

Duke Energy's Role in Utility Efforts to Limit Customer Choice and Customer Owned Behind-the-Meter Solar

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I. QUALIFICATIONS

I have been an energy, consumer and environmental advocate for more than 30 years, with 20 years' lobbying experience on various issues, including energy/utility issues, at the Indiana General Assembly and experience before the Indiana Utility Regulatory Commission. I have a Bachelor of Arts in History and German and Master of Arts in Teaching German from Indiana University, as well as overseas experience at the University of Hamburg (West Germany) as an exchange student.

As Director of Utility and Energy Programs at the Citizens Action Coalition of Indiana from 1998 to 2004, my responsibilities included participating in negotiations with utility companies, participating in rule makings, coordinating with expert witnesses and attorneys before the Indiana Utility Regulatory Commission, and testifying periodically as a policy witness. From 2004 to 2011, I served as executive director of the organization.

From 2011 through the fall of 2017, I was the Senior Energy Policy Advisor at the Civil Society Institute, or CSI, based in Newton, Mass. For CSI, I conducted national energy market research, crafted the organization's energy policy, tracked power sector technological and policy developments for organizational partners, attended conferences on power sector and water-related issues, and worked with consultants on CSI-commissioned reports.

From fall of 2017 to present, I have served as the Senior Energy Policy Advisor for Environmental Working Group. In this capacity, I have assisted with developing the organization's energy policy, co-authored reports on Duke Energy and trends in technological developments, such as green hydrogen, and prospects for the clean

energy workforce, written numerous blogs on energy technology trends and policy and regulatory developments (including on rate structure), and drafted comments for the net metering proceedings in California. A copy of my CV is attached as Exhibit 1.

II. PURPOSE OF THE REPORT

The purpose of this report is to examine Duke Energy's joint application for revised NEM tariffs in North Carolina within the nationwide context of utility efforts to limit growth of customer-owned solar. The report demonstrates:

1. Duke Energy's efforts, since 2013, to undermine the value proposition of customer-owned solar in North Carolina is in response to a broader electric utility sector effort in the U.S. to slow progress in energy efficiency and solar investments on the customer side of the meter.
2. Duke Energy seeks, as do monopoly utilities nationwide, secure control of the pace of change in the electric system to protect the centralized grid design to implement a high-cost business plan to bolster profits and stock price, and to protect existing assets from being stranded costs.
3. Duke Energy's increasing use of fixed charges is unjustly discriminatory and incompatible with fundamental rate design principles.
4. To achieve these ends, Duke Energy has worked to redefine decades-long held principles in rate design in an effort to shift a greater portion of costs recovered from ratepayers to fixed from variable charges.
5. Duke Energy's joint application is a continuation of these efforts to limit customer-sited energy generation.
6. Duke Energy's proposal for net metering customers is not justified and fundamentally discriminates against solar customers.

III. SUMMARY

On November 29, 2021, Duke Energy North Carolina, or DEC, and Duke Energy Progress, or DEP, collectively Duke Energy or Duke, filed a joint application with the North Carolina Utilities Commission seeking approval of their net metering tariffs in compliance with G.S. 62-126.4 and House Bill 951.¹

For the better part of a decade, Duke has tried a variety of approaches and arguments to kill rooftop, customer-owned solar. The assault on decentralized solar that electric monopoly utilities don't own has been a nationally coordinated effort since the release of the *Disruptive Challenges: Financial Implications and Strategic Responses to a*

¹ *Duke Energy Carolinas, LLC's and Duke Energy Progress, LLC's Joint Petition for Approval of Revised Net Energy Metering Tariffs*, Docket No. E-100 Sub 180 (Nov. 29, 2021). <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=0123106b-d977-4a0a-8ca1-f27c1968d8b9>

Changing Retail Electric Business report by Duke Energy's lobbying organization, the Edison Electric Institute, or EEI, in 2013.²

The EEI-derived arguments for eliminating the monopolies' greatest source of competition – their own ratepayers – are anchored in rate designs that are inimical to sound ratemaking principles. These divide-and-conquer strategies are designed to pit lower-income customers against higher-income customers and to skew public opinion in favor of solar facilities that utilities own. Customer-owned solar – that is, customers using their own money to reduce their bills and provide benefits to all customers – is referred to as “private solar” and large utility solar farms, or utility-scale solar, as “universal solar” that everyone can access but that utilities own.³

The strategy of Duke in North and South Carolina, echoed by monopoly utilities across the country, is two-fold. First, Duke seeks to preserve the centralized utility business model in which utilities have complete ownership and control of investments – from their perspective, the bigger and more expensive, the better. Second, Duke wants to protect sunk costs – for Duke, its massively overbuilt natural gas power plant fleet and its nuclear fleet – from becoming uneconomic or stranded assets due to competition from energy efficiency and renewable energy investments that utilities don't control.

Utilities' preferred solution is to shift as many of their costs that are recovered from ratepayers as possible – namely, power plant and power line costs – to fixed charges. With high fixed charges, customers lose control of their electricity bills, which diminishes their incentive to invest in more efficient lighting, appliances, insulation, and solar that would otherwise reduce their bills. Reduced investments in making their homes more energy efficient and in generating their power eventually increases the costs of the entire electric system. Finally, high fixed charges decrease bills for energy hogs and increase bills for those with the most efficient homes. In particular, high fixed charges harm lower-income customers the most.

The current net metering proceeding provides Duke with another avenue to increase fixed charges. This time, on solar customers in the form of a minimum bill, which, as it increases, will eventually dissuade other customers from investing in solar and lead to greater monopoly control over the electric system and inevitable higher costs for everyone.

² *Disruptive Challenges: Financial Implications and Strategic Responses to a Changing Retail Electric Business*, Edison Electric Institute, (Jan. 2013).

<http://roedel.faculty.asu.edu/PVGdocs/EEI-2013-report.pdf>

³ See, e.g., *Something Under the Sun: Competition and Solar Power Issues in Solar Power*, Comments of the Edison Electric Institute (June 7, 2016). A Federal Trade Commission Workshop, Solar Electricity Project No. P. 161200.

https://www.eei.org/issuesandpolicy/testimony-filings-briefs/Documents/EEIComments_FTCSolarWorkshop_06072016.pdf

Duke's current utility business model has failed to provide for a least-cost, safe and resilient electric system. Change is necessary. And it should start with this proceeding.

This report is divided into 10 sections. Section IV reviews the historical context of Duke's assault on customer-owned solar. Section V addresses recent developments in Duke's pursuit of high fixed charges and proper rate design. Section VI reviews the current net metering proceeding in the context of Duke's continuing strategy to protect its monopoly investments at the expense of ratepayers. Section VII questions the heightened concern for the residential intra-class cost shift. Section VII explains Duke's continuing pursuit of a high-cost electric system for its own benefit. Section IX explains why state energy/utility policy should be revisited. Section X provides the conclusions and recommendations EWG proposes.

IV. THE NATIONALLY COORDINATED UTILITY ASSAULT ON CUSTOMER-OWNED SOLAR

National Utility Effort to Undermine Customer-owned Solar and Energy Efficiency Investments

Duke's strategy to curtail customer-owned solar as much as possible derives from EEI's 2013 report on disruptive challenges,⁴ which calls out customer-owned solar and customer energy efficiency investments as threats to the bottom lines of investor-owned utilities:

Today, a variety of disruptive technologies are emerging that may compete with utility-provided services. Such technologies include solar photovoltaics (PV), battery storage, fuel cells, geothermal energy systems, wind, micro turbines, and electric vehicle (EV) enhanced storage. As the cost curve for these technologies improves, they could directly threaten the centralized utility model.... In addition, energy efficiency and DSM programs also promote reduced utility revenues while causing the utility to incur implementation cost.⁵

This report refers to net metering as "a significant potential adverse impact to utility investors."⁶

A centerpiece of the recommendations EEI proposes is increasing fixed charges. Indeed, in the report's list of "Immediate Actions," the first priority is: "Institute a monthly customer service charge to all tariffs in all states in order to recover fixed costs and eliminate the cross-subsidy biases that are created by distributed resources and net metering, energy efficiency, and demand-side resources."⁷

⁴ EEI, *supra* note 1.

⁵ *Id.*, p. 3.

⁶ *Id.*, p. 17.

⁷ *Id.*, p. 18.

Another high priority in the report was to: “Analyze revision of net metering programs in all states so that self-generated DER sales to utilities are treated as supply-side purchases at a market-derived price.”⁸ In other words, base the export rate on the much lower wholesale rate.

EEL’s fear is not that lower-income customers without solar on their rooftops would be harmed through a so-called cost shift from solar to non-solar customers. Rather, EEL fears that even if utilities were enabled to recover their authorized revenue requirement through rate mechanisms like decoupling, the existing “cost-recovery structure ... may lead to stranded cost exposure.”⁹

This is further evidence that competition from ratepayers is EEL’s main concern, and that the rationale behind high fixed charges was not the so-called cost shift but sunk costs becoming stranded. If a utility bets wrong, it should absorb the cost.¹⁰ But high fixed charges relieve electric utilities of any market discipline.¹¹

Duke’s Assault on Customer Competition Precedes the Net Metering Joint Application

In its annual reports to the Security and Exchange Commission, Duke consistently points to government policies that support energy efficiency and customer-owned solar, including net metering, as a threat to its bottom line, business model, and overall business strategy.¹²

But Duke’s attempts to undermine customer choice and savings to undercut competition from its customers preceded the net metering proceeding. Duke’s net metering proposals are part of this long-term strategy, which is being pursued by electric utilities for the better part of a decade.

⁸ *Id.*, p. 18.

⁹ *Id.*, p. 1.

¹⁰ See *Duquesne Light Co. v. Barasch*, 488 U.S. 299 (1989) (providing set parameters for the extent to which a utility can legally absorb stranded assets, based on its ability to attract financing and remain financially healthy overall, not on a single asset).

¹¹ See Lazar, J. *Appendix D: The specter of straight/fixed variable rate designs and the exercise of monopoly power*, In *Smart rate design for a smart future Regulatory Assistance Project*, (2016), pp. D-1-D-12. <https://www.raponline.org/wp-content/uploads/2016/05/appendix-d-smart-ratedesign-2015-aug-31.pdf>.

¹² See Duke Energy Corporation, *Form 10-K 2020*, p. 26. https://desitecoreprod.cd.azureedge.net/_media/pdfs/our-company/investors/2020-duke-energy-form-10-k.pdf?la=en&rev=bfebf7b21c8e48c8aef2ba0513abca6c and Duke Energy Corporation, *2018 Annual Report and 10-K*, p. 17. https://www.duke-energy.com/_media/pdfs/our-company/investors/de-annual-reports/2018/2018-duke-energy-annual-report.pdf

EWG has chronicled Duke's offensive against its captive ratepayers through reports and articles, including the following actions.

