



As a preliminary matter, while the Council applauds the Commission for seeking comments from all interested stakeholders on the implementation of the 2019 Act in advance of the filing of a specific case pursuant to the Act, this opportunity to provide comment should not and cannot be considered as a surrogate or substitute for allowing those individuals, organizations, or businesses that seek intervention and satisfy the standards in the Commission regulations for intervention, from being made parties to individual rate cases brought pursuant to the Act. As noted by the Commission in a February 18, 2019 Letter to Senator Brandon Smith, Chair of the Senate Natural Resources and Energy Committee, regarding a proposed (and ultimately rejected) floor amendment to Senate Bill 100, the rate cases are the processes by which jurisdictional utilities could propose, and the Commission could evaluate, a change in the valuation of the electricity fed into the grid by an eligible customer-generator:

The original provisions of Senate Bill 100 create a transparent process that would have allowed broad participation among all stakeholder interests with the ability of the Commission to fulfill its statutory directive to establish rates that are fair, just and reasonable to all ratepayers.

*February 18, 2019 Letter to Senator Brandon Smith*, annexed as Attachment 1.

The Council concurs with the Commission that *broad participation among all stakeholder interests* should be part of any such rate case, and anticipates that

the Commission will grant intervention to assure such broad participation, just as it did when the initial model net metering tariff and interconnection guidelines were developed following adoption of net metering by the Kentucky General Assembly.

The Council hopes that this comment period will assist all stakeholders and the Commission in framing the issues and understanding the concerns of other stakeholders in advance of the filing of a specific rate case, and will provide opportunities to work collaboratively toward developing reasonable, fact-based policies that are fair to all stakeholders, and the development of rates for crediting of distributed generation under the Act that are fair, just, and reasonable to participating and non-participating customers.

Prior to providing specific comments, the Council believes that there are a few key points that should guide the Commission's review of any proposed tariff pursuant to the 2019 Act.

First, the Commission must assess the full range of costs *and* benefits specific to each utility in establishing the rate at which energy fed into the grid by net metering customers will be credited. As noted by the Commission in the February 18, 2019 to Senator Brandon Smith:

Utilities and the territories they serve have quite distinct differences, and it is because of these variations that the ratemaking process should reflect a utility's unique characteristics and the specific cost of serving that utility's customers. The same holds true for examining the quantifiable benefits and costs of net-metered systems.

*February 18, 2019 Letter to Senator Brandon Smith, Attachment 1.*

Second, KRS 278.466 allows utilities to use the ratemaking process to recover costs necessary to serve its net metering customers, "without regard for the rate structure for customers who are not eligible customer generators." The utility proposing an alternative rate structure for customers taking service under the replacement tariff bears the burden of demonstrating through sufficient data and appropriate analysis, that any changes to the rate design, including the current fixed charge currently applicable to both participating and non-participating ratepayers of that class, are fair, just, and reasonable, and properly allocate costs of service and credit for benefits (including avoided costs). Despite spending copious amounts of money to convince legislators and ratepayers to the contrary, no evidence has been produced to date from any jurisdictional utility in Kentucky that net metering customers cost more to serve than other residential customers, or that any material cross-subsidization is occurring intra-class between participating and non-participating ratepayers. The Council's own analysis, which did not account for any benefits provided by net metering

customers to other customers, the grid, or the utility, showed no evidence of cross-subsidization occurring between customer classes at any more than a miniscule level. This finding is consistent with the 2017 Lawrence Berkeley National Laboratory Report *Putting The Potential Rate Impacts of Distributed Solar Into Context*, which concluded that “for the vast majority of states and utilities, the effects of distributed solar on retail electricity prices will likely remain negligible for the foreseeable future.” The 2017 LBNL Report, authored by Galen Barbose, is appended as Attachment 2.

Additionally, while utilities deserve an opportunity to seek to recover their costs and a fair rate of return on prudent investments for providing reliable service through fair, just, and reasonable rates, abrupt changes to the current net-metering relationship would violate the rate-setting principle of gradualism and could dramatically slow the rate at which distributed generation from renewable sources is incorporated into the grid.<sup>2</sup> A significant reduction of the value of the credit provided for fed-in electricity from distributed generators under the net-metering tariff, could encourage those customers to exit the grid

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<sup>2</sup> Naim R. Darghouth, *Net Metering and Market Feedback Loops: Exploring the Impact of Retail Rate Design on Distributed PV Deployment*, Lawrence Berkeley National Laboratory Energy Technologies Area July 2015, annexed as Attachment 3.

entirely, to the detriment of the system and other customers. Changes to net metering valuation necessarily have policy implications that affect economic development, utility customers, both participating and not, and the environment; all of which deserve consideration.

Finally, as the Commission noted in the February 18, 2019 letter, it has “broad authority to consider all relevant factors presented during a rate proceeding, *which would include evidence of the quantifiable benefits and costs of a net-metered system.*” (Emphasis added). The consideration of “quantifiable” benefits of distributed solar should include those benefits recognized by the jurisdictional utilities when they have proposed and requested Commission approval for utility-installed solar capacity.

These issues are discussed in greater detail below.

