

**COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION**

**In the Matter of:**

<b>APPLICATION OF KENTUCKY POWER COMPANY</b>	)	<b>CASE NO.</b>
<b>FOR AN ADJUSTMENT OF ITS</b>	)	<b>2020-00174</b>
<b>ELECTRIC RATES</b>	)	

**DIRECT TESTIMONY OF JOSHUA BILLS,  
COMMERCIAL ENERGY SPECIALIST, MOUNTAIN ASSOCIATION**

Tom FitzGerald  
Kentucky Resources Council, Inc.  
P.O. Box 1070  
Frankfort, KY 40602  
(502) 875-2428  
FitzKRC@aol.com

Counsel for Joint Intervenors Mountain  
Association, Kentuckians For The Commonwealth,  
and the Kentucky Solar Energy Society

October 7, 2020

1 **Q: Please state your name, title, and business address.**

2 A: Joshua Bills, CEM, Commercial Energy Specialist, Mountain Association, 433 Chestnut  
3 Street, Berea, KY 40403.

4 **Q. On whose behalf are you testifying today?**

5 A. My testimony is filed on behalf of the Mountain Association.

6 **Q: Please describe your current position, your education, and background.**

7 A: Mountain Association for Community Economic Development, DBA Mountain  
8 Association is a Community Development Financial Institution (“CDFI”) working with  
9 people in eastern Kentucky and Central Appalachia to create economic opportunity,  
10 strengthen democracy, and support the sustainable use of natural resources. Our energy  
11 programs work to strengthen the region’s residents, small businesses, local governments,  
12 communities, and non-profits by helping to reduce energy costs and consumption,  
13 increase energy security, and build resilience in the face of climate change. Mountain  
14 Association has worked with hundreds of small commercial and nonprofit Kentucky  
15 Power Company (“KPC”) customers over the last 12 years providing technical assistance  
16 and/or financing to access investments in energy efficiency and renewable energy,  
17 resulting in reduced operating expenses. At the same time also assisting contractors with  
18 technical trainings and equipment financing to grow their businesses.

19 I’ve been employed in energy related work at Mountain Association since 2008.  
20 As a Certified Energy Manager (“CEM”), employed in the position as Commercial  
21 Energy Specialist, I serve as Mountain Association’s subject matter expert on commercial  
22 energy efficiency and renewable energy. Specific responsibilities include promoting and  
23 delivering energy analyses, technical assistance and energy consulting services to

1 enterprises and local governments in eastern Kentucky for implementing efficiency and  
2 renewable energy projects. Such assistance includes utility billing reviews for identifying  
3 energy cost saving opportunities, supporting clients with project implementation,  
4 applying for grants and utility rebates (when available) and evaluating return on  
5 investment. Another function of my position is to actively engage in regulatory or  
6 legislative changes that could impact our energy sector work.

7 In regards to my background, I've been involved in energy efficiency and  
8 renewable energy work in Kentucky for over 25 years. I advocated policy allowing for,  
9 and worked on Kentucky's first solar electric net metering installation in Mt. Vernon, KY  
10 in 2001 and 2002. This was accomplished with Kentucky Utilities pilot net metering  
11 electric service, resulting from Commission Case No. 2001-00304. Later, I engaged in  
12 providing testimony in support of passage of Kentucky net metering legislation in 2004,  
13 and engaged in updated net metering legislation in 2008, Senate Bill 83, which among  
14 other things, directed the Commission to establish interconnection and net metering  
15 guidelines. Subsequently, I intