incomplete and lacking transparency.²⁰ As the large-scale solar industry in North Carolina has grown dramatically in recent years, avoided cost has come under great scrutiny by utilities, solar companies and trade groups. What is now being called into question is how to determine the true value of solar to the utility, the grid, and customers.

In the 2014 avoided cost docket currently open before the NCUC, Duke Energy filed an unbalanced study on the costs and benefits of solar energy – giving excessive weight to Duke's perceived costs of solar while barely touching on benefits.²¹ The utility's expert witness, Lawrence Makovich, recommended that solar be valued to include only avoided fuel costs without consideration of any societal benefits such as avoided pollution and carbon emissions.²²

In fact, Duke counts the zero-carbon emissions from nuclear power as a benefit in its Integrated Resource Plan, but neglects to give that same zero-carbon value to solar.²³

II. Duke tries to block consideration of the many benefits of solar power

Duke simply ignores the numerous benefits of adding more solar to the electric grid, including:

- providing power at peak times;
- requiring no fuel except for abundant free sunlight;
- eliminating the almost \$3 billion taken out of the North Carolina economy every year for out of state coal and natural gas purchases;
- avoiding the multiple, devastating environmental and safety costs that accompany coal, natural gas, and nuclear power;
- creating a more secure, reliable, distributed grid as compared to central power plants; and
- using practically zero water, while coal and nuclear plants each use as much as entire cities.²⁴

NC WARN's expert witness in the current avoided cost case, Nancy LaPlaca, cites additional benefits of solar, while emphasizing that solar is beating other resources economically in other states. Solar beat natural gas on economics in a Minnesota utilities commission decision in March, with key factors including:

- 25 years of avoided natural gas purchases,
- avoided costs of building new power plants,
- avoided additional transmission capacity, and
- avoided environmental and carbon costs.²⁵

Duke is wrong to suggest that all these societal benefits are somehow unimportant.

III. Duke Energy is making it increasingly difficult for large solar projects to move forward – including over 2,000 MW of projects already “in the pipeline”

Duke is currently proposing to change the rules so that any solar installation 100 kW or larger that would sell to Duke would require a negotiated contract.²⁶ In the past, all utilities were required to meet standard terms for purchased power agreements with any solar project up to 5 MW in their territory.²⁷ These mutually agreed upon terms are meant to ensure a reasonable and fair contract for both parties. Duke wants to significantly reduce the size of solar projects eligible for these standard terms – from 5 MW (5,000 kW) down to 100 kW – leading to these contracts being negotiated on Duke Energy's terms.²⁸

These “negotiations” would lack both a timeline for completion and a standard procedure to be followed by both parties – effectively enabling the utility to slow-walk the interconnection process for as long as it chooses, and to include any conditions in the contracts that it chooses. Such a lengthy negotiation process makes solar projects more expensive and fraught with uncertainty.²⁹

Strata Solar, which has contracted with Duke Energy Carolinas to sell power from a number of its large solar installations in NC, has criticized that negotiations with the utility are extremely protracted.³⁰

If a contract is negotiated, Duke is also permitted to include a well-known clause that allows it to cancel the agreement with the installer if regulations on distributed generation ever

change in the future. This type of inconsistency makes investors wary of solar projects that are, otherwise, clearly profitable investments.

Other states, such as Oregon and California, have standard contract terms for systems substantially larger (10 MW and 20 MW, respectively) than even the current limit of 5 MW in North Carolina.³¹ Duke Energy requesting to cut the limit to 100 kW is unprecedented and unwarranted. Solar developers have suggested that requiring negotiations for smaller projects is nothing but a stall tactic by Duke Energy in hopes of putting off as many large solar installations as possible until the state renewable energy tax credit expires at the end of 2015.