**I. Net Metering Reform is a Complex Topic and a Wide Variety of Stakeholders with Unique Interests Should be Given the Right to Intervene in Individual Rate Cases to Ensure Full Consideration of the Issues.**

The Kentucky Resources Council (“KRC” or the “Council”) was founded in 1984, and since then has worked to ensure that individuals affected by environmental and energy policy decisions have a voice in the policy-making process. KRC provides, without charge, legal and technical assistance to those who live

“downhill, downwind, or downstream,” and whose homes, health, lands, and quality of life are threatened by environmental and energy policy decisions that too often are made without consideration of their unique voices. In this role, KRC has represented numerous clients before this Commission and has consistently represented specific groups of organizations and citizens with unique and important interests distinct from the general “consumer.”

Until recently, the Kentucky Resources Council’s clients have consistently been granted permission to intervene in various proceedings before this Commission, including rate cases. However, last November, this Commission denied the request of the Metropolitan Housing Coalition to intervene in a case where LG&E and Kentucky Utilities requested an average rate increase of \$9.63 per month for KU customers. The Sierra Club, Association for Community Ministries, and the Community Action Council were also denied intervention. As the Commission is aware, those movants have challenged their exclusion and that case is currently pending before the Kentucky Supreme Court.

While the Council appreciates the Commission’s attempt to develop a record to draw from in considering individual rate proceedings that may be filed after January 1, 2020 proposing to change the valuation of electricity generated by eligible customer-generators under the net metering tariff, inviting general

public comments on net metering in this case is not a substitute for the ability of an interested stakeholder to participate fully as an intervening party in an individual utility's net metering rate case, where each party presents testimony and evidence under oath and subject to cross-examination, and where the record is developed with respect to data and factors specific to the utility and its unique service territory. Net metering reform is one of, if not the, most hotly contested utility issues throughout the nation, with consumers and other stakeholders engaging and seeking to participate in the policy making process at unprecedented levels. It is also a complex undertaking in which there is no consensus among states. Given the wide variety of unique interests that will be at play in these proceedings, a fair rate structure for net metering can only be established when the full gamut of interested stakeholders are given the opportunity to participate fully in individual rate cases. As such, those with specific interests and information, such as low-income advocates, potential solar net metering customers, solar installers and businesses, environmental groups, and others that meet the legal requirements should be given a seat at the table to ensure a fair process and an outcome that all parties will respect as legitimate.

The Council appreciates the recognition by the Commission, in the February 18, 2019 Letter to Senator Brandon Smith, that the costs and benefits of net-

metered systems for each utility system may vary depending on the utility's "unique characteristics and the specific cost of serving that utility's customers," and that in the individual rate case in which the examination of the "quantifiable benefits and costs of net-metered systems" will occur, "broad participation among all stakeholder interests" should be allowed.

**II. In Determining the Dollar Value of The Credit Provided to Net Metering Customers for their Excess Energy Generation, the Commission's Analysis Should be Thorough and Transparent and Assess the Full Range of Costs and Benefits Provided by Distributed Technologies.**

The 2019 Net Metering Act redefines net metering going forward, so that instead of netting the difference between the amount of energy fed back to the grid and the amount of energy consumed on a kilowatt basis, net metering will be the difference in dollar value between the electricity fed back to the grid and the electricity consumed by the customer generator. The Net Metering Act directs the Commission to set the rate of compensatory credit in proceedings initiated by one or more utilities, which will necessarily involve determine the value to the utility, other customers, and the grid, of the energy the customer-generator feeds back to the grid. Numerous studies and state utility commissions have considered this question and there is no overarching consensus as to how to value these resources. However, almost all methodologies agree that both the costs and

benefits of the distributed resource should be assessed and that the process should be based upon reliable data.

So too, this Commission has indicated that in a rate proceeding brought under the 2019 Act, it will receive and consider evidence “of the quantifiable benefits and costs of a net-metered system” as being relevant factors in the rate proceeding. Attachment 1, p 2.

Utilities frequently argue, and will likely argue in this case, that net metering customers should be compensated at the “avoided” cost rate under PURPA, which is the cost the utility would have to pay to purchase or generate energy itself. However, the avoided cost rate fails to recognize that net metering customer-generators are not utilities and such generation is very different than that of a traditional power producer. Unlike power purchased from a traditional producer or produced by the utility, the utility incurs no transmission and little-to-no distribution costs since customer-generated energy is either consumed on site or consumed by the customer’s neighbor, the next closest energy user in the system. In addition, line losses, which average about five (5) percent of electricity transmitted and distributed annually in the United States, are avoided with

customer-generated energy, resulting in further savings.<sup>3</sup> Thus, any proposal to credit net metering customers at the avoided cost rate, fails to take into consideration the unique characteristics of distributed generation and the benefits utilities receive from these energy sources in comparison to other wholesale power purchases.<sup>4</sup> The Commission has itself noted that a categorical setting of the rate to be credited for fed-in electricity would be arbitrary, since that “[b]enefits of generation from net-metered systems vary for a number of reasons, including locational benefits, specific utility load factors, etc.” While a rate *formula* may be established by the Commission in a rate case under the 2019 Act, the specific costs and benefits will vary in value depending on the “unique characteristics” of the utility, including the rate design and territory served.

While it is clear that net metering provides benefits to utilities, as well as to other customers and the grid, there is no clear consensus on a valuation methodology for quantifying the rate that should be paid to consumers. While the weight given to various factors may necessarily be specific to the location or

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<sup>3</sup> U.S. Energy Information Administration, available at: <https://www.eia.gov/tools/faqs/faq.php?id=105&t=3> (based upon data averaged from 2013-2017).