- In South Carolina, Duke derailed 2018 legislation that would have lifted the cap limiting net metering to customers representing 2 percent of utility sales.¹³ The state hit the cap that summer, causing new solar adopters to receive less compensation for their contributions to the grid.¹⁴
- In its home state of North Carolina, from 2013 to June 2018, Duke was allowed to increase the flat monthly charge, from about \$6.75¹⁵ to the current \$14.¹⁶ Asking for higher increases than received in every instance. In 2015, the utility lobbied successfully to kill legislation that would have made it easier for customers to borrow and pay back the cost of solar panels,¹⁷ and to stop the extension of a renewable energy tax credit. Duke supported House Bill 589, which allowed utilities to add demand charges to solar customers' bills, if approved by regulators.¹⁸
- Duke has two subsidiaries in the Carolinas, Duke Energy Carolinas and Duke Energy Progress, a legacy of its 2012 merger with Progress Energy. In November 2018, the two utilities separately asked South Carolina regulators for major increases in their flat monthly customer charges. Duke Energy Carolinas is seeking an increase from \$9.06 to \$29, and Duke Energy Progress wants an increase from \$8.29 to \$28.¹⁹

¹³ Fretwell, Sammy. "Utilities kill solar bill despite majority support in SC House." *The State*, (April 14, 2018). <https://www.thestate.com/latest-news/article208435464.html>

¹⁴ Gheorghiu, Lulia. "Duke region hits South Carolina net metering cap." *Utility Dive*, (July 13, 2018). <https://www.utilitydive.com/news/duke-region-hits-south-carolina-net-metering-cap/527718/>

¹⁵ Spearman, T. Anthony, Dickerson Doug, "Duke Energy's mandatory fee plan is unwise and unfair." *The News Observer* (Opinion and Commentary), (December 12, 2017). <https://www.newsobserver.com/opinion/op-ed/article189428774.html>

¹⁶ NCUC Docket No. E-7, Sub 1146. <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=80a5a760-f3e8-4c9a-a7a6-282d791f3f23>

¹⁷ "Will Duke Energy Kill North Carolina's Growing Solar Industry?" NCWARN, (2015). Retrieved March 9, 2022 from <https://www.ncwarn.org/willdukekillsolar/>

¹⁸ House Bill 589, NC Stat. 62-126.4(b) (2017). <https://www.ncleg.net/Sessions/2017/Bills/House/PDF/H589v5.pdf>

¹⁹ Downey, John. "Duke Energy seeks large SC rate hikes for both its Carolinas utilities." *Charlotte Business Journal*, (November 8, 2018). <https://www.bizjournals.com/charlotte/news/2018/11/08/duke-energy-seeks-large-sc-rate-hikes-for-both-its.html>

- In Indiana, the lobbying group for the state's large utility companies, including Duke, successfully killed the statewide energy efficiency program.²⁰ Eliminating the program cost Indiana ratepayers nearly an estimated \$150 million more from 2015 through 2019 than if it had stayed in place, according to a 2018 report.²¹ In 2017, Duke and its allies pushed through legislation in Indiana to eliminate net metering by 2022.²²
- In Ohio, Duke sought in 2017 to increase fixed charges from \$11.32 to \$22.77.²³

Duke Energy's Efforts to Undermine Affordability and Solar Access for Low-Income Households

Although Duke CEO Lynn Goode has emphasized "affordability" as a priority for Duke, the company's treatment of low-income customers does not show concern for those customers. EWG's report cataloguing Duke's low-income policies is also relevant to the cost-shift issue.

As to who is subsidizing whom with respect to the cost-shift issue: In 2017, Duke Energy Progress proposed to raise the fixed charge from \$11.13 to \$19.50.²⁴ In lowering Duke's requested charge to \$14, utility commissioners said the attorney general's office declared that the higher fixed charge "will shift costs to small users such as low-income and elderly consumers who live in small apartments, as they are charged the same unavoidable [flat rate] as other residential consumers who live in spacious high-consumption residences."²⁵

²⁰ Siegel, P.R. "Why Did Indiana Kill Its Successful Energy Efficiency Program?" Triple Pundit, (April 10, 2014). <https://www.triplepundit.com/story/2014/why-did-indiana-kill-its-successful-energy-efficiency-bill/44676>

²¹ Lydersen, Kari. "Indiana cancellation of efficiency program took heavy toll, study says." Energy News Network, (July 26, 2018). <https://energynews.us/2018/07/26/indiana-cancellation-of-efficiency-program-took-heavy-toll-study-says/>

²² NC Clean Energy Technology Center. Retrieved March 9, 2020, from <https://programs.dsireusa.org/system/program/detail/342>

²³ *Direct Testimony of James A. Riddle on behalf of Duke Energy Ohio*. Before the Public Utilities Commission of Ohio (Case No. 17-32-EL-AIR), p. 7. <https://dis.puc.state.oh.us/ViewImage.aspx?CMID=A1001001A17C16B64949A01038>

²⁴ *Order Accepting Stipulation, Deciding Contested Issues and Granting Partial Rate Increase*, NCUC Docket No. E-2, Sub 1142, p. 105. <http://dig.abclocal.go.com/wtvd/docs/ncuc-duke-energy-ruling.pdf>

²⁵ *Id.*, p. 112.

This principle was also cited in a 2015 paper by the nonprofit Regulatory Assistance Project,²⁶ a 2015 ruling by the Illinois Commerce Commission,²⁷ and a 2015 resolution by the National Association of State Utility Consumer Advocates.²⁸ All three opinions concluded that substantial hikes in the fixed monthly charge would mean that high-use customers would see not only lower-than-average increases but also, potentially, decreases in their monthly bills.

Energy hogs exact a higher demand on the system and should pay more. The Regulatory Assistance Project says jacking up the customer charge is akin to a monopoly business' charging its customers whatever it wants – the very practice that utility regulations are intended to prevent.

In 2017, North Carolina legislators mandated that Duke start its first community solar program. The program Duke created is designed to fail. Public interest advocates objected to the excessive fees required to join the program and to inflated costs. The North Carolina Sustainable Energy Association calculated that the cost of the solar power purchase agreements was high and “exceeds the proposed bill credit,” so participants would not see a savings on their bills.²⁹ State law does not let low-income customers pay reduced rates, so for all practical purposes, they are shut out of the program. Utility commissioners approved the plan but said Duke should explore ways to bolster low-income participation.³⁰

In South Carolina, in November 2018 Duke sought to raise its customers' fixed monthly charge – the flat fee for hooking up to the company's system, regardless of how much electricity is used – from \$8.29 to \$28. In May 2019, the commissioners cut the requested increase by more than half, saying it would discourage customers from investing in solar panels or energy efficiency and, by reducing customers' control over their bills, could actually encourage more energy use. The commissioners noted Duke's

²⁶ Lazar, Jim, Gonzalez Wilson, *Smart Rate Design for a Smart Future*. Regulatory Assistance Project (July 2015). <http://www.raponline.org/wp-content/uploads/2016/05/rap-lazar-gonzalez-smart-rate-design-july2015.pdf>

²⁷ Order, Illinois Commerce Commission (Case 14-0224). <https://www.icc.illinois.gov/docket/P2014-0224/documents/224001>

²⁸ *Customer Charge Resolution*, Resolution 2015-1, National Association of State Utility Consumer Advocates, (2015). <https://www.nasuca.org/customer-charge-resolution-2015-1/>

²⁹ *Order Approving Revised Community Solar Program Plan and Riders*, NCUC Docket No. E-2, Sub 1169 & 1168 (April 4, 2019), p. 17. <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=0ea7e1c7-e9dc-49b6-9253-74f3858c2643>

³⁰ *Id.*, p. 27.

executives “were ‘tone deaf’ as to how a 238% increase . . . would have negatively and adversely impacted the elderly, the disabled, the low income and low use customers.”³¹

South Carolina also passed a community solar law in 2015,³² but Duke delayed starting its program until 2018.³³ For low-income customers, Duke waives the sign-up fee, but those customers still have to pay the monthly fee.³⁴ Customers can’t join the program if they’re behind on their bills, or on a deferred payment plan that sets monthly bills at an amount that is adjusted up or down at the end of the year according to usage.³⁵ It remains to be seen how many low-income customers will be able to participate under those conditions.

V. RECENT DEVELOPMENTS IN DUKE’S EFFORTS TO PROTECT THE MONOPOLY BUSINESS MODEL AT THE EXPENSE OF ITS RATEPAYERS AND PROPER RATE DESIGN

Duke’s Efforts to Turn Key Ratemaking Concepts on Their Head, Justifying Increasing Fixed Charges

In its bid for higher fixed charges to compensate for ratepayer investments designed to reduce their monthly utility bills, Duke Energy, like other utilities in the country, is working to gain acceptance of the redefinition of two concepts that have strategic importance for the design of rate structure – cost causation and proper price signals for ratepayers.

This effort has manifested itself in statute and in the regulatory arena in the guise of the minimum system method. In the former, House Bill 951 includes the minimum system method for purposes of performance-based regulation,³⁶ and House Bill 589 includes language suggesting, but not outright stating, that solar customers are not paying for their fair share of the local distribution system that connects them to Duke Energy’s electric power grid.³⁷ In the former case, the North Carolina Utilities Commission found,

³¹ *Commission Directive*, Public Service Commission of South Carolina, Docket No. 2018-319-E (May 1, 2019), p. 1 <https://dms.psc.sc.gov/Attachments/Matter/86a4fa07-3796-4ff7-8486-07de716a0809>

³² Walton, Robert. “Duke Energy reaches agreement to expand community solar in South Carolina.” *Utility Dive*, (May 15, 2015). <https://www.utilitydive.com/news/duke-energy-reaches-agreement-to-expand-community-solar-in-south-carolina/398224/>

³³ *Transforming the Future: Duke Energy 2018 Sustainability Report*. Duke Energy, (2018), p. 18 <https://sustainabilityreport.duke-energy.com/2018/downloads/2018-Duke-Energy-Sustainability-Report-Complete.pdf>

³⁴ “Shared Solar for Income-Qualified Households.” Duke Energy, (2020). Retrieved March 9, 2022 from https://www.duke-energy.com/_media/pdfs/our-company/191228-shared-solar-fs-dep.pdf?la=en

³⁵ *Id.*

³⁶ House Bill 951, NC Stat. § 62-133.16(b) (2021). <https://www.ncleg.gov/Sessions/2021/Bills/House/PDF/H951v6.pdf>

³⁷ HB 59, *supra* note 18.

in Docket No. E-7, Sub 2014, the minimum system method appropriate for purposes of cost-of-service studies, or COSS.³⁸

Rate structure and the minimum system method are relevant to this proceeding because DEC and DEP refer to Docket No. E-7, Sub 2014, and the minimum system method as the basis for their proposed minimum monthly bill.³⁹

As Duke witness Janice Hager wrote in the 2020 rate case justifying the minimum system method: “The theory behind use of a minimum system study is sound and consistent with cost causation, which is the foundation of COS studies.... Without the use of the Minimum System allocation methodology, low use customers avoid paying for the infrastructure necessary to provide service to them which is counter to cost causation principles.”⁴⁰

To send ratepayers the proper price signals, according to testimony sponsored by a group of advocacy organizations in the 2017 rate case, DEC argued that “increasing the residential customer charge to better reflect customer-related embedded costs would improve price signals for promoting economically efficient behavior by residential customers.”⁴¹

However, Duke’s bid to shield itself from competition from its own ratepayers is redefining decades of ratemaking principles grounded in two key ideas – that electric demand, not numbers of customers, dictates distribution system investment, and those who most burden the system should pay more. One size doesn’t fit all. Moreover, increasing the fixed charges reduces price elasticity in electric rates, sending the wrong price signal for encouraging customer investment in efficiency measures and rooftop solar as ways to reduce electric bills.

The utility argument that low-usage customers subsidize high-usage customers is not new. Their solution for this apparent inequity, high fixed charges, results over time in a

³⁸ *Order Accepting Stipulations, Granting Partial Rate Increase, and Requiring Public Notice*, NCUC Docket No. E-7, Sub 1214 (March 31, 2021), p. 164
<https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=b7bfd96b-6df7-4013-9054-d1ff7242588a>

³⁹ Docket No. E-100 Sub 180 *supra* note 1, p. 23.

⁴⁰ Direct Testimony of Janice Hager for Duke Energy Carolinas, LLC, NCUC Docket No. E-7, Sub 1214 (Sep. 30, 2019), p.14.
<https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=4de93935-b222-4a96-bb6f-bff95d906d87>

⁴¹ *Direct Testimony of Jonathon Wallach on Behalf of The North Carolina Justice Center, North Carolina Housing Coalition, Natural Resources Defense Council, and Southern Alliance for Clean Energy*, NCUC Docket No. E-2, Sub 1142 (Oct. 20, 2017), p. 5. <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=50a9dd80-97a9-4845-9898-f0c6ccd86467>

more expensive power system by undermining the customer incentive to reduce electric bills.

In 2015, Synapse Energy Economics addressed these issues and cost causation:

It is often claimed that a low fixed charge results in high-usage customers subsidizing low-usage customers... The reality is much more complicated.... [D]istribution costs are largely driven by peak demands, which are highly correlated with energy usage. Thus, many low-usage customers impose lower demands on the system, and should therefore be responsible for a smaller portion of the distribution system costs. Furthermore, many low-usage customers live in multi-family housing or in dense neighborhoods, and therefore impose lower distribution costs on the utility system than high- usage customers... Fixed charges reduce customers' control over their bills, disproportionately impact *low-usage and low-income customers*, dilute incentives for energy efficiency and distributed generation, and distort efficient price signals.⁴² (*Emphasis added.*)

Likewise, a 2016 Regulatory Assistance Project, or RAP, analysis of the impacts of high fixed charges runs contrary to utility assertions, finding that, with high fixed charges, "low-income (generally low-usage customers) households are made to subsidize higher-income, higher-usage households."⁴³

The RAP conclusions are similar to Synapse's: "High fixed charges provide utilities with stable revenues and address their immediate concerns. In doing so, they punish lower-usage customers, discourage efficiency improvements and adoption of distributed renewables, and over time can lead to an unnecessary increase in consumption. . . ."⁴⁴

The discussion of this issue by the Illinois Commerce Commission, or ICC, in a 2015 Peoples Gas proceeding – which translates easily to the electric monopolies and in which jointly intervening utilities argued for shifting essentially all their costs into an excessively high fixed charge – shows compellingly why regulators should reject moving utility costs that should be recovered in the variable component of rates to fixed charges.