Many solar project developers and industry experts have criticized North Carolina's *existing* purchased power agreement terms as being an obstacle to large-scale projects. While many utilities, such as Tennessee Valley Authority, will contract to buy power from solar facilities for up to 20 years, Duke Energy will only contract for 5 to 15 years.³² A longer contract term makes a project a more stable investment and thus easier to finance. In fact, Duke is taking advantage of selling power to Washington, D.C. under a 20-year Power Purchase Agreement (PPA) that it refuses to provide to its own customers.³³

IV. Duke Energy has signaled it will no longer pay capacity credits for solar installations not directly connected to Duke lines

Solar installers have encountered many obstacles in completing projects in Duke Energy's service area in the past. Because of this, many have chosen to work around Duke Energy and pursue projects that would be located in *ElectriCities* – some of the only areas in North Carolina not under the Duke Energy monopoly.³⁴ But Duke has recently sought to block solar success on this path as well.

Capacity credits are flat rates paid by the utility to large-scale solar projects. They are based on the size and productivity of the PV system, and are a large part of the compensation paid to a solar energy provider. Even though solar installations in *ElectriCities* territories are connected to the municipality's lines, the municipality is effectively an intermediary and all of the power from the system is still sold to Duke Energy under a negotiated contract.

In the past, Duke has allowed projects to receive a capacity credit under these negotiated contracts, but sources at *ElectriCities* say that Duke Energy Carolinas and Duke Energy Progress have chosen to no longer offer them. Projects that do not receive capacity credits will not be sustainable or receive funding from investors to get off the ground in the first place.

This move by Duke doesn't just block new projects from being proposed. A large majority of the solar projects currently "in the pipeline" in North Carolina are in *ElectriCities* territory, and these projects would likely fail without assurance that they will receive capacity credit payments when they begin generating power.

Duke Energy steals credit, and misleads policymakers and public

I. Duke Energy's advertising and other extensive PR efforts boast that the utility has invested \$3.5 billion in clean, renewable energy

And it is true. But almost all of that is *outside* its home state of North Carolina and is developed by Duke Energy Renewables, a commercial division of Duke Energy entirely separate from Duke Energy Carolinas and Duke Energy Progress.

Duke Energy Renewables has bought or developed 1,600 megawatts (MW) of wind and 100 MW of solar in areas where it competes for customers.³⁵ And Duke Energy Renewables recently announced it will develop a large solar farm in North Carolina – but will sell the electricity to Washington D.C.³⁶ Duke Renewables is exporting clean solar power from North Carolina and taking advantage of generous solar tariffs in Washington D.C. But Duke’s other subsidiaries sell coal, nuclear and fracking gas power to monopoly-captive Carolinians.³⁷

Duke Energy spends big advertising dollars in the Carolinas to claim it is at the forefront of a renewable energy future while making the North Carolina public believe it’s happening here.

II. The company’s website says “more than 2,500 MW of utility-scale solar projects are being proposed” – implying that Duke can be credited for the active North Carolina solar industry

Rob Caldwell, the leader of Duke Energy Carolinas’ new renewable energy division similarly cited this capacity boastfully at the Sustainable Energy Conference in April.³⁸ But these projects are not happening *because of* Duke Energy – they are moving forward *in spite of* Duke Energy. Many of these projects have been previously mentioned as “in the pipeline” – the very projects Duke is seeking to delay or eliminate.

III. Duke Energy is likely to stall projects until tax credits expire

The company requested proposals for 300 MW of new solar capacity in February of this year. Duke estimates that these projects will be in place by the end of 2015, but it has been suggested by sources in the industry that this project may actually never be completed and will serve its purpose as a place-holder that will enable the company to avoid investing in any further projects until the tax credit expires at the conclusion of 2015. A project of that scale will consume all of the Duke Energy parent company’s tax liability and therefore make it uneconomical for both Duke Energy Carolinas and Duke Energy Renewables to pursue any large-scale solar projects.

Conclusion

North Carolina needs an open, transparent, multi-stakeholder process to determine the value of solar to North Carolina; a consistent method to value solar, including a reasonable cost of carbon; and to recognize that local clean energy jobs provide far more value to North Carolina than importing \$2-3 billion per year in coal and natural gas.

Duke Energy should evolve its regulated utilities to participate in the renewable energy industry in its home state. If nothing else, Duke needs to get out of the way and allow the strong North Carolina solar industry to move forward.