<sup>4</sup> The General Assembly considered, and rejected, setting the value of fed-in electricity from net-metering systems, at the avoided cost.

utility,<sup>5</sup> there is an overwhelming consensus that distributed energy generation fed back to the grid can and does provide a host of benefits, including those described above but also others that differentiate customer-sited generation from wholesale power purchases. This full range of benefits, in addition to costs, should be taken into account in coming to a fair valuation to credit net metering customers for the excess energy they produce.

In recent years, numerous cost-benefit, location-specific studies have been done relating to net metering and distributed solar<sup>6</sup> and several additional studies have reviewed solar valuation studies in order to understand trends and explore ways to standardize valuation methodologies. These studies show at the very minimum that an assessment of a range of benefits in addition to costs is standard. Most, if not all studies take into account avoided energy costs and avoided capital and capacity investment, and a majority of the studies consider

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<sup>5</sup> For example, many studies add value for aiding in meeting a solar carve out requirement for renewable energy portfolio standards, however, this would not be applicable in a state like Kentucky that does not have a renewable energy portfolio standard. Thus, while other studies are instructive, variables used in computing the value of solar in Kentucky must be specific to the unique situation existing in the Commonwealth.

<sup>6</sup> While the Kentucky Net Metering Act applies to other forms of renewable energy besides solar, we focus on solar here since it is by far the most common form of net metered energy in Kentucky and nationwide and most valuation studies focus on solar. The principles and analysis here can apply equally to other renewable energy options, as well.

reduced financial risks due to predictable pricing of net metered solar, reduced costs of environmental compliance, and avoided greenhouse gas emissions.<sup>7</sup>

Other categories assessed by at least some studies include grid resiliency, other environmental benefits, and societal benefits.

As a recent analysis by ICF for the U.S. Department of Energy notes, the value of solar in any given study necessarily depends on the data considered and assumptions made.<sup>8</sup> The study explains the important differences that caused the studies analyzed to arrive at varying conclusions:

Some differences are caused by variables that are geographically and situationally dependent, while other differences are driven by the input assumptions used to estimate their value. Studies use a range of assumptions for factors that influence results, such as marginal unit displacement, solar penetration, integration costs, externalities, and discount rates. Furthermore, the stakeholder perspective – whether costs and benefits are examined from the view of customers, the utility, the grid, or society at large – is a key influencer of the methodology employed by the studies and their resulting direction and outcomes.

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<sup>7</sup> ICF, “Review of Recent Cost-Benefit Studies Relating to Net Metering and Distributed Solar (May 2018) (prepared for the U.S. Dept. of Energy) available for download at: <https://www.icf.com/blog/energy/value-solar-studies>; Environment American, “Shining Rewards: The Value of Rooftop Solar Power for Consumers and Society” (2016), available at: <https://environmentamerica.org/sites/environment/files/reports/AME%20ShiningRewards%20Rpt%20Oct16%201.1.pdf>.

<sup>8</sup> ICF, “Review of Recent Cost-Benefit Studies Relating to Net Metering and Distributed Solar (May 2018) (prepared for the U.S. Dept. of Energy”) available for download at: <https://www.icf.com/blog/energy/value-solar-studies>

Overall observations from this analysis show, not surprisingly, that a major challenge in studying and developing an approach to [net energy metering], the value of solar, and [distributed energy resource] valuation is that some value components are relatively easy to quantify, while others are more difficult to represent by a single metric or measure.<sup>9</sup>

Recognizing a need for a standardized approach, both the Interstate Renewable Energy Council and the National Renewable Energy Laboratory have developed guides for regulators to use in assessing the costs and benefits of distributed renewable energy.<sup>10</sup> The Interstate Renewable Energy Council study came to three major conclusions on valuing distributed solar generation (“DSG”):

- DSG primarily offsets combined-cycle natural gas facilities, which should be reflected in avoided energy costs.
- DSG installations are predictable and should be included in utility forecasts of capacity needs, so DSG should be credited with a capacity value upon interconnection.
- The societal benefits of DSG policies, such as job growth, health benefits and environmental benefits,

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<sup>9</sup> *Id.* at iii.

<sup>10</sup> Interstate Renewable Energy Council, “A Regulator’s Guidebook: Calculating the Benefits and Costs of Distributed Solar Generation,” (October 2013) available for download at: <https://irecusa.org/2014/02/solar-will-you-marry-me-for-a-contract-period-of-20-years/>; National Renewable Energy Laboratory, “Methods for Analyzing the Benefits and Costs of Distributed Photovoltaic Generation to the U.S. Electric System (September 2014), available at: <https://www.nrel.gov/docs/fy14osti/62447.pdf>.

should be included in valuations, as these were typically among the reasons for the policy enactment in the first place.<sup>11</sup>

The National Renewable Energy Laboratory model focused on recommended methodologies for calculating costs and benefits from the utility perspective.