⁴² *Caught in the Fix: The Problem With Fixed Charges for Electricity*. Synapse Energy Economics, prepared for Consumers Union (Feb. 9, 2016), p. 26 <https://www.synapse-energy.com/sites/default/files/Caught-in-a-Fix.pdf>

⁴³ Lazar, Jim, *Smart Rate Design for a Smart Future, Appendix D: The Specter of Straight Fixed Variable Rate Design and the Exercise of Monopoly Power*. Regulatory Assistance Project (May 2016), p. D-5. <https://www.raonline.org/wp-content/uploads/2016/05/appendix-d-smart-rate-design-2015-aug-31.pdf>

⁴⁴ *Id.*, p. D-1.

In the order, the ICC accepts and lays out the arguments put forward by its staff and the attorney general's office. The commission found that:

- “[L]ower monthly charges and higher volumetric charges ... can decrease energy use by providing a *greater price signal*” (*emphasis added*).⁴⁵
- “[H]igh customer charges mean ... the *lowest users bear the brunt of rate increases, and subsidize the highest energy users*” (*emphasis added*).⁴⁶
- “[T]he Companies’ *proposal violates cost causation principles* by failing to ‘properly recognize that customers with different demands impose differing costs on the system’” (*emphasis added*).⁴⁷
- In response to supposed reduced utility bill volatility: “[I]f some customers do value bill stability, they can voluntarily enter into a budget billing plan that achieves this end.”⁴⁸

Importantly, in the Peoples Gas proceeding, the ICC also found that the gas utilities risk of not recovering their authorized revenue requirement is minimal “in light of the guaranteed recovery that the Companies enjoy through decoupling, uncollectibles and infrastructure riders.”⁴⁹

However, as noted above in EEI’s Disruptive Challenges report, recovering authorized revenue isn’t good enough for utility companies. It’s the fear of not being able to recover stranded investment that is key for monopoly utilities.

Similarly, in 2016, Berkeley Lab asked stakeholders to contribute their perspective on recovery of utility fixed costs. The authors of the utility portion raised their concern about decoupling. Recognizing that “decoupling makes the utility whole,” they nonetheless said it created a cost shift between customers who participate in energy efficiency and those who do not.⁵⁰

In addition to decoupling and other rate treatments discussed below that protect recovery of authorized revenue, the U.S. Supreme Court has provided additional financial protections to monopoly utilities. States have the authority to disallow recovery of stranded investment. However, the boundary for the extent to which stranded costs can be disallowed has been established by the Supreme Court; this includes a rate that

⁴⁵ Illinois Commerce Commission, *supra* note 27, p. 165

⁴⁶ *Id.*, p. 153.

⁴⁷ *Id.*, p. 169.

⁴⁸ *Id.*, p. 170.

⁴⁹ *Id.*, p. 176.

⁵⁰ Wood, Lisa, Howat, John, Cavanagh, Ralph, Borenstein, *Severin, Recovery of Fixed Costs: Utility, Consumer, Environmental, and Economist Perspectives*. Lawrence Berkeley National Laboratory (NBNL-1005743) (June 2016), p. 12.

<https://www.osti.gov/servlets/purl/1342757>

allows a utility to “Operate successfully to maintain its financial integrity; attract capital; and compensate its investors for the risk assumed.”⁵¹

The National Association of State Utility Consumer Advocates, or NASUCA, in lock step with the ICC and analysts referred to above, is also opposed to shifting demand- and energy-related utility costs into fixed charges, in concert with the principle of cost causation.

Among NASUCA’s findings in its 2015 Customer Charge Resolution: “[G]as and electric utilities’ own embedded cost of service studies, in fact, show that a substantial portion of utility delivery service costs are usage-related, and therefore, subject to variation based on customer usage of utility service.”⁵²

Duke Works To Expand the Category of Fixed Charges

This leads to Duke’s minimum system methodology, or MSM – a different argument to the same ends, that is, killing the competition from their ratepayers.

Customer-related costs are only those that vary with the number of customers, such as billing and collection, meter reading, and customer services such as receiving complaints and sending bill-stuffers. What is referred to as the basic customer method includes only these costs as fixed costs. All other costs are related to energy and demand, because multiple customers share the local distribution system of the lines, poles, transformers and attendant equipment. For instance, one transformer can be shared by a number of residential customers – each using power differently, thus exacting lighter or heavier burdens on the electric system.

Indeed, the diversity of electric use among customers and the fact that providing energy to homes and businesses is the largest cost to the electric system is why, according to the RAP, “[M]ost costs of the grid should be assigned on a usage basis, recovered in the sale of each kWh,”⁵³ not in fixed charges.

In a recent report that suggests updating cost allocation methodology, RAP asserts:

The basic customer method for classification is by far the most equitable solution for the vast majority of utilities.... However, more general attempts by utilities to include a far greater portion of shared distribution system costs as customer-related are frequently unfair and wholly unjustified. These methods include straight fixed/variable approaches where all

⁵¹ See *Duquesne Light Co. v. Barasch*, 488 U.S. 299 (1989).

⁵² National Association of Utility Consumer Advocates, *supra* note 28.

⁵³ Lazar, Jim, Chernick Paul and Williams, Marcus, *Electric Cost Allocation for A New Era*. Regulatory Assistance Project (Jan. 2020), p. 145,146.

<https://www.raponline.org/wp-content/uploads/2020/01/rap-lazar-chernick-marcus-label-electric-cost-allocation-new-era-2020-january.pdf>

distribution costs are treated as customer-related and the more nuanced minimum system and zero-intercept approaches included in the 1992 NARUC cost allocation manual.

RAP added that this cost allocation “vastly overstates the portion of distribution that is customer-related.”⁵⁴

With the minimum system method, utilities seek to expand the category of fixed, customer-related costs to portions of the shared distribution system according to the number of customers, which is contrary to cost causation principles. (Those distribution costs include the lines, poles, transformers and attendant equipment, both above and below ground.) Instead, the local distribution network is built based on electric usage/demand, not numbers of customers.

Referring to the Berkeley Lab report, the utility representatives turn these concepts on their head. While stating that “[c]ustomers increasingly are differentiated by how they use and even generate power,” utilities assert “[t]he drivers of the costs of distribution grid services are almost completely independent of energy supply costs”⁵⁵ – indicating distribution costs are primarily fixed.

But, as RAP points out, “A piece of equipment (e.g., conductor, pole, service drop or meter) should be considered customer-related only if the removal of one customer eliminates the need for the unit”⁵⁶ – such as a large commercial or industrial customer.

It’s the load on the distribution system – energy use with time-varied changes in demand – that “affects distribution investment” on how quickly components age and must be replaced.⁵⁷

Witness Justin Barnes, in his testimony before the commission in a 2017 DEP rate case, voiced concerns about DEP gravitating quickly away from sound ratemaking, cost-causation principles: “A reasonable observer might question whether the Company has found a way to puts its thumb on the scales to inflate the classification of customer-related costs.... For instance, in its current study DEP reclassified the primary portion of underground conduit from 6% customer-related to 100% customer-related.”⁵⁸

The overriding issue is whether the residential customer class is paying for its full freight. Indeed, the rate class Duke territory in North Carolina may be paying more than

⁵⁴ *Id.* p. 145, 146.

⁵⁵ Berkeley Lab *supra* note 50, p. 5, 9.

⁵⁶ RAP *supra* note 53, p. 147.

⁵⁷ *Id.*, p. 148.

⁵⁸ *Direct Testimony of Justin R. Barnes on Behalf of North Carolina Sustainable Energy Association*. NCUC Docket No. E-2, Sub 1142 (Oct. 20, 2017), p. 24.

its full freight.⁵⁹ The excessive concern of utility companies for the so-called cost shift, appears to us to have more to do with diminishing the value of solar and energy efficiency while, as is suggested in the EEI Challenges report, protecting sunk costs.

VI. DUKE ENERGY'S JOINT FILING FOR REVISED NET METERING TARIFFS: A CONTINUATION OF THE COMPANY'S EFFORT TO QUASH COMPETITION

Duke's attempts to disrupt the distributed solar market and the Duke-supported MSM cost of service framework and inadequate assessment of distributed solar benefits established the last few years in North Carolina:

- Is not conducive to realizing least-cost service as mandated in statute;
- Unfairly shifts costs to the residential customer class, as the minimum system method is based on numbers of customers; and
- Presupposes a cost-shift within the customer class, while not monetizing all benefits across the system.

EWG fears the state's ratepayers and economy may be missing out by not taking full advantage of clean distributed resources. The National Renewable Lab in 2016 calculated the technical potential for small and large buildings for each state. Combined, this represented almost 35 percent of state power generation.⁶⁰ This is not economic potential – although the cost of solar is much lower now than the data used in the NREL analysis – but still, the contribution would be significant and does not include community solar projects that are not deployed on roofs. And costs for solar and storage have dropped significantly since then.

Time-of-Use Rates Should Reflect Current Circumstances to Assist in Establishing a Strong Decentralized Solar Market

To correct these deficiencies, EWG supports the following actions that will enable a decentralized and distributed grid design while keeping DEC and DEP financially whole.

EWG supports a theory of gradualism that favors ratepayers, not Duke. Gradualism has been more a means for utility companies to justify slowly increasing fixed charges,

⁵⁹In testimony regarding DEC's 2020 rate case, Wallach argued, "In fact, with distribution plant costs classified in accordance with cost-causation principles, the Company's COSS shows that the residential rate classes in aggregate are currently over-earning relative to the system-average achieved rate of return." p. 24, 25 <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=bd205764-cc82-418d-a535-08473e9e0336>

⁶⁰ Gagnon, Peter, Margolis, Robert, Melius, Jennifer, Phillips, Caleb and Elmore Ryan. *Rooftop Solar Photovoltaic Technical Potential in the United States: A Detailed Assessment*. National Renewable Energy Laboratory (NREL/TP-6A20-65298) (Jan. 2016), p. 26, 32. <https://www.nrel.gov/docs/fy16osti/65298.pdf>

whether across the board for residential and small commercial, or for solar customers. Given the 2027 date for changes in net metering to occur, we believe it makes more sense to implement those changes slowly and systematically so customers can adjust. Beginning with better aligning cost causation with solar output, we urge the commission to first set time-of-use rates based on current reality, not projections four to five years from now. These rates can be imposed after educating customers first over a reasonable period of time- within 4 to 6 months.

Although Duke supports the MSM approach that subverts cost causation principles, TOU rates, which Duke also proposes, recognize that costs differ according to energy use – which is reflective of residential diversity of load – thus, proper cost causation principles.

Since North Carolina and Arizona have very similar solar generation profiles,⁶¹ a recent Arizona Corporation Commission decision is instructive and underscores the importance of cost causation for daily and seasonal solar valuation. The commission eliminated grid access charges for solar customers on the time-of-use rate, noting “that DG solar customers on TOU-E (the TOU rate for solar customers) generally cover their costs of service within the range of other residential customers.”⁶²

Arizona has also adopted a kind of decoupling mechanism referred as the “Lost Fixed Cost Recovery,” or LFCR, for recovery of lost revenue from energy efficiency and customer solar.⁶³ Given these two rate mechanisms, the Arizona Commerce Commission agreed with interveners Vote Solar and SEIA in a recent Arizona Public Service, or APS, rate case that solar customers, on average, covered a higher percentage of their cost of service than non-solar customers.⁶⁴ The commission also imposed an earnings test on APS, so the company would have to prove it was actually losing revenue from customer energy efficiency and solar investments.⁶⁵ The commission noted that interveners arguing this point maintained “that the current LFCR gives APS an incentive to continue promoting higher usage while also allowing it to

⁶¹ According to 3rd quarter 2021 data compiled by the Solar Energy Industries Association, North Carolina, <https://www.seia.org/sites/default/files/2021-12/North%20Carolina%20Solar-Factsheet-2021-Q4.pdf>, and Arizona, <https://www.seia.org/sites/default/files/2021-12/North%20Carolina%20Solar-Factsheet-2021-Q4.pdf>, are nearly equivalent with respect to solar penetration and percent of state power generation from solar. However, solar capacity additions in Arizona are expected to be double that of North Carolina over the next five years, which further shows that Duke’s TOU proposal should be rejected.