Endnotes

- ¹ “Free Enterprise under Attack in North Carolina,” NCSEA, February 12, 2014.
<http://energync.org/blog/ncsea-news/2014/02/12/free-enterprise-under-attack-in-north-carolina/>
- ² ALEC stands for The American Legislative Exchange Council, for more information:
www.alecexposed.org
- ³ *Economic Impact Analysis of Clean Energy Development in North Carolina – 2014 Update*, RTI International for the North Carolina Sustainable Energy Association:
<http://energync.org/assets/files/RTI%20Study%202013.pdf>
- ⁴ “Cost of Solar 60% Lower Than Early 2011”, *Cost of Solar*: <http://costofsolar.com/solar-panel-costs-drop-60-in-us-since-early-2011-can-now-power-1-5-million-us-homes/>
- ⁵ “Eleven States Generated Electricity from Non-hydro Renewables at Double the U.S. Average”, Energy Information Administration: <http://www.eia.gov/todayinenergy/detail.cfm?id=15911>
- ⁶ SEIA North Carolina webpage: <http://www.seia.org/state-solar-policy/north-carolina>
- ⁷ Duke Energy website: <http://www.duke-energy.com/environment/solar.asp>
- ⁸ Duke Energy Carolinas Integrated Resource Plan, page 36, NCUC Docket E-100 Sub 137:
<http://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=1dc4e5f4-eafo-4c44-97d8-b6493845850c>
- ⁹ “Duke Energy Renewables plans solar project in Eastern NC”, *The Charlotte Observer*:
<http://www.newsobserver.com/2014/06/24/3959486/duke-energy-renewables-plans-solar.html>
- ¹⁰ See Washington, D.C. page on SREC trade website:
http://www.srectrade.com/srec_markets/district_of_columbia
- ¹¹ “Duke Energy to seek reduction in payments to NC homes with solar panels”, *The News & Observer*:
<http://www.newsobserver.com/2014/01/22/3555461/duke-energy-to-seek-reduction.html>
- ¹² “Duke Energy’s new rate hike is rigged against the public”, NC WARN: <http://www.ncwarn.org/wp-content/uploads/2013/05/Factsheet-5-17-13-RATE-RIGGING.pdf>
- ¹³ “Glossary of Energy Terms”, Duke Energy North Carolina website: <http://www.duke-energy.com/south-carolina-business/understand/glossary.asp>
- ¹⁴ Findings of Fact, Conclusions of Law and Recommendation, Minnesota Public Utilities Commission Docket No. E-002/CN-12-1240:
www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=showPoup&documentId=%7BBDCD83F5-1BBA-46C8-972C-DO7191477C0B%7D&documentTitle=201312-95007-01
- ¹⁵ Over 1,000 people attended a multiple-day hearing at the Arizona Corporation Commission when the rule changes were announced.
“Solar Installations Dip in APS Territory”, *The Arizona Republic*:
<http://www.azcentral.com/business/arizonaeconomy/articles/20140204solar-installations-dip-aps-territory.html>
- ¹⁶ “Free Enterprise under Attack in North Carolina”, North Carolina Sustainable Energy Association:
<http://energync.org/blog/ncsea-news/2014/02/12/free-enterprise-under-attack-in-north-carolina/>
- ¹⁷ “3rd-Party Solar PV Power Purchase Agreements (PPAs)”, Database of State Incentives for Renewables & Efficiency: http://www.dsireusa.org/documents/summarymaps/3rd_Party_PPA_map.pdf
- ¹⁸ Public Utility Regulatory Policies Act, 42 U.S.C. § 46:
<http://www.law.cornell.edu/uscode/text/16/chapter-46>
- ¹⁹ *The Benefits and Costs of Solar Generation for Electric Ratepayers of North Carolina*, Crossborder Energy:
[http://energync.org/assets/files/Benefits%20and%20Costs%20of%20Solar%20Generation%20for%20Ratepayers%20in%20North%20Carolina\(2\).pdf](http://energync.org/assets/files/Benefits%20and%20Costs%20of%20Solar%20Generation%20for%20Ratepayers%20in%20North%20Carolina(2).pdf)
- ²⁰ Direct testimony of R. Thomas Beach on behalf of the North Carolina Sustainable Energy Association, pages 8-17, NCUC Docket E-100 Sub 140: <http://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=89f3b5of-17cb-4218-87bd-c743e1238bc1>