Despite the decision to focus on the utility perspective and not the customer and societal perspectives,<sup>12</sup> the NREL model recommends, and provides methods for calculating the following broad categories of costs and benefits: 1) energy displaced by customer-generated energy; 2) environmental benefits and costs, including avoided emissions, avoided water use, and avoided land impacts; 3) transmission and distribution losses; 4) generation capacity value associated with deferral of capital investments; 5) transmission capacity value for reducing the

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<sup>11</sup> Interstate Renewable Energy Council, “A Regulator’s Guidebook: Calculating the Benefits and Costs of Distributed Solar Generation,” 3 (October 2013) available for download at: <https://irecusa.org/2014/02/solar-will-you-marry-me-for-a-contract-period-of-20-years/>

<sup>12</sup> However, the report recognizes that there are additional costs and benefits from the perspective of other stakeholders that were not included in the report. “While various benefits and costs can accrue to different entities—such as utilities, consumers, and society as a whole—the focus here is primarily on quantifying the benefits and costs from the utility or electricity-generation system perspective and providing the most useful information to utility and regulatory decision makers.” National Renewable Energy Laboratory, “Methods for Analyzing the Benefits and Costs of Distributed Photovoltaic Generation to the U.S. Electric System, 1 (September 2014), available at: <https://www.nrel.gov/docs/fy14osti/62447.pdf>.

need for additional transmission capacity; 6) distribution capacity value for reducing the need from distribution capacity; 7) benefits and costs of ancillary services (operating reserves and voltage control);<sup>13</sup> 8) other benefits and costs such as fuel price hedging/diversity and market-price suppression.<sup>14</sup> While these models add to a dizzying array of costs and benefits that can be assessed and varying methodologies for calculating those, it is regardless important for the Commission to consider the host of benefits provided by net-metered energy sent back to the grid, in addition to the costs, and to consider the costs and benefits not just to utilities, but to a variety of stakeholders and society as a whole.

Despite the variability of methodologies used and factors considered and the locational differences between states, is noteworthy that a significant number of studies have found that the value of customer-generated distribution generation is *higher* than the retail rate. Environment America Research and Policy Center conducted a review of sixteen (16) analyses on the value of rooftop solar in 2016.<sup>15</sup> The studies reviewed were published between November 2012

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<sup>13</sup> The penetration rate of net-metered distribution generation in Kentucky almost certainly too small to have a quantifiable impact in this category.

<sup>14</sup> National Renewable Energy Laboratory, “Methods for Analyzing the Benefits and Costs of Distributed Photovoltaic Generation to the U.S. Electric System (September 2014), available at: <https://www.nrel.gov/docs/fy14osti/62447.pdf>.

<sup>15</sup> Environment American, “Shining Rewards: The Value of Rooftop Solar Power for Consumers and Society” (2016), available at:

and August of 2016 and include analyses undertaken in a variety of states for or by public utility commissions, environmental groups, utility companies, and consulting firms. On average, the studies found that the median value of rooftop solar was 16.35 cents per kWh while the average residential electric rate was 13.05 cents per kWh. Thirteen of the sixteen studies found that the value of rooftop solar was higher than Kentucky's average retail rate of electricity, which is 8.57 cents per kWh as of 2017.<sup>16</sup> Of the three studies that did not, two were written by or commissioned by the utility industry.

In 2016, the Brookings Institute also analyzed "the accumulating national literature on costs and benefits of net metering," and found that these studies, whether conducted by PUCs, national laboratories, or academia, increasingly conclude "that the economic benefits of net metering actually outweigh the costs and impose no significant cost increase for non-solar customers."<sup>17</sup> An assessment of solar valuation studies by the Rocky Mountain Institute reached similar conclusions and found that the average value of solar of the studies assessed was

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<https://environmentamerica.org/sites/environment/files/reports/AME%20ShiningRewards%20Rpt%20Oct16%201.1.pdf>.

<sup>16</sup> U.S. Energy Information Administration, "State Electricity Profiles," available at: <https://www.eia.gov/electricity/state/kentucky/>

<sup>17</sup> Mark Muro and Devashree Saha, "*Rooftop solar: Net Metering is a Net Benefit*," (May 23, 2016), available at: <https://www.brookings.edu/research/rooftop-solar-net-metering-is-a-net-benefit/>

17 cents per kWh, compared to an average residential retail rate of 12.5 cents per kWh.<sup>18</sup>

Similar conclusions have been reached in other southeastern states comparable with Kentucky in terms of solar penetration. A 2014 study commissioned by the Mississippi Public Utilities Commission found that after comparing the per-MWh costs of distributed solar generation to its benefits, expressed as avoided costs, distributed solar would provide levelized net benefits to Mississippi over a period of 25 years.<sup>19</sup> The study concluded that:

[S]olar net metered projects have the potential to provide a net benefit to Mississippi in nearly every scenario and sensitivity analyzed. This may never happen if net metering participants are not expected to receive a reasonable rate of return on investment.<sup>20</sup>

In addition, while the Mississippi study found a net benefit from net metering, it is noteworthy that this analysis did not include potential environmental and public

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<sup>18</sup> Rocky Mountain Institute, Energy Innovation Lab, *“A Review of Solar PV Benefit and Cost Studies”* (Sept. 2013), available for download at:

<https://rmi.org/insight/a-review-of-solar-pv-benefit-and-cost-studies/>

<sup>19</sup> Elizabeth Stanton, et al., Synapse Energy Economics, Inc., *“Net Metering in Mississippi”* (Sept. 19, 2014), available at: <https://www.synapse-energy.com/sites/default/files/Net%20Metering%20in%20Mississippi.pdf>

<sup>20</sup> *Id.* at 49. The study found that residents would need to receive slightly above the retail rate for energy sent back to the grid to make solar economical, however, these conclusions may be different now given that the costs to install rooftop photovoltaic systems have dropped since 2014 when this study was completed.

health benefits and instead focused on the money that utilities would save for every MWh of distributed solar adopted. When environmental and societal benefits have been considered along with avoided costs, the benefits of distributed generation have been even higher. For example, a 2015 study commissioned by the Maine Public Utility Commission assessed a value of solar of 33 cents per kilowatt hour, compared to an average retail rate of just 13 cents per kilowatt hour when reductions in air and climate pollution and other societal benefits were also taken into account.<sup>21</sup>