⁶² *Order*, The Arizona Corporation Commission, Docket No. E-01345A-19-0236 (Nov. 9, 2021), p. 358. <https://docket.images.azcc.gov/0000205236.pdf?i=1645470626874>

⁶³ *Opinion and Order*, the Arizona Corporation Commission, Docket No. E-01345A-11-0224 (May 24, 2012).

<https://docket.images.azcc.gov/0000137042.pdf?i=1645563864925>

⁶⁴ The Arizona Corporation Commission *supra* note 59, p. 357, 352,353.

⁶⁵ *Id.*, p. 219, 432.

recover lost revenues from EE and DG, whereas the addition of an earnings test would discourage this.”⁶⁶

Besides its contradictory positions with respect to MSM and TOU rates, Duke diminishes the value of solar with its TOU rates and solar cost-benefit analysis.

Duke’s proposed time-of-use rates do not reflect current reality and will diminish the value proposition of rooftop solar well into the decade.⁶⁷ Although Duke projects a shift in peak afternoon period more to the evening hours by the mid-2020s, peak is earlier now – to the benefit of solar customers. Here the regulatory concept of gradualism is particularly pertinent. TOU rates should reflect current circumstances and change gradually to reflect the penetration of distributed solar over time. The proposed change is immediate and radical, in that it does not reflect reality and violates this principle.

Referring back to Arizona – a state with a solar profile similar to North Carolina’s – the ACC in the rate case discussed above proposed peak summer time-of-use rates begin and end two hours earlier than proposed by Duke.⁶⁸

Duke’s So-Called Cost-Benefit Analysis Nebulous to Nonexistent, Contrary to State Statute

EWG supports cost-benefit analysis based on best practices, as described by Karl Rabago – based on the *National Practice Manual*,⁶⁹ a much broader assessment of the entire spectrum of distributed energy resources.

Duke appears not to include all variables in its analysis. According to Duke’s response to NCWARN’s 11-1 data request, “NEM Benefits vs Cost Revenue Reduction,” Duke only includes energy, capacity, transmission and distribution.⁷⁰ Notably, there is neither detail with respect to variables used in transmission and distribution assessment nor a “study” that sets out justification of the results or any modeling.

⁶⁶ *Id.*, p 216.

⁶⁷ Response to Duke Energy’s Rate Design Study Quarterly Status Report for Third Quarter 2021, NCWARN (Nov 15, 2021), p. 11.
<https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=b6814c4a-247c-4e6e-a47b-15ecc620a84e>

⁶⁸ *Rate Schedule TOU-E Residential Time-of-Use Service*, Arizona Public Service, p. 1.
<https://www.aps.com/-/media/APS/APSCOM-PDFs/Utility/Regulatory-and-Legal/Regulatory-Plan-Details-Tariffs/Residential/Service-Plans/Time-of-Use3pm-8pmWeekdays>

⁶⁹ *National Standard Practice Manual for Benefit -Cost Analysis of Distributed Energy Resources*. National Energy Screening Project, a project of E4TheFuture, (August 2020). https://www.nationalenergyscreeningproject.org/wp-content/uploads/2020/08/NSPM-DERs_08-24-2020.pdf

⁷⁰ Copy of Worksheet in NCWARN DR1 DEC-DEP Response 1-11 NEM Benefits v COS Revenue Reduction.

On March 15, the attorney general's office filed comments in the docket linked to this Duke Energy net metering docket, asserting that no assessment of costs and benefits of customer-owned solar had taken place:

In Duke's joint petition for approval of revised net energy metering tariffs, Duke asserted that its Comprehensive Rate Design Study fulfills this requirement. While the Comprehensive Rate Design Study investigated the costs of customer-sited generation, it did not investigate potential benefits of customer-sited generation. These potential benefits are many — from reducing carbon emissions by offsetting fossil fuel generation to improving grid resilience — and they must be investigated and quantified. It may not be possible to fully quantify those benefits until there is more clarity on the role customer-sited generation will play in meeting the carbon reduction goals of House Bill 951.⁷¹

Externalities and Economic Benefits Not Included

For EWG, it is unclear if additional benefit variables were included or the status of Duke's value of solar study⁷² and how these may impact the purported cost shift. However, since the South Carolina approach appears to be the preferred framework for the net metering negotiations, the components of the solar cost-effectiveness analysis should have at least been expanded to reflect line losses, carbon emissions avoided, avoided criteria pollutants, fuel hedge, and environmental system/compliance costs avoided.⁷³ The commission has the authority to include non-energy benefits in solar cost-benefit analyses, as expressed in its 2020 order regarding cost recovery of demand-side management costs.⁷⁴

⁷¹ In the Matter of: Application of Duke Energy Progress, LLC For Approval of Smart Saver Energy Efficiency Program and Application of Duke Energy Carolinas, LLC For Approval of Smart Save Energy Efficiency Program. Comments of the Attorney General's Office, Docket No. NCUC E-2, Sub 1287, and E-7, Sub 1261, respectively (March 15, 2022), p 3,4. <https://starw1.ncuc.gov/NCUC/ViewFile.aspx?Id=533b7fb3-6489-477a-a1a7-cfdd612413ef>

⁷² Response to NCARN DR 1-16: It appears Duke will produce a (purported) value of solar study shortly.

⁷³ *Order on Net Metering and Approving Settlement Agreement*, the Public Service Commission of South Carolina (March 20, 2015), p 3. <https://dms.psc.sc.gov/Attachments/Order/29cf4369-155d-141f-23b1536c046aebc5>

⁷⁴ *Order Approving Revisions to Demand-Side Management and Energy Efficiency Cost Recovery Mechanisms*, NCUC Docket No. E-2, Sub 931 (Oct. 20, 2020), p.3. <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=5aaea5ce-6458-41fe-ab2d-14d86881092d>

Given the increasing investor concern with climate risks that Duke mentions as a business risk in its SEC filings, and since the company has made reducing carbon emissions part of its business plan, it is all the more important to include a social cost of carbon in solar cost-benefit analyses. It is good business practice to ameliorate these risks, and distributed solar can play a significant role. Even in a 2013 report on this subject for North Carolina, Tomas Beach and Patrick McGuire included avoided costs related to energy, capacity, transmission, distribution, line losses and carbon emissions.⁷⁵

A cost-benefit analysis for solar and solar plus storage should be much broader, to move distributed solar and solar plus storage to its rightful position as a resource that provides benefits to the entire system. In a 2020 South Carolina solar proceeding on the costs and benefits of current net metering programs, the witness Justin Barnes asserts:

[A] cost of service study tends to treat some costs (e.g., distribution investments) as fixed even though DG can contribute to longer-term avoidance of these types of costs. Likewise, a cost of service framework typically excludes societal benefits such as economic impacts, and other potential sources of DG value such as avoided future environmental costs (compliance and social) and risk hedging.⁷⁶

He further states:

The takeaway from both of these studies (referencing studies conducted in Maryland and Arkansas) is that economic benefits, or conversely, the negative economic consequences of less DG deployment, can be considerable. Their inclusion in a cost-benefit study can easily make the difference between whether or not a 'subsidy' is deemed to exist. Furthermore, consideration of economic benefits may also tilt the scale on the relative costs and benefits of BTM (behind-the-meter) generation compared to utility-scale generation. The Maryland study illustrates this, showing economic impact benefits from BTM generation at roughly three times those from utility-scale generation on a \$/kWh basis.⁷⁷

⁷⁵ Beach, R. Thomas, McGuire, Patrick G., *The Benefits and Costs of Solar Generation for Electric Ratepayers in North Carolina* (Oct. 18, 2013), p. 5, 6.

https://energync.org/wp-content/uploads/2017/03/Benefits_Costs_Solar_Generation_for_Electric_Ratepayers_NC.pdf

⁷⁶ *Direct Testimony of Justin R. Barnes on Behalf of Solar Energy Industries Association and North Carolina Sustainable Energy Association*, The Public Service Commission of South Carolina Docket No. 2019-182-E (Oct. 8, 2020), p. 11.

<https://dms.psc.sc.gov/Attachments/Matter/db686cf0-798e-4685-bb1d-89839862b056>

⁷⁷ *Id.* p. 15.

Barnes also raises incorporating additional technologies, such as smart meters and battery storage,⁷⁸ in a forward-looking approach to enhance those benefits to the electric system as a whole.

Duke Energy Creates Unsubstantiated New Fixed Charges to Further Erode Savings and the Solar Investment Incentive for Its Customers

Duke Energy proposes to impose a grid access fee, or GAF, for residential systems 15 kilowatts and larger, and a non-bypassable charge for all solar customers after December 31, 2026.

With respect to the GAF (which differ slightly for DEC and DEP customers), the monopoly states in its joint application that these are necessary because “[c]ustomers with large system sizes represent the greatest potential for under-recovery” and that the “GAF helps mitigate this risk by ensuring the recovery of distribution system costs.”⁷⁹

However, Duke Energy is merely addressing a *potential* for under-recovery. There is no evidence that the company is under-recovering its authorized revenue from the residential class. Moreover, North Carolina statute does not mandate such a charge. Rather, these charges may be imposed, suggesting that Duke Energy has rushed to judgment to present a fait accompli to customers going forward, further undermining the distributed solar market in the state. Finally, as the minimum system method on which the minimum bill is based includes shared distribution components, this additional charge may result in double-dipping.

As for the non-bypassable charge, the company appears to be maneuvering to shift all future “volumetric charge increases” into fixed charges for those customers who do not in the near-term agree to be charged under the company’s deficient TOU rates. But what will be included in non-bypassable charges in the future is unclear, because the tariff provisions do not specify.

Duke suggests this in its “alternative NEM rate” for legacy customers: “These customers would pay a monthly non-bypassable charge based on the installed capacity of their generation for future volumetric base rate increases applicable to their rate schedule.”⁸⁰

However, Duke also asserts that non-bypassable charges, which will eventually be assessed as a fixed monthly charge, relate only to “DSM/EE, storm cost recovery, and cyber security.”⁸¹ These charges have been historically recovered in the variable kilowatt-hour charge, according to cost causation principles. In Duke’s proposed changes in each of its NEM tariffs after December 31, 2026, for customers not taking the TOU rates, the utility states: “Any volumetric price increase of the Customers’

⁷⁸ *Id.*, p. 4.

⁷⁹ *See, Supra* note 1, p. 14.

⁸⁰ *Id.*, p. 6.

⁸¹ *Id.*, p. 15.

applicable rate schedule after the sunset date [Dec. 31, 2026] will be placed in a monthly Non-Bypassable Charge based on the Nameplate Capacity of their generation system.”⁸²

In other words, the company’s aims seem much broader than just shifting DSM/EE and the other costs described by the company as non-bypassable charges. After December 31, 2026, all rate increases that would otherwise be embedded in the variable rate will instead appear as a fixed charge in non-TOU solar tariffs – effectively eliminating customers’ ability to avoid those rate increases and making customer solar investments and energy efficiency investments for solar customers systematically less and less appealing. This is particularly true for customers unaware of the implications for not moving to the NEM tariff that includes TOU rates – although the TOU rates do not support customer-owned solar. If customers do not have the necessary information to respond to time-of-use rates, such rates just become another means of assessing higher charges on customers than are justified.

Resiliency Benefit, a Must for the North Carolina Power System, Not Included

A distributed grid design harbors resiliency benefits.⁸³ Customer-owned solar, with ride-through capability, plus storage, can allow customers to maintain power during severe storms, which are expected to become more frequent, and which Duke has had experience with, since it shut down its Brunswick nuclear plant in 2018 prior to Hurricane Florence.⁸⁴ Nuclear units may take the better part of a week or longer to restart – but only with assistance from the broader electric system.

If the commission were to step back and systematically implement changes to its net metering program, there would be time by 2027 to establish a framework for monetizing resiliency benefits of solar and solar plus storage. Although this area of electric system benefits is still evolving, there are resources available to begin the process.⁸⁵

⁸² *Id.*, Exhibits 1 and 2.