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- ²¹ *Duke Energy Photovoltaic Integration Study: Carolinas Service Areas*, Pacific Northwest National Labs, Direct Testimony of Glen A. Snider on behalf of Duke Energy Carolinas and Duke Energy Progress, Exhibit 1, NCUC Docket E-100, Sub 140: <http://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=0e638ac6-eaba-4b18-9713-e53foada5c9b>
- ²² Direct testimony of Lawrence Makovich on behalf of Duke Energy Carolinas and Duke Energy Progress, pages 3-4, NCUC Docket E-100 Sub 140: <http://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=b3b30e33-968e-4c63-bf4e-5e5d920e7ec1>
- ²³ Response testimony of R. Thomas Beach on behalf of the North Carolina Sustainable Energy Association, pages 18-20, NCUC Docket E-100 Sub 140: <http://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=19e0b58d-a7f6-4d0d-9f4a-08260e561443>
- ²⁴ “Drought could shut down nuclear power plants”, *The Associated Press*: <http://www.nbcnews.com/id/22804065/ns/weather/t/drought-could-shut-down-nuclear-power-plants/>
- ²⁵ Direct testimony of Nancy LaPlaca on behalf of NC WARN, pages 6-7, NCUC Docket E-100 Sub 140: <http://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=e9bbbbee1-fdf6-4397-a5ce-bb5f82853cc4>
- ²⁶ Direct Testimony of Glen A. Snider on behalf of Duke Energy Carolinas and Duke Energy Progress, page 6, NCUC Docket E-100, Sub 140: <http://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=0e638ac6-eaba-4b18-9713-e53foada5c9b>
- ²⁷ Duke Energy Carolinas Rate Schedule PP-N: <http://www.duke-energy.com/pdfs/NCPPN.pdf>
Duke Energy Progress Rate Schedule CSP: <http://www.duke-energy.com/pdfs/C1-NC-Schedule-CSP-dep.pdf>
- ²⁸ Direct testimony of Kendal C. Bowman on behalf of Duke Energy Carolinas and Duke Energy Progress, page 14, NCUC Docket E-100 Sub 140: <http://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=bd4b095f-0859-42e3-b931-127c95b96d5b>
- ²⁹ Direct testimony of Greg Ness on behalf of the North Carolina Sustainable Energy Association, pages 3-5, NCUC Docket E-100 Sub 140: <http://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=019cc274-780e-4767-accd-7265e30e7ebb>
- ³⁰ Direct testimony of Michael Cohen on behalf of the North Carolina Sustainable Energy Association, pages 9-11 NCUC Docket E-100 Sub 140: <http://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=019cc274-780e-4767-accd-7265e30e7ebb>
- ³¹ Id.
- ³² Id.
- ³³ “Duke Energy Renewables plans solar project in Eastern NC”, *The Charlotte Observer*: <http://www.newsobserver.com/2014/06/24/3959486/duke-energy-renewables-plans-solar.html>
- ³⁴ ElectriCities is an organization of public power authorities in North Carolina, South Carolina and Virginia, for more information see the ElectriCities website: <http://www.electricities.com>
- ³⁵ Duke Energy Renewables website: <http://www.duke-energy.com/commercial-renewables/>
- ³⁶ “Duke Energy Renewables plans solar project in Eastern NC”, *The Charlotte Observer*: <http://www.newsobserver.com/2014/06/24/3959486/duke-energy-renewables-plans-solar.html>
- ³⁷ Duke Energy Renewables website: <http://www.duke-energy.com/commercial-renewables/>
- ³⁸ Keynote address from Rob Caldwell, Duke Energy Vice President of Wholesale Power and Renewable Generation at the North Carolina Sustainable Energy Conference, April 23, 2014: <http://www.sustainable-energy-conference.org/2014/audio/2014-04-23-Caldwell.mp3>