As to whether the mitigation of climate change and reduction of greenhouse gas emissions should be considered a quantifiable benefit, the Council believes that it must. There are several sources to which the Commission could look to assign a dollar value to mitigation of GHG emissions. A number of utility IRPs have, as part of demonstrating that a particular mix of generation and other measures represent the least cost alternative, assigned a range of values to GHG emissions, assuming as reasonable the observation that GHG emission control under the Clean Air Act will occur and that such costs must be considered in charting a course to meeting customer demand in the future. Additionally, in

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<sup>21</sup> Clean Power Research, “Maine Distributed Solar Valuation Study” (March 1, 2015), available at: <https://www.nrcm.org/wp-content/uploads/2015/03/MPUCValueofSolarReport.pdf>

filings before this Commission, jurisdictional utilities have recognized the value of solar as a hedge against GHG emissions, and have requested approval by the Commission of solar additions to their generating assets for that reason.

While some utilities in Kentucky have argued that the benefits of solar are “intangible” and “lack market value” when advocates of distributed renewable generation have raised the issue of GHG emission mitigation, utilities have themselves identified those very benefits as reasons for approving new utility-owned solar arrays.

In defending the proposal to construct a 10-mW solar array in the Public Service Commission Case 2014-00002 as the least-cost option to “meet customer needs while at the same time complying with recently enacted and anticipated air quality regulations in the most cost-effective manner,” the Chief Operating Officer of Louisville Gas and Electric Company made these observations *under oath*:

“[C]onstructing the Brown Solar Facility will allow the Companies to add a renewable resource with relatively minor impact to customer revenue requirements in the coming years.”

“[T]he Brown Solar Facility will broaden and further diversify the Companies’ fuel supply sources and reduce future greenhouse gas emissions.”

“The Companies believe it is prudent at this time to construct a facility to expand their renewable energy sources. A number of developments have

enabled the Companies, for the first time, to present a feasible proposal to the Commission for a solar generation facility. The declining price of solar panels, available federal tax credits, and renewable energy certificates have helped create this opportunity.... These developments, along with the increased likelihood of carbon constraints, have created a reasonable opportunity for the Companies to add a renewable source to their generation portfolio and gain the valuable experience that will result from constructing and operating that source.”

Thus, according to the sworn testimony of the COO for LG&E/KU, adding renewable energy to the utility portfolio has measurable value, the likelihood of carbon constraints and decline in future greenhouse gas emissions have tangible value, and diversification of fuel supply sources likewise has measurable value.

Other testimony in that case indicated that expanding solar generation produced benefits:

“The Companies believe it is prudent at this time to construct a facility to expand their renewable energy sources.”

“Given the increasing likelihood of carbon constraints, the ability to sell renewable energy credits, and the availability of federal tax credits if a solar facility is operational by the end of 2016, the Companies believe a solar facility will be a prudent fuel-diverse addition to the generation portfolio and will reduce future greenhouse gas emissions.”

In describing the factors that led to the decision to construct the combined-cycle gas and the solar arrays, the LG&E/KU witness in charge of energy supply and analysis gave these factors as being key to the decision:

[The] decision was reached after an extensive process that considered: (1) the Companies' load forecast and the uncertainty associated with it; (2) the impact of the Companies' demand-side management ("DSM") programs on future generation resource needs; (3) the potential for future regulation of greenhouse gas ("GHG") emissions by the U.S. Environmental Protection Agency ("EPA"); (4) the issuance and evaluation of a Request for Proposals ("RFP") for capacity and energy to replace the retired generation facilities and meet future load growth; and (5) the uncertainty associated with future natural gas prices.

Distributed solar provides many of these same benefits to the utility and other customers that the utility-owned array would, according to the utility witnesses, provide with respect to price volatility, adapting to greenhouse gas regulation, and more.

With respect to whether GHG emission mitigation has quantifiable value, the prefiled written testimony in that case of Mr. Sinclair argued that it does:

Q. You have previously testified that regulation of CO<sub>2</sub> was essentially "unknown and unknowable." Has your position changed?

A. Somewhat. As I said, the future remains highly uncertain regarding CO<sub>2</sub> regulation in the U.S. Many people believe that the Clean Air Act is not really suited for regulating CO<sub>2</sub> emissions and that new legislation is needed from Congress. Given the current climate in Washington, it is hard to envision bipartisan support for GHG legislation. Second, court challenges continue related to past actions taken by EPA to regulate CO<sub>2</sub> emissions and threats of future litigation are being made should EPA press ahead on regulations for existing power stations. In this environment, much remains unknown about if, when, and how CO<sub>2</sub> might be regulated in the future. However, the Companies feel that enough is known that the risk of future

CO2 regulations should be part of a 30-year analysis related to the next generation resource and that a resource should be economically robust with or without future CO2 regulations. I would add, however, that there is not enough known about the potential for CO2 regulations to evaluate material changes to the Companies' existing generation fleet." (Italics added).

Mr. Sinclair also noted that:

"I would point out that the Companies are recommending the construction of a NGCC unit and a solar facility, both of which become more economically attractive the greater the weight one places on future CO2 emission costs."