⁸³ See, e.g., “Using virtual power plants to spur energy equity, grid stability and fight the climate crisis.” Environmental Working Group (Blog) (Aug. 5, 2021) <https://www.ewg.org/news-insights/news/2021/08/using-virtual-power-plants-spur-energy-equity-grid-stability-and-fight> and Penn, Ivan, “Its Electric Grid Under Strain, California Turns to Batteries.” New York Times (Sept. 3 2020). <https://www.nytimes.com/2020/09/03/business/energy-environment/california-electricity-blackout-battery.html>

⁸⁴ Walton, Robert. “Duke shuts down Brunswick nuclear plant ahead of Hurricane Florence.” (Sept. 13, 2018) <https://www.utilitydive.com/news/duke-shuts-down-brunswick-nuclear-plant-ahead-of-hurricane-florence/532297/>

⁸⁵ See, e.g., Anderson, Kate, Laws, Nicholas, Marr, Spencer, Lisell, Lars, Jimenez, Tony, Quantifying and Monetizing Renewable Energy Resiliency. Sustainability (March 2018)

VII. IS THE SO-CALLED INTRA-CLASS COST SHIFT DUE TO CUSTOMER-OWNED SOLAR IN NORTH CAROLINA BEYOND HISTORICAL EXPERIENCE? COMPELLING EVIDENCE FROM CALIFORNIA SAYS LIKELY NOT

The California Independent System Operator, or CAISO, in 2018 recommended saving \$2.6 billion in future costs by canceling 18 transmission projects by Pacific Gas & Electric and San Diego Gas & Electric and revising 21 others. CAISO found that “[t]he changes were mainly due to changes in local area load forecasts, and strongly influenced by energy efficiency programs and increasing levels of residential, rooftop solar generation,”⁸⁶ which shows the higher the penetration of distributed solar and the more extensive the energy efficiency investment, the greater the savings benefit to all ratepayers.

In testimony in the California NEM proceeding, utility expert Bill Powers calculated that the full benefit of the average distributed solar system in PG&E territory saved about \$620 more than the purported cost shift in a previous study that was “extensively cited” by the California Public Advocates Office in the proceeding.⁸⁷

Protect Our Communities, also filing testimony in the California NEM proceeding, noted that the state does not consider the resiliency of solar “paired with storage,” adequately “quantify” transmission avoided costs, nor the “full” benefits of avoided carbon emissions, which, the testimony indicates,⁸⁸ can be readily incorporated into the state’s avoided cost assessment of solar plus storage as dollar values, or monetized. The testimony concludes, “The total benefits of customer-sited renewable generation under the current NEM tariffs, including societal benefits, outweigh the total costs.”⁸⁹

https://www.researchgate.net/publication/324097139_Quantifying_and_Monetizing_Renewable_Energy_Resiliency_and_Valuing_the_Resilience_Provided_by_Solar_and_Battery_Storage_Systems. National Renewable Energy Laboratory (NREL/BR-6A20-70679) (Jan. 2018). <https://www.nrel.gov/docs/fy18osti/70679.pdf> and Anderson, Kate, Burnam, Kari, Simpkins, Travis, Helsen, Erika, Lisell, Lars and Case, Trina, *New York Solar Smart DG Hub-Resilient Solar Project: Economic and Resiliency Impact of PV and Storage on New York Critical Infrastructure*. National Renewable Energy Laboratory (NREL-TP-7A40-66617) (June 2016). <https://www.nrel.gov/docs/fy16osti/66617.pdf>

⁸⁶ Board approves 2017-2018 Transmission Plan, CRR rule changes. CAISO (News Release) (March 23, 2018). http://www.caiso.com/documents/boardapproves2017-18transmissionplan_crrrulechanges.pdf

⁸⁷ *Rebuttal Testimony of Bill Powers, P.E. on behalf of Protect Our Communities, The Public Utilities Commission of the State of California*, Docket No. R.20-08-020 (July 16, 2021), p. 22.

<https://docs.cpuc.ca.gov/PublishedDocs/SupDoc/R2008020/3824/393386122.pdf>

⁸⁸ Powers *supra* note 77, p. 21, 16, 23.

⁸⁹ Powers *supra* note 77, p. 7.

Powers found that much of the potential \$40 billion in future transmission and distribution-system-hardening costs could be avoided with decentralized rooftop and community solar, battery storage and energy efficiency investments.⁹⁰

In terms of the cost effectiveness of the distributed grid design, a report by Vibrant Clean Energy says a California state policy to prioritize a decentralized grid dominated by solar and battery storage would save \$120 billion by 2050, compared to a system dominated by centralized large utility-scale wind and solar farms, which PG&E prefers.⁹¹ Customers would pay \$29 billion less in utility bills in cumulative savings under a primarily decentralized clean power system complemented by utility-scale wind and solar investments.⁹²

Utilities didn't receive complaints for customers with high demand ostensibly paying more than their fair share of grid costs than the average customer until energy demand began to flatten. But the evidence shows that low-use customers subsidize high-use customers. The cost-shift argument comes across as contrived and is exacerbated by poor community solar program designs, failure to embrace a well-designed decoupling regimen (which can also assign costs according to customer demand), time-of-use rates that have nothing to do with reality, and failure to assess the full potential of distributed resources. Utility cost-shift arguments, in our view, have to do with stock price and growth of the business, not a concern for customer welfare.⁹³

Duke's Deficient Community Solar Programs Contributes to "Cost Shift" Concerns

Another issue that is key to addressing any equity or cost-shift concerns is providing solar access to households and businesses with obstructed roofs, lower income customers, and communities of color. A robust community solar program can improve

⁹⁰ Powers *supra* note 77, p. 23.

⁹¹ Clack, Christopher T. M., Chalkulkar, Alditya, Cote, Brianna, McKee, Sarah A., *The Role of Distributed Generation in Decarbonizing California by 2045* (July 2, 2021), p. 6 https://www.vibrantcleanenergy.com/wp-content/uploads/2021/07/VCE-CCSA_CA_Report.pdf

⁹² Clack et. al., *supra* note 80, p. 7

⁹³ See, e.g. Su Jean, Kuveke, Christoper, *Powerless in the Pandemic: After Bailouts, Utilities Choose Profit Over People*. Center for Biological Diversity and Bailout Watch (Sept. 2021). https://www.all4energy.org/uploads/1/0/5/6/105637723/powerless_in_the_pandemic_rpt.pdf and "In Pandemic-Triggered Economic Crisis, Millions of American Struggle to Pay Utility Bills." Environmental Working Group (Blog) (July 2, 2020). <https://www.ewg.org/news-insights/news/pandemic-triggered-economic-crisis-millions-americans-struggle-pay-utility-bills> and Morabito, Nate. "Duke Energy complaints rise of ahead of company's decision to extend disconnection ban." WCNC Charlotte (Oct 1, 2021). <https://www.wcnc.com/article/money/duke-energy-disconnect-ban-complaints-north-carolina/275-e6a7fe7d-aa77-48c6-afbc-1dfaaf7882bf>

state concerns about cost shifts within the residential class and help create a distributed electric grid that provides benefits to customers across the board.

As noted, the design of Duke's community solar program in North Carolina makes it very difficult to expand the program. Indeed, the Institute for Local Self-Reliance in its 2021 *Community Power Scorecard* analysis assigned a score of "0" to North Carolina's program.⁹⁴

VIII. DUKE ENERGY IS VYING FOR A HIGH-COST ELECTRIC SYSTEM, NOT A LEAST-COST SCENARIO

Working Toward a Higher Cost System by Means of Data Manipulation

Duke has a history of using the integrated resources planning, or IRP, process to manipulate data for its preferred power generation mix. In doing so, Duke has consistently downplayed least cost options through its modeling while supporting higher cost power generation resources. Duke's recent IRP filings show that the company is not interested in a least-cost electric system:

- Duke's 2018 planning document proposed a substantial buildout of natural gas in North Carolina. The plan prompted pushback from the state attorney general's office, advocates and the North Carolina Sustainable Energy Association and others. They argued that:
 - The projected natural gas costs were overly optimistic and exposed ratepayers to too much price volatility;⁹⁵
 - Duke undervalued solar's capacity value and underestimated solar and solar plus storage capacity going forward;⁹⁶

⁹⁴ *The 2022 Community Power Scorecard*. Institute for Local Self-Reliance (2022), p 5. <https://ilsr.org/wp-content/uploads/2022/02/2022-Scorecard-Methodology-Full-Scores.pdf> "6 possible points for a statewide **shared/community renewables** policy and program. Rubric developed to evaluate existing policies and programs across six different factors: +1 point for an enabling state policy (e.g., virtual net metering or a shared renewables policy); +1 point for an operational program (i.e. some capacity is in operation, or has been awarded); +1 point for meaningful policy or requirements that specifically address low-income access; +1 point for policies that include multiple eligible technologies (e.g., solar, wind, digesters); and up to 2 points for effective and established programs (+1 point for an installed capacity greater than 25 watts per capita, +1 point for installed capacity greater than 100 watts per capita)."

⁹⁵ *Order Accepting Integrated Resource Plans and REPS Compliance Plans, Scheduling Oral Argument, and Requiring Additional Analyses*. NCUC Docket No. E-100, Sub 157 (Aug. 27, 2019), p. 39, 41.

<https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=143d85de-b1e7-4622-b612-5a8c77e909d4>

⁹⁶ *Id.* p. 44, 45, 55.

- Duke underestimated demand-response capabilities;⁹⁷ and
- Shifting to a portfolio of renewables, energy efficiency and battery storage would save ratepayers billions of dollars.⁹⁸

However, regulators ultimately accepted Duke's plan.

- Duke's 2020 IRP met with similar skepticism, as the public staff, attorney general's office and/or advocates found that Duke:
 - Had planned reductions in sales from its energy efficiency that were insufficient, noting that they could be cost-effectively ramped up significantly;⁹⁹
 - overestimated the cost of battery storage;¹⁰⁰
 - underestimated the cost of natural gas;¹⁰¹
 - underestimated the cost of the company's preferred option, new natural gas capacity;¹⁰² and
 - underestimated EE to justify more natural gas.¹⁰³

NCWARN contracted with consultant Bill Powers in the 2020 proceeding. His findings show that:

- Duke placed "artificial constraints" on solar plus battery storage buildout;¹⁰⁴
- Duke overestimated demand growth¹⁰⁵ and underestimated available resources to meet winter peak demand, providing additional justification for more unneeded natural gas plants;¹⁰⁶

⁹⁷ *Id.* p. 45.

⁹⁸ *Id.* p. 62

⁹⁹ *Order Accepting Integrated Resource Plans, REPS and CPRE Program Plans With Conditions and Providing Further Direction on Future Planning.* NCUC Docket No. E-100, Sub 165 (Nov. 19, 2021), p. 18.

<https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=3142e686-6cb0-43e4-a71a-afb3e2518f94>

¹⁰⁰ *Id.* p. 7.

¹⁰¹ *Id.* p. 8.

¹⁰² NCWARN and Center for Biological Diversity's Initial Comments on Duke's Integrated Resource Plans. NCUC Docket No. E-100, Sub 165 (March 1, 2021), p. 2.

¹⁰³ *Id.* p. 18.

¹⁰⁴ Powers, William. Review of Duke Energy Carolinas, LLC and Duke Energy Progress, LLC's 2020 Integrated Resource Plans. NCUC Docket No. E-100, Sub 165 (March 1, 2021), p. 7. <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=9ae4a34d-d374-4146-bcf5-278fbe03e12a>

¹⁰⁵ *Id.* p. 18.

¹⁰⁶ *Id.* p. 1.

- Duke further skewed its business plan against solar and energy storage by projecting the potential for highly expensive small nuclear reactor units as a resource option in its no-gas scenario;¹⁰⁷
- Duke’s inflexible nuclear units and insufficient battery storage leads to curtailment of solar;¹⁰⁸ and
- As with the 2018 IRP, by shifting investment to solar plus storage (including significantly increasing customer-owned rooftop solar with storage), Duke could retire its coal plants within a year while avoiding new natural gas capacity and yet another nuclear financial disaster in the future – at a cost commensurate with its natural gas-ridden scenarios.¹⁰⁹

Duke has a history of this kind of data manipulation in its IRP filings. Advocates’ analysis of Duke Indiana’s 2015 IRP found that the company overestimated the cost of wind and solar,¹¹⁰ made coal units that were losing money look cost effective by altering their power production efficiency,¹¹¹ and underestimated wind’s contribution to electric system stability.¹¹²

Indeed, in an article recently published by Utility Dive, EWG found that these practices are essentially ubiquitous across the monopoly electric utility landscape.¹¹³

Working Toward a Higher Cost System by Means of High-Cost Power Generation Preferences

Duke also appears to have timed power generation capacity additions, and ignored others, around ensuring that the preferred costlier additions are deployed first.

As late as 2018, Duke made specious claims about its wind avoidance. Duke highlights its excuses for not investing in wind in its 2018 resource plans for its utilities based in the Carolinas – that wind power is a “long-term” consideration for them in the context of

¹⁰⁷ *Id.* p.23.

¹⁰⁸ *Id.* p. 8.

¹⁰⁹ *Id.* p. 1.

¹¹⁰ Comments of Citizens Action Coalition, Earth Justice, Indiana Distributed Energy Alliance, Michael A. Mullett, Sierra Club, and Valley Watch on Duke Energy Indiana’s and I&M’s 2015 IRP (Feb. 12, 2015), p. 8.

https://www.in.gov/iurc/files/CAC_Earthjustice_et_al.pdf

¹¹¹ *Id.* p. 10.

¹¹² *Id.* p. 7.

¹¹³ Smith, Grant. “Unused and Useless: States must act to energy flawed natural gas buildout.” Utility Dive (Opinion) (Jan. 11, 2022).

<https://www.utilitydive.com/news/unused-and-useless-states-must-act-to-end-flawed-natural-gas-power-plant-b/616899/>

“portfolio diversity” and, more importantly, “general compliance needs”¹¹⁴ (with state renewable portfolio standard laws); that wind isn’t declining in cost as fast as other renewable resources “like solar”; that it’s too difficult to site wind in its most of its territory;¹¹⁵ and that it will seek to contract for wind resources in the future.¹¹⁶ Besides, Duke said, wind and solar require subsidies,¹¹⁷ ignoring the fact that subsidies for fossil fuels¹¹⁸ and nuclear power¹¹⁹ are enormous.

The timing of Duke’s natural gas investments in North Carolina and Florida reinforces this assertion. Duke began a huge natural gas plant and pipeline buildout shortly after it was found guilty of violating the Clean Air Act at a number of its coal plants, around 2011.¹²⁰ As Duke closed the plants, it began replacing that capacity with natural gas-fired power. And Duke still insists on gas.¹²¹ Moreover, Duke abandoned offshore wind in 2010,¹²² and still doesn’t plan any movement there until the end of the decade, or longer, despite current and expected sharp declines in costs.¹²³

¹¹⁴ *Duke Energy Carolinas, LLC 2018 Integrated Resource Plan and 2018 REPS Compliance Plan*. NCUC Docket No. E-100, Sub 157 (Sept. 5 2018), p. 27. <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=aa9862b5-5e31-4b3f-bb26-c8a12c85c658>

¹¹⁵ *Duke Energy Progress, LLC 2018 Integrated Resource Plan and 2018 REPS Compliance Plan*. NCUC Docket No. E-100, Sub 157 (Sept. 5 2018), p. 27. <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=25fb3634-54b6-464b-9704-b6fe99cda1a8>

¹¹⁶ Duke Energy, *supra* note 20, p. 186.

¹¹⁷ *Id.* p. 186.

¹¹⁸ See, e.g. Parry, Ian, Black, Simon, Vernon, Nate. *Still Not Getting Prices Right: A Global and Country Update on Fossil Fuel Subsidies*. International Monetary Fund (Sept. 24, 2021). <https://www.imf.org/en/Publications/WP/Issues/2021/09/23/Still-Not-Getting-Energy-Prices-Right-A-Global-and-Country-Update-of-Fossil-Fuel-Subsidies-466004>

¹¹⁹ *Doubling Down: Taxpayers’ Losing Bet on NuScale and Small Nuclear Reactors*. Taxpayers for Common Sense (Dec. 2021). https://www.taxpayer.net/wp-content/uploads/2021/12/TCS_Doubling-Down-SMR-Report_Dec.-2021.pdf

¹²⁰ “Duke Learns the Value of Diversity.” *Power Engineering* (May 1, 2012). <https://www.power-eng.com/coal/duke-energy-learns-the-value-of-diversity/#gref>

¹²¹ “There She Goes Again: Duke CEO ‘Not Prepared’ to Embrace Renewable Energy Future.” *EWG (Blog)* (Feb. 16, 2021). <https://www.ewg.org/news-insights/news/there-she-goes-again-duke-ceo-not-prepared-embrace-renewable-energy-future>

¹²² Downey, John. “Duke Energy drops wind project off N.C. coast, citing cost.” *Charlotte Business Journal* (Aug. 23, 2010). <https://www.bizjournals.com/charlotte/stories/2010/08/23/story13.html?b=1282536000%5e3828381>

¹²³ *EWG, supra* note 117.

Perhaps Duke's insistence that new nuclear power plants are a viable option financially is the most telling example of Duke's pursuit of a high-cost electric system.¹²⁴

Duke recently announced its growing interest in NuScale's modular nuclear technology,¹²⁵ which won't be available until the mid-2030s – if at all – as if wind, solar, energy efficiency, demand response and battery storage aren't cheaper and can provide the same service more efficiently now. To justify regulatory approval of this high-capacity factor, inflexible resource to replace aging natural gas power plants, Duke will likely attempt to further suppress distributed energy investments. However, given the prospects for improved battery technology, long-term storage, and, in North Carolina's case, offshore wind, so-called 24/7 power generation technology with 80 percent or more capacity factors will not be needed – more so since they are and will, almost inevitably, be more expensive.

NuScale and the Department of Energy, NuScale's top funder via the U.S. taxpayer, have been trying since the 2010s to make NuScale's design commercially viable. It's still in the design stage at a cost of \$6 billion¹²⁶ and, in keeping with nuclear power's history of repeated financial debacles,¹²⁷ half of that amount is cost overruns. A planned pilot project has been postponed to the end of the decade. The planned units are to provide power to Utah Associated Municipal Power Systems, or UAMPS, a municipal power author that buys power for municipalities. UAMPS 2020 projected cost for the plant was twice that of NuScale's¹²⁸ and, according to the cost estimates of several utility companies in the region,¹²⁹ up to nearly twice that of the current cost of offshore wind, whose costs have declined sharply the last few years and will continue to decline, says the National Energy Renewable Lab.¹³⁰

¹²⁴ *Id.*

¹²⁵ "Duke Energy may waste millions on nonexistent nuclear reactors, ignoring clean and safe renewable power." EWG (Feb. 22, 2022). <https://www.ewg.org/news-insights/news-release/2022/02/duke-energy-may-waste-millions-nonexistent-nuclear-reactors>

¹²⁶ Makhijani, Arjun, Ramana, M.V. "Why Small Modular Nuclear Reactors Won't Help the Climate Crisis." EWG (March 25, 2021). <https://www.ewg.org/news-insights/news/why-small-modular-nuclear-reactors-wont-help-counter-climate-crisis>

¹²⁷ *An Analysis of Nuclear Power Plant Construction Costs*. Energy Information Administration (DOE/EIA-0483) (1986). <https://www.osti.gov/servlets/purl/6071600>

¹²⁸ EWG *supra* note 32.

¹²⁹ M.V. Ramana. *Eyes Wide Shut: Problems with the Utah Associated Municipal Power System Proposal to Construct NuScale Small Modular Nuclear Reactors*. Oregon Physicians for Social Responsibility (Sept. 2020), p. 13. https://d3n8a8pro7vnm.cloudfront.net/oregonpsrorg/pages/1625/attachments/original/1598897964/EyesWideShutReport_Final-30August2020.pdf?1598897964

¹³⁰ Stehly, Tyler, Beiter, Phillip. *2018 Cost Wind Energy Review*. NREL (NREL/TP-5000-74598) (Dec. 2019). <https://www.nrel.gov/docs/fy20osti/74598.pdf>

Even Duke's past nuclear disasters haven't dissuaded the company from embracing the technology.¹³¹ Unlike renewable energy and battery storage, nuclear is the only power generation technology with a negative learning curve; the next unit built is always more expensive.¹³² But nuclear power has and always will require subsidies, an argument Duke has used against wind and solar development. In contrast to solar and wind technology, nuclear power costs continue to rise.

With respect to long-term storage, there is growing consensus that green hydrogen could be competitive with natural gas reforming to produce hydrogen by the end of the decade in the U.S.¹³³ Unlike the modular nuclear technology experience, there are projects springing up globally.¹³⁴ Moreover, it is likely that carbon capture will go the way of nuclear power – completely financially unviable.¹³⁵

Clearly, Duke Energy is not interested in least-cost planning, which now has dire implications for customer-owned solar.

IX. DUKE'S BUSINESS PLAN, STATE ENERGY POLICY, AND MOVING FORWARD

Duke's High-Cost Approach Is Contrary to State Policy

Duke's business plan is not compatible with state policy with respect to:

- Least-cost planning in statute that stipulates requiring “energy planning and fixing of rates in a manner to result in the least cost mix of generation and demand-reduction” and “avoiding the costly overbuilding of generation resources” in the commission's regulations; and

¹³¹ See *Duke's Epic Fails: \$11.6 Billion in Scrapped Projects Since 2013*. EWG (Aug. 31, 2020). <https://www.ewg.org/research/duke-energys-epic-fails-116-billion-scrapped-projects-2013>

¹³² EWG, *supra* note 123.

¹³³ See, e.g. “Green' Hydrogen to Outcompete 'Blue' Everywhere by 2030.” Bloomberg NEF (May 5, 2021). <https://about.bnef.com/blog/green-hydrogen-to-outcompete-blue-everywhere-by-2030/> and “IHS Markit: production of carbon-free “green” hydrogen could be cost-competitive by 2030.” Green Car Congress (July 16, 2020). <https://www.greencarcongress.com/2020/07/20200716-ihs.html>

¹³⁴ Collins, Leigh. “Global green-hydrogen pipeline exceeds 250 GW – there's the 27 largest gigawatt-scale projects.” RECHARGE (Aug. 2, 2021). <https://www.rechargenews.com/energy-transition/global-green-hydrogen-pipeline-exceeds-250gw-heres-the-27-largest-gigawatt-scale-projects/2-1-933755>

¹³⁵ Fuel to the Fire: How Geoengineering Threatens to Entrench Fossil Fuels and Accelerate the Climate Crisis. Center for International Environmental Law (2019). https://www.ciel.org/wp-content/uploads/2019/02/CIEL_FUEL-TO-THE-FIRE_How-Geoengineering-Threatens-to-Entrench-Fossil-Fuels-and-Accelerate-the-Climate-Crisis_February-2019.pdf

- Ability to achieve carbon reductions sought in the governor’s executive orders 80¹³⁶ and 246,¹³⁷ given Duke’s heavy reliance on natural gas-fired power plants.

Moreover, the rapidly changing energy landscape of technological developments, electric grid operations, and declining costs will exert more financial pressure on natural gas and nuclear power plants. State policy needs to evolve to embrace these changes and the new energy economy.

As shown, Duke has sought a high-cost electric system by:

- Postponing onshore and offshore wind development in the state;
- Underestimating the full potential of energy efficiency programs that are achieving far fewer reductions in electricity demand than leading states;¹³⁸
- Overbuilding natural gas capacity; and,
- Planning for more high-cost nuclear capacity with deployment of NuScale’s modular unit design that is destined to be more expensive than even offshore wind, fraught with technological uncertainties, will likely not be needed, and is vulnerable to climate change.

Duke’s Preference for a Thermo-Electric Centralized Utility Business Model Undermines Resiliency of North Carolina’s Power System

Electric system resiliency measures, such as a much-needed emphasis on distributed resources, will play an increasingly important role, because thermo-electric power plants –including water-cooled coal, nuclear and natural gas power plants – are particularly vulnerable to climate change with respect to water issues.

There are multiple stressors on the U.S. electric power system due to climate change. Storms and flooding can result in power plants being shut down. Droughts and excessive heat can reduce water availability for use in a power plant by reducing the amount available or making the intake water from streams, lakes or even the ocean too warm to cool the plant. These circumstances can force power plants offline or curtail their output. These concerns apply to the Southeast, according to a 2021 U.S. Government Accountability Office report.¹³⁹

¹³⁶ Executive Order 80, North Carolina (Oct. 29, 2018).