"While the Brown Solar Facility is not a lowest reasonable cost resource absent REC prices greater than \$57/REC, as can be seen in Tables 35, 36, and 37 in the Resource Assessment, the Companies are proposing to move forward with the project because *(i) it is a prudent hedge against both GHG regulations and natural gas price risk; (ii) it will reduce the Companies' GHG emissions; (iii) it affords the Companies the opportunity gain operational experience with an intermittent renewable resource; and (iv) it does not materially add to revenue requirements over the next 30 years.*" (Emphasis added).

Thus, what tipped the scales in favor of solar even where renewable energy credits are below the cutpoint that they would make the solar array the least-cost resource was, according to the utility witness, the value of solar as a prudent hedge against greenhouse gas regulations and natural gas price risk, and the reduction it would provide in GHG emissions by the companies. These same

benefits accrue to the utility and other utility customers from an increase in distributed solar generation, yet the utilities claim that those values are intangible and unquantifiable in the latter context.

In the 2013 LG&E and KU Resource Assessment in Case No. 2104-00002, it is noted that:

“As long as Kentucky does not have a renewable portfolio standard, the Companies would have the option to sell the Renewable Energy Certificates (RECs) that are created when the facility produces electricity. Today, the market price in Ohio for solar RECs from Kentucky is \$24-28 per REC.”

“Given the increasing likelihood of CO<sub>2</sub> constraints and the ability to sell Renewable Energy Certificates (“RECs”), the Companies also recommend building a 10 MW solar facility at the existing E.W. Brown station. The solar facility is a prudent hedge against both GHG regulations and natural gas price risk, it will reduce GHG emissions, it affords the Companies the opportunity to gain operational experience with a solar PV resource, and it does not materially add to revenue requirements over the next 30 years.”

The testimony of John Voyles on behalf of LG&E/KU further underscores that there are tangible, measurable benefits to expanded solar generation within a utility system in the Commonwealth:

Given the increased likelihood of carbon constraints, the Companies believe the Brown Solar Facility will be a valuable addition to their generation portfolio[.]

Finally, the testimony of the Director of Environmental Affairs in support of the E.W. Brown solar array noted the value of solar with respect to environmental permitting and regulatory compliance costs, noting that “[t]here will be no requirements for an air permit or water withdraw/discharge permit.”

It is curious indeed that when expanding solar generation is proposed by the utility, values and benefits described as “intangible” and “unquantifiable” take on a quantifiable, measurable, and tangible form. In weighing the costs and benefits of distributed solar generation to a utility system and to other customers, it is clear from the testimony of the witnesses in the Brown solar array case that the value of solar as a prudent hedge against greenhouse gas regulations and natural gas price risk, and in the reduction it would provide in GHG emissions for the companies, is both quantifiable and substantial.

In sum, a full range of costs and benefits should be assessed by the Commission in determining the rate of compensation for excess energy produced by net metering customers. In assessing benefits from the utility perspective, the vast majority of studies cited above support the inclusion of benefits beyond the almost universally agreed benefits of avoided energy costs and capital investments. Additional benefits appropriate for consideration are described above and should be considered in any comprehensive analysis. In addition, the

benefits and costs assessed should include benefits beyond those from the utility perspective, such as job growth (or lack of job losses), public health, and other environmental benefits. Finally, in analyzing the costs and benefits the Commission chooses to take into account, the methodologies employed to calculate those benefits should be evidence-based and reasonable.

**III. Available Data Does not Support the Utilities' Argument that Net Metering Customers are Causing Cost Shifting or that Net Metering Customers Are Not Paying Their Fair Share of Fixed Costs.**

In addition to arguing that excess renewable energy generation from customers should be compensated at the utility's avoided cost rate, the utilities have argued that solar net metering customers do not pay their fair share for the costs of service and that non-participating customers, and particular low- or fixed-income customers, are being required to subsidize the participating ratepayers. The utility industry makes these same arguments across the country and would have consumers and policy makers believe that these arguments are true regardless of the unique situations in each state. While some states with high levels of distributed energy penetration may have legitimate concerns that cost shifts do or could occur, the assertion that distributed energy customers in Kentucky are not paying their fair share or are being subsidized by other ratepayers has not been supported by any data provided by the utility companies

in Kentucky. Absent such evidence, there is no basis in this state and at this time for imposing additional charges on customer-generators. Instead, the Council's own analysis using publicly available data shows that any cross-subsidization is negligible.

First, all residential customers in each utilities' service area pay the same fixed service charges that are designed to recover the costs to maintain the grid, including net metering customers. These charges have increased drastically in many service areas in recent years, and utilities continue to request increases in fixed charges for *all* customers to compensate for a lack of customer growth and a reduction in per capita energy usage across the board, a trend that is anticipated to continue.<sup>22</sup> While the costs net metering customers incur for the electricity they consume are offset by electricity they supply back to the grid, these credits count only against energy consumed, not other fixed charges. Thus, net metering customers pay the same fixed charges as all other residential customers every month, regardless of any credits they receive for energy produced.<sup>23</sup> As the

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<sup>22</sup> See, e.g., *In the Matter of: Electronic Application of Kentucky Utilities Company for an Adjustment of its Electric Rates*, Case No. 2018-00294; *In the Matter of: Electronic Application of Louisville Gas and Electric Company for an Adjustment of Its Electric and Gas Rates*, Case No. 2018-00295.

<sup>23</sup> While the utilities will argue that these fixed costs do not capture the total cost of service and that some costs are built into the volumetric rates, that is not a net metering issue, but an overarching ratemaking issue that implicates the

utilities continue to seek upward adjustments in their fixed customer charges and to move costs from the volumetric to the meter charges, any perceived intra-class “subsidization” will become all the more marginal.