<https://files.nc.gov/ncdeq/climate-change/EO80--NC-s-Commitment-to-Address-Climate-Change---Transition-to-a-Clean-Energy-Economy.pdf>

¹³⁷ Executive Order 246, North Carolina (Jan. 7, 2022).

<https://governor.nc.gov/media/2907/open>

¹³⁸ 2020 Utility Energy Efficiency Scorecard. American Council for an Energy Efficient Economy. (Feb. 2020).

https://www.aceee.org/sites/default/files/pdfs/ACEEE_2020_UtilScrSht_Southeast%202021.13.pdf

¹³⁹ Electric Grid Resiliency: Climate Change is Expected to Have Far-Reaching Effects and DOE and FERC Should Take Action. U.S. Government Accountability Office (GAO-21-346) (March 2021), p 18. <https://www.gao.gov/assets/gao-21-346.pdf>

Similarly, a 2017 study conducted by Boston-based Northeastern University and the German Research Centre for Geosciences sums up the situation: “[P]ower production in [the] US remains particularly vulnerable to water scarcity and rising stream temperatures under climate change and variability.... In fact, limited freshwater supplies are one of the constraints for installation of new thermoelectric facilities in certain regions of the US.”¹⁴⁰

The study shows decreasing surface water runoff from 1991 to 2005 in the South, Southeast, Southwest, West and Central portions of the country, noting that most water-cooled power generation is located in these regions.¹⁴¹

By 2035, the Northeast, Northwest and Upper Midwest regions will be added to the list.¹⁴² In addition, the report asserts, stream water temperatures in the South, Southeast, Northeast, and Upper Midwest are projected to exceed those appropriate for cooling thermo-electric power plants “at most gauge stations” in the near term.¹⁴³

A more recent analysis, released this year by S&P Global Market Intelligence, shows a potentially dire impact on electric system reliability from decreasing water availability by 2030. Its assessment finds that nearly 70 percent of natural gas plants, more than 60 percent of the nuclear fleet, and 45 percent of the coal-fired power plants will “face medium-high to extremely-high water stress” in the contiguous U.S.¹⁴⁴

In addition, in its analysis, S&P lists the 20 largest utility companies that own fossil and nuclear power plants most threatened by water stresses. These companies include Duke Energy, in Indiana, Ohio, the Carolinas, and Florida; Exelon Corporation, which owns the largest fleet of nuclear power plants in the country, including in Illinois; and Xcel Energy, which operates in the Upper Midwest and Colorado.¹⁴⁵

Similarly, the Department of Energy is well aware of growing concerns with water availability for water-cooled power plants, finding in a 2015 report that “[t]hermoelectric power generation is vulnerable to increasing temperatures and reduced water

¹⁴⁰ Ganguli, Poulomi, Kumar, Devashish & Ganguly, Auroop, *US Power Production at Risk from Water Stress in a Climate Change*. Nature (Sept. 2017), p. 1.

<https://www.nature.com/articles/s41598-017-12133-9.pdf>

¹⁴¹ *Id.*, p. 2.

¹⁴² *Id.*, p. 2.

¹⁴³ *Id.*, p.3.

¹⁴⁴ Whieldon, Esther, Kuykendall, Taylor. “Climate change poses big water risks for nuclear, fossil-fueled plants.” S&P Global Market Intelligence (Oct. 21, 2020)

<https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/climate-change-poses-big-water-risks-for-nuclear-fossil-fueled-plants-60669992>

¹⁴⁵ *Id.*

availability in most regions, particularly in the Midwest, Great Plains, and southern regions.”¹⁴⁶

Duke’s Business Plan Is Contrary to the Principle of Market Discipline Required for Monopoly Utilities

A major tenet of North Carolina state policy is “[t]o promote the inherent advantage of regulated public utilities.”¹⁴⁷ The issue is what form that regulation should take to arrive at a least cost electric system and to avoid overbuilding of power capacity.

RAP emphasizes that monopoly utility regulation should instill “the same pricing discipline that competitive firms experience, so that they endeavor to minimize costs and maximize customer satisfaction,” underscoring proper rate structures are required to foster competition “with alternatives to electricity consumption from the utility, including energy efficiency and customer self-generation. This helps hold costs down for all consumers.”¹⁴⁸

Emily Hammond, law professor at Vanderbilt University and Jim Rossi, law professor at Georgetown University, assert in a 2017 article, “If the history of energy law teaches anything, however, it is that transitions and change ought to be expected in the energy sector.”¹⁴⁹ And that’s true today. Over the last decade, the nation has experienced a technological revolution in the energy sector:

- In a 2014 report, the Renewable Policy Network for the 21st century found that government, nonprofits and the energy industry consistently underestimated projections for wind and solar power globally. Renewable energy exceeded projections made in the 2000s for 2020 by 2010.¹⁵⁰

¹⁴⁶ “Energy Secretary Ernest Moniz Releases Report on America’s Regional Vulnerabilities to Climate Change.” U.S. Department of Energy (News Release) (Oct. 9, 20105) <https://www.energy.gov/articles/energy-secretary-ernest-moniz-releases-report-america-s-regional-vulnerabilities-climate>

¹⁴⁷ North Carolina Stat. § 62-2. (a)(2) Declaration of policy https://www.ncleg.gov/EnactedLegislation/Statutes/PDF/BySection/Chapter_62/GS_62-2.pdf

¹⁴⁸ RAP *supra* note 43, p. D-4, D-5.

¹⁴⁹ Emily Hammond & Jim Rossi, Stranded Costs and Grid Decarbonization, 82 Brook. L. Rev. 645 (2017), p. 680. <https://brooklynworks.brooklaw.edu/blr/vol82/iss2/9>

¹⁵⁰ Renewables 2014: Global Status Report. Renewable Energy Policy Network for the 21st Century (May 2019), p. 101 https://www.ren21.net/wp-content/uploads/2019/05/GSR2014_Full-Report_English.pdf

- Since 2012, the Energy Information Administration (EIA) says projections for new solar and wind capacity exceeded those for natural gas in all but two years — and that gap has widened since 2019.¹⁵¹
- According to EIA, renewables are reducing capacity factors at natural gas plants.¹⁵²
- As early as 2015, an analysis by the Union of Concerned Scientists warned of natural gas plants' becoming stranded assets.¹⁵³
- Electric vehicle battery costs have dipped 87% since 2008, CleanTech Media says.¹⁵⁴

Creating Greater Balance Between Duke Energy's Ratepayers and the Company

Given these extraordinary developments and the advantages of a decentralized electric system design, EWG respectfully suggests it's time for the state to take a step back and reassess the new normal as it relates to climate change and energy technology. In our estimation, actions can be taken to achieve greater balance between utility and customer interests that would be of great benefit to the state's economy and address climate challenges.

Rate Designs that Encourage Customer-Owned Solar While Keeping Duke Energy Financially Whole

In a recent demand-side management docket, advocacy organizations urged the Commission to initiate an investigation into decoupling to allow Duke Energy Carolinas and Progress to recover their authorized revenue requirement, but under the following parameters, which EWG supports.

¹⁵¹ See, *Natural gas and renewables make up most 2018 electric capacity additions*. EIA (May 7, 2018) <https://www.eia.gov/todayinenergy/detail.php?id=36092#tab2> and *New electric generation capacity in 2019 will come from renewables and natural gas*. EIA (Jan. 10, 2019) <https://www.eia.gov/todayinenergy/detail.php?id=37952> and *New electric generating capacity in 2020 will come from wind and solar*. EIA (Jan. 14, 2020) <https://www.eia.gov/todayinenergy/detail.php?id=42495> and *Renewables account for most new U.S. electricity generating capacity in 2021*. EIA (Jan. 11, 2021). <https://www.eia.gov/todayinenergy/detail.php?id=46416> and *Solar power will account for nearly half of new U.S. electric generating capacity in 2022*. EIA (Jan. 10, 2022). <https://www.eia.gov/todayinenergy/detail.php?id=50818>

¹⁵² *New renewable power plants are reducing U.S. electricity generation from natural gas plants*. EIA (Jan. 18, 2022). <https://www.eia.gov/todayinenergy/detail.php?id=50918>

¹⁵³ *Rating the States on Their Risk of Natural Gas Overreliance*. Union of Concerned Scientists (Oct. 2015), p 1. <https://www.ucsusa.org/sites/default/files/attach/2015/10/natural-gas-overreliance-technical-appendix.pdf>

¹⁵⁴ Shahan, Zachary. "Electric Vehicle Battery Pack Costs in 2021 – 87% Lower Than In 2008." CleanTech Media (Oct. 6, 2021) <https://cleantechnica.com/2021/10/06/electric-vehicle-battery-pack-costs-in-2021-87-lower-than-in-2008/>

Decoupling can and should be implemented in a way that protects consumers, and as part of its investigation, the Commission should consider safeguards such as the following, as recommended by John Howat of the National Consumer Law Center:

- 1) rate increase collars that limit upside rate volatility;
- 2) explicit regulatory review and adjustment of return on equity to account for altered utility risk profiles;
- 3) regular review and adjustment of baseline utility cost structure assumptions, including cost of capital; and
- 4) inclining block rates, where decoupling surcharges (assessed through kilowatt-hours) are tied to higher usage blocks and bill credits to the initial usage block.¹⁵⁵

With respect to rate structure, the idea would be “intelligently designed inverted rates, where the rule is ‘the more you use, the more you pay.’”¹⁵⁶ In other words, recovering costs through kilowatt-hour charges. Adjustments of return on equity and cost structure assumptions can be addressed in periodic rate cases, such as every three years.

We understand that the Commission believes that it may not have authority¹⁵⁷ to initiate a broader investigation into decoupling, given decoupling is authorized only under the performance-based rates provisions of HB 591.¹⁵⁸ But, if the commission has the authority, the concept appears to be weakened with respect to cost causation principles. However, a properly designed decoupling program, based on cost causation principles for recovering costs from the residential class in conjunction with robust energy efficiency and solar programs can keep DEC and DEP financially whole. EWG urges the Commission to discuss the necessity of this approach with the executive and leadership of the legislative branches via a legislative resolution or legislation. Until then, EWG urges the Commission to review the Arizona decision and the possibility of adding an earnings test to lost revenue recovery in North Carolina.

¹⁵⁵ Cavanagh, Ralph & Howat, John, *Finding Common Ground Between Consumer and Environmental Advocates*. ELECTRICITYPOLICY.COM (May 2012), p. 5.

¹⁵⁶ *Id.*, p. 4.

¹⁵⁷ Order Approving Revisions to Demand-Side Management and Energy Efficiency Recovery Mechanisms. NCUC Docket No. E-2, Sub 931 (Oct. 20, 2020), p. 13. <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=5aaea5ce-6458-41fe-ab2d-14d86881092d>

¹⁵⁸ NC Stat. § 62-133.16. (a)(2).

<https://www.ncleg.gov/Sessions/2021/Bills/House/PDF/H951v6.pdf>

Other Suggested Measures to Instill Market Discipline in Duke Energy

Public policy analyst John Burritt McArthur, in an analysis of the \$100 billion-plus in stranded cost recovery¹⁵⁹ afforded to nuclear power plants when the electric power wholesale market was deregulated, noted in 1998, “Regulation was not intended to shield careless investment or overinvestment. Such conduct prevents least-cost service and deprives consumers of just and reasonable rates.”¹⁶⁰

Indeed, stranded investment could become a significant issue for Duke not far into future. Vote Solar and Energy Transition Institute estimate that nearly \$5 billion in Duke's existing and planned gas investments will become stranded assets that ratepayers would pay.¹⁶¹

The Commission could instead assess market conditions based on the likelihood of investments becoming stranded. It would review recent national market conditions and projections, or the flow of capital to clean energy technologies, and, of course, cost. Utilities should have to prove that their investment proposals or retention of current assets will not become stranded because of new policies, trends and technologies.

Regulators could also consider near-term risks and long-term liability to ratepayers - for example, for nuclear construction, decommissioning, potential accidents and lifecycle costs, compared to cheaper and more efficient clean energy alternatives.

The same is true of high-risk, high-cost carbon capture. If the private sector won't invest in the technology unless construction and accident liability shifts to the public, including through excessive subsidies, indications are not to approve such projects or, in the alternative, foist the construction cost and liabilities onto stockholders, if possible.

Interestingly, state statute has a similar approach to coal and nuclear power plants:

A certificate for the construction of a coal or nuclear facility shall be granted only if the applicant demonstrates and the Commission finds that energy efficiency measures; demand-side management; renewable

¹⁵⁹ Kuplow, Doug. *Nuclear Power: Still Not Viable Without Subsidies*. Union of Concerned Scientists (Feb. 2011), p. 21.

https://www.ucsusa.org/sites/default/files/2019-09/nuclear_subsidies_report.pdf

¹⁶⁰ McArthur, John Burritt. *COST RESPONSIBILITY OR REGULATORY INDULGENCE FOR ELECTRICITY'S STRANDED COSTS?* The American University Law Review 47, no 4 (Feb. 1998), p. 859.

<https://digitalcommons.wcl.american.edu/cgi/viewcontent.cgi?article=1354&context=aulr&httpsredir=1&referer=>

¹⁶¹ Fitch, Tyler. Carbon Stranding: Climate Risks and Stranded Assets in Duke's Integrated Resource Plan. Vote Solar and Energy Transition Institute (Jan. 2021), p. 48.

https://votesolar.org/wp-content/uploads/2021/02/ETI_CarbonStrandingReport_2021.pdf

energy resource generation; combined heat and power generation; or any combination thereof, would not establish or maintain a more cost-effective and reliable generation system and that the construction and operation of the facility is in the public interest. In making its determination, the Commission shall consider resource and fuel diversity and reasonably anticipated future operating costs.¹⁶²

Provisions such as these should be expanded to include natural gas power plants and include energy storage in the assessment of alternatives to assess a true “clean energy portfolio.”¹⁶³

A used and useful standard could be imposed on all power plant infrastructure investment to ensure that stockholders, not ratepayers, bear the risk of construction.¹⁶⁴ Risk-shifting mechanisms, such as construction work in-progress (CWIP), should be eliminated from statute.

Similarly, electric system reliability should also be tied to resiliency. As the distributed grid offers the surest means to provide ride-through capability in the wake of storms, requires far less water, and has solar and storage resources that can be bundled to provide grid services (including reducing peak demand), state policy should mandate analysis that assesses the availability of distributed resources to provide the same services as proposed utility-scale resources and include such analyses in integrated resource planning. This is not to say that utility-scale renewable and storage resources will not be required. However, prioritizing resiliency in terms of maintaining service in anticipation of climate impacts, could avert unnecessary transmission, as in California, and central station power generation.

A competitive bidding process for capacity additions would boost renewables and control costs. Third-party aggregators should bundle rooftop solar and storage capacity, and ratepayers should be compensated when their assets are used for energy supplies.¹⁶⁵

¹⁶² North Carolina Stat. 62-110-1.(e) <https://codes.findlaw.com/nc/chapter-62-public-utilities/nc-gen-st-sect-62-110-1.html>

¹⁶³ See, generally, Dyson, Mark. A Bridge Backward? The Risky Economics of New Natural Gas Infrastructure in the United States. RMI (Sept. 9, 2019). <https://rmi.org/a-bridge-backward-the-risky-economics-of-new-natural-gas-infrastructure-in-the-united-states/>

¹⁶⁴ See, e.g. Smith, Grant. “Unused and useless: States must act to end flawed natural gas plant bailouts.” Utility Dive (Opinion) (Jan. 11, 2022) <https://www.utilitydive.com/news/unused-and-useless-states-must-act-to-end-flawed-natural-gas-power-plant-b/616899/>

¹⁶⁵ Smith, Grant. “Energy equity: Reforming utilities’ business plans by rebalancing ratepayers’ financial risks.” Utility Dive (Sept. 7, 2021). <https://www.utilitydive.com/news/energy-equity-reforming-utilities-business-plans-by-rebalancing-ratepayer-1/606097/>

Ratepayers see a monthly bill. But to create greater understanding of their costs over the long term, utilities should create a line-item on ratepayer bills that projects their cumulative utility bill in 20 years, according to the current rates, rate structure and charges and adjusted on an annual basis as they change. We consider 20 years appropriate because that is the approximate lifetime of rooftop solar systems.

A decentralized electric system harbors many benefits but also costs for upgrading in distribution system, including accommodating electric vehicles. Reconfiguring the electric system in line with market trends and costs and the inevitable increasing threat of climate change impacts to the electric system and economy provides opportunities for significant utility infrastructure investment. North Carolina can't wait for Duke to decide this is good for its shareholders and remain in a virtual holding pattern while Duke waits on NuScale's units to be rolled out. That would be a highly risky, if not irresponsible, proposition for the state and Duke ratepayers.

X. CONCLUSIONS

State policy declares rates and charges should be "just and reasonable ... without unfair or destructive competitive practices... by avoiding wasteful, uneconomic, and inefficient uses of energy."¹⁶⁶

Duke is guilty of all of these. The company has mounted an incessant assault on ratepayer savings through rate designs and data manipulation inimical to energy efficiency and solar investments. The joint net metering application is a continuation of that strategy to pack as many of the company's revenue requirement into fixed charges as possible.

These are "destructive competitive practices" that will erode market discipline if fully realized.

What Duke is doing is reminiscent of a recent federal appeals court decision, declaring a public utility's efforts to derail customer-owned solar as a violation of anti-trust law. The U.S. Court of Appeals for the Ninth District ruled that:

[T]he [Salt River Project's Agricultural Improvement and Power District's] price plan 'discriminates against customers that use solar energy systems and disincentivizes further purchases and use of solar energy systems' by eliminating 'the economic value in investing in solar energy systems to self-generate electricity,' leading customers 'to obtain their electrical power needs exclusively from SRP.' According to [plaintiffs], '[t]he ... price plan makes it impossible for solar customers to obtain any viable return on a

¹⁶⁶ North Carolina Stat. 62-2(a)(4).

https://www.ncleg.gov/EnactedLegislation/Statutes/PDF/BySection/Chapter_62/GS_62-2.pdf

solar energy system investment, thereby eliminating any competition from solar energy.¹⁶⁷

The legal doctrine used by the federal appeals court may not apply to Duke, a utility regulated by the Commission, but the result is the same if Duke is successful in implementing its near and long-term strategy.

Duke is systematically arranging for the necessary legislative and regulatory context to slowly throttle its competition and setting a pace of change that adheres to its business plan. Duke's theory of gradualism uses every opportunity to cement control over the electric power system, eliminate competition and protect its existing investment while it plans for additional high-cost power generation options and boosting its stock price at any price – to ratepayers.

However, Duke's business plan is no longer viable. A new era of energy technology and capabilities is upon us that can truly address affordability, reliability and resiliency. The pace of climate change and its growing costs¹⁶⁸ do not leave the state much time to act.

II. RECOMMENDATIONS

EWG recommends that the Commission follow best practices for assessing solar costs and benefits and generally distributed energy resources per Karl Rabago's report.

To establish the proper framework for moving towards a least-cost electric system, emphasizing resiliency and a decentralized electric system, much more must be done on the policy front to protect North Carolina energy consumers.

In the interim, the proposed minimum bill should be rejected and realistic TOU rates adopted.

Date: March 29, 2022.



Grant Smith

¹⁶⁷ *Ellis v. Salt River Agricultural Improvement and Power District*, 432 F. Supp. 3d 1070 (D. Ariz. 2020).

¹⁶⁸ See, e.g. Allen, Jennifer. "Florence's Financial Toll Clearer Two Years On." CoastalReview.org (Sept. 9, 2022). <https://coastalreview.org/2020/09/florences-financial-toll-clearer-two-years-on/>

SMITH EXHIBIT 1

Grant Smith

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Energy, consumer and environmental advocate for 30 years with 20 years lobbying experience at the Indiana General Assembly. Management experience and experience before the Indiana Utility Regulatory Commission, with sound analytical, research, writing, and communication skills.

Professional Experience

ENVIRONMENTAL WORKING GROUP, Indianapolis, IN

Senior Energy Policy Director, August 2017 - Present

- Lead EWG's energy policy
- Co-author reports concerning Duke Energy and other utilities across the country, jobs in the renewables and energy efficiency sectors, hydrogen technology, energy and water
- Highlight trends in technological development in the energy sector
- Author blogs/articles on energy technology trends, policy, and regulatory developments on topics such as utility rate structures, energy subsidies, renewable power, nuclear and coal-fired power, alternative utility models, natural gas-fired power

CIVIL SOCIETY INSTITUTE, Newton, MA

Senior Energy Policy Advisor, June 2011 – August 2017

- Conducted research and drafted white paper and topic briefs on various issues, including energy policy and the energy transition, the utility sector assault on customer-owned solar, uranium mining, nuclear power, water policy and energy and agriculture impacts on water resources, frack sand mining, energy market trends
- Participated in press conferences
- Worked with local organizations with respect to power sector and water related issues
- Tracked power sector technological and policy developments for organizational partners
- Attended conferences with respect to power sector and water related issues
- Worked with consultants on reports on energy transition commissioned by Civil Society Institute

CITIZENS ACTION COALITION OF INDIANA, Indianapolis, IN

Executive Director, Citizens Action Coalition of Indiana (CACI), 2004 – 2011

- Performed all responsibilities for managing an organization including budgeting, staff mentoring program, prioritizing campaigns, overseeing canvas management staff, and public speaking on behalf of CACI

- Raised funds and assisted with foundation proposals to support CACI's energy work
- Worked with attorneys and expert witnesses before the Indiana Utility Regulatory Commission (IURC)

Director of Utility and Energy Programs, CACI, 1998-2004

- Lead lobbyist in charge of bill analysis, drafting, negotiation, memos
- Drafted position papers/memos on topics such as net metering, natural gas-fired "peaker" plants during the initial gas-fired power plant expansion, telecommunications, and biomass-fired power plants
- Lead organizer focused on the gas-fired power plant issue working with local ad hoc citizens groups
- Organized, scheduled, participated in press conferences to promote CACI's energy advocacy
- Contributed to the organization's newsletter on energy topics
- Public speaking advocating for CACI policy issues
- Participated in negotiations with utilities and regulators

Environmental Coordinator, CACI, 1986-1998

- Similar duties as above

Assistant Instructor in German, Indiana University, 1983-1985

- Taught beginning and intermediate German

Appointments

- Endowment Board member, Citizens Action Coalition of Indiana, 2016
- Present: Board Chair, Citizens Action Coalition of Indiana, 2014 - Present
- Legislative Chair, Hoosier Chapter Sierra Club executive committee, 2012 - 2018
- Citizens Action Coalition Education Fund Board, 2011 - Present
- Board Member, Hoosier Environmental Council, 2001 - 2004
- Appointed by the Governor to the Indiana Pollution Prevention Board, 1992 - 1994
- Appointed by the Governor to the Clean Manufacturing Advisory Committee, 1997 - 1998
- Appointed by President Pro Tem of the Indiana Senate to the Air Sub-Committee of the Environmental Quality Service Council of the Indiana General Assembly, 1997
- Governor's Pollution Prevention Awards committee (various times with respect to awards for manufacturers in reducing toxics usage and energy efficiency)

Awards/Recognition

- Recognition for Service from CAC's Board of Directors, 2011
- Proclamation As Honorary Indiana State Representative, 2011
- Recognition from Citizens Action Coalition for longtime service and dedication to the cause of economic and social justice, 2000
- Recognition from the Clean Manufacturing Technology and Safe Materials Institute (CMTI) located at Purdue University, the Indiana Department of Environmental Management's Office of Pollution Prevention and Technical Assistance and the Clean Manufacturing Board for assistance provided to the Institute in its efforts, 1999

- Recognition from CMTI for participation on the Pollution Prevention Measurement Method (3P2M) Work Group, 1995
- Recognition for service as a member of the Clean Manufacturing Technology Board, 1995
- Hoosier Environmental Council's Excellence in Advocacy Award for the design and successful lobbying effort with respect to the passage of the state's clean manufacturing program, 1990

Published Article

Grant Smith, "Indiana's Voluntary Approach to Pollution Prevention." Pollution Prevention Review, Spring 1997

Education

INDIANA UNIVERSITY, Bloomington, IN

- Master of Arts in Teaching German, 1985
- Max Kade Fellow, 1982
- Bachelor of Arts in German and History, 1980
- University of Hamburg, West Germany, 1978 – 1981

Addition Skills

Bilingual: German and English