Second, solar net metering has such low penetration rates in Kentucky, (which under the now “hard” cap of 1% will remain low), that any impact to other ratepayers is negligible, if not undetectable. The Kentucky Resources Council did an analysis of the economic impact on residential customers from net-metered energy sold back to the grid at retail rates using 2016 data from the Department of Energy’s Energy Information Administration. The analysis looked at the cost to each utility for crediting net metering customers at the retail rate rather than the avoided cost rate, with an assumed difference between the two of roughly seven (7) cents per kilowatt hour, for excess power supplied to the grid. Contrary to the utilities’ arguments that crediting net metering customers at the retail rate results in cross-subsidization, our analysis found that for 2016, the economic impact for any non-participating customer ranged from a high of 4 cents per month, or 48

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continuing problem of a utility business model built largely around selling increasing amounts of electricity while demand continues to decline. Isolating and according disparate rate treatment for customers who use less electricity because of generation of electricity from solar panels, than is accorded other customers in the same class who may use less electricity due to efficiency investments or weatherization, for example, is hardly fair, just, or reasonable.

cents per year, to a low of 0.1 cents per month, or 1.3 cents per year. The average economic impact on non-participating customers was 4 cents per year. Thus, while the utilities argue that cost shifting is occurring in some jurisdictions, the reality in Kentucky is that any cost-shift or cross-subsidization is negligible.<sup>24</sup>

A January 2017 study by the Lawrence Berkley National Laboratory confirms this analysis on a nationwide level.<sup>25</sup> According to this report, at a solar net-metering penetration rate of 0.4% and with purely volumetric rates, the impact to average retail electricity prices is no more than three one-hundredths of one cent per kWh. Kentucky currently has a distributed solar penetration rate of less than 0.1% and utilities charge a fixed rate which is not subject to reduction through net metering, in addition to volumetric rates. This means the impact to retail electric prices in Kentucky should be even lower than projected in this report for the foreseeable future. Furthermore, because the 2019 Net Metering Act caps net metering at 1% of a utility's peak load, utility companies are not

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<sup>24</sup> Tom FitzGerald, "The Economic Impact on Kentucky Residential Customers of Energy 'Sold' To Utilities From Net Metering Solar Customers in 2016," (February 28, 2018) annexed as Attachment 4.

<sup>25</sup> Galen Barbose, "Putting the Potential Rate Impacts of Distributed Solar into Context" (Lawrence Berkeley National Laboratory, Jan. 2017) available at: <https://emp.lbl.gov/sites/all/files/lbnl-1007060.pdf>

required to offer net metering when penetration rates rise to a level where retail rate net metering is projected to have impacts on non-participating ratepayers.

Further, while Kentucky utilities may have a monopoly in their service territories, that monopoly status does not prohibit customers from seeking to reduce their energy consumption or reliance on energy from the grid. Utility customers have always had the option to take whatever measures they see fit to control their own energy use and reduce their bills by using less energy. To compensate net metering customers at anything less than the retail rate for energy they produce and which is used behind the meter to reduce their own energy consumption is contrary to this principle and treats net metering customers differently than all other customers that seek to reduce their energy usage. This is unreasonable, unfair, and contrary to longstanding ratemaking principles.

In conclusion, the utility industry's argument that solar net-metering customers are not paying their fair share to upkeep the grid and that their decreased energy usage and utility credits they receive for energy produced are creating an unfair burden on other ratepayers is simply not true in Kentucky. As the analysis above makes clear, there is no need to raise rates on net metering customers to recover for any cross-subsidization because net metering

customers' effect on other customers is negligible. Imposing additional fixed costs on net metering customers above what other retail customers pay or putting net metering customers in a separate rate class is contrary to the requirement that rates be fair, just, and reasonable, and is not supported by any evidence provided by the utilities to date. Any assertion by the utility industry that cost shifts are occurring or that net metering customers impose additional costs on utilities must be supported by valid, transparent data.<sup>26</sup>

**IV. The Commission's Decisions Relating to Net Metering Should Take into Account General Principles Inherent in Ratemaking and Consider the Public Policy Impacts of Any Significant Changes to the Current Compensation Scheme.**

Finally, in assessing any changes to the current compensatory credit formula under the 2019 Net Metering Act, the Commission has recognized that the standard principles of utility ratemaking apply (Attachment 1 p. 2) and that the establishment of what are fair, just, and reasonable rates requires taking into account the impact its decisions will have not just on utility companies, but on

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<sup>26</sup> Note also that cross-subsidization within a class is inherent in flat rate electricity pricing. Ahmad Faruqui, *The Ethics of Dynamic Pricing*, 23 *Electricity J.* 13, 19 (July 2010) ("A flat rate that charges the same price around the clock essentially creates a cross subsidy between consumers that have flatter-than-average load profiles and those that have peakier-than-average load profiles. This cross subsidy is invisible to most consumers but over a period of time it can run into the billions of dollars.").

other stakeholders, as well. The Commission has historically considered such factors as economic development and environmental protection in approving rates and should be as mindful of those factors in this case. In addition, this Commission has the benefit of having seen the impacts in other states that have resulted from drastic changes in net metering policy. Given some of these consequences, which in some cases have necessitated a reversal in policy, the Council urges the Commission to consider the long-term implications of any changes to the pre-Net Metering Act compensatory credit scheme and make prudent decisions that are fair to all stakeholders.

First, any changes in utility rates for net metering customers should allow customers that want to subscribe to net metering to be able to simply calculate their potential rate of return based on their intended usage. Residential consumers are not as savvy as commercial and industrial customers and should not be forced to rely on a solar energy installer to calculate their expected rate of return if the rate structure is too complicated. For consumers to be protected, they must have the ability to understand the rate of return on an investment in a solar system. This includes not only being able to calculate the rate, but also certainty in what the rates will be over time. Thus, any rate structure should be straightforward and understandable to the average residential ratepayer.

In addition, in considering changes to net metering compensation rates, the Commission must consider the economic development impacts such a decision might have on Kentucky as a whole. The solar industry is one of the fastest growing industries in the entire nation. Although only .10% of Kentucky's electricity generation is supplied by solar, as of 2018, 1410 people worked in the solar industry in Kentucky and solar jobs are expected to grow 10% in 2019. Kentucky ranked 17<sup>th</sup> in the nation in solar jobs added in 2018, despite ranking 45<sup>th</sup> for installed solar capacity. In addition, 56 solar companies operate in Kentucky.<sup>27</sup> Nationwide, solar installers represent the fastest growing profession in the entire country, with a growth rate of 63% expected through 2028 and paying median salaries of \$42,680.<sup>28</sup>

In other jurisdictions unexpected and dramatic changes to net metering have resulted in crippling impacts to the solar industry. In addition to significant economic impacts on a viable and growing industry, drastic changes in net metering have also resulted in the need to go back and revise these policies after these unintended consequences become apparent. This puts additional strain on

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<sup>27</sup> The Solar Foundation, "Kentucky Solar Jobs Census 2018," available at: <https://www.thesolarfoundation.org/solar-jobs-census/factsheet-2018-KY/>

<sup>28</sup> U.S. Bureau of Labor Statistics, "Occupational Outlook Handbook: Fastest Growing Occupations," available at: <https://www.bls.gov/ooh/fastest-growing.htm>

already limited government resources, from legislators, utility commissioners, and judges hearing appeals. Furthermore, it creates even more uncertainty for consumers interested in investing in rooftop solar and stunts an industry that has seen rapid growth in recent years and is projected to grow far more than most industries.

For example, in 2015 in Nevada, regulators tripled the fixed charges solar customers would pay over the next four years and reduced the credit received for excess energy supplied to the grid by more than 75%. Prior to these changes, Nevada had one of the most robust and developed solar markets in the country and the industry employed thousands of people. After the new rates took effect on January 1, 2016, major solar companies left the state altogether and hundreds of solar workers were laid off. New solar installations dropped 92 percent in the first quarter of 2016. The fallout from this decision was so significant that the Nevada legislature, almost unanimously, passed new legislation, A.B. 405, in 2017 in attempt to remedy these adverse impacts and the Nevada Public Utilities Commission issued an order later that year implementing the new law and restoring net metering compensation to close to the retail rate.

One of the most important factors in promoting renewable energy, and any business or economic development initiative generally, is stability. As shown by

the situation in Nevada, drastic, unexpected, or retroactive shifts in policy could paralyze the solar industry and cause major harm to business owners and workers that made investments in their businesses and careers under existing policies with the expectations that those policies would continue until a 1% cap on net metering was reached, as stated in Kentucky's former law. Thus, any changes in net metering policy should provide stability and long-term regulatory certainty to all parties, including utilities, businesses, energy consumers, and independent energy producers. Drastic changes to policies in which heavy investments have been made stunt economic development and are unfair to energy businesses that are not guaranteed a significant rate of return on their investments like the utility companies.

The Public Service Commission has considered economic development principles in the past in approving rates and has approved lower rates for industrial customers that meet certain qualification to encourage job creation and economic development in the state. While utility rates must always be fair, just, and reasonable, the Commission is authorized to and does consider economic development impacts in ratemaking decisions.<sup>29</sup> All things being equal, Kentucky

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<sup>29</sup> See *PSC of Ky. V. Commonwealth*, 320 S.W.3d 660 (Ky. 2010) (Finding that the PSC could authorize utilities to offer reduced gas and electric rates to industrial customers to promote economic development in Kentucky).

could add 1000 solar jobs over the next decade. Alternatively, if states like Nevada serve as any guide, Kentucky could lose out on those 1000 potential jobs and see additional job cuts if residential solar demand flatlines due to dramatic policy changes. While economic development should clearly not be the only consideration in the Commission's decision and the decision should be fair and reasonable to all stakeholders, avoiding drastic impacts to a significantly growing industry that provides well-paying jobs to Kentuckians should and can be avoided.

Finally, in making decisions in this case, it is important to keep in mind that utility regulation springs from the state's police power to protect the health, safety, morals and general welfare of its citizens. Regulation was a response to the growth of the public's dependence on powerful utilities that provide essential services, and governments sought through the police power to protect the public from the effects of unchecked monopoly power. Thus, in assessing a value of solar, it is important to not only assess criteria that impacts utilities, but to also assess public interest factors, since the role of the Commission stems from the power of government to protect the health, safety, morals, and general welfare of the public.

## **CONCLUSION**

The Council appreciates this opportunity to provide preliminary comments in response to the Commission's invitation for public comment. These comments will be supplemented with oral and written testimony at the public hearing scheduled in this case, and copies of all reports to which these comments refer are available in digital format or have been included as attachments.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Tom FitzGerald', with a long horizontal stroke extending to the right.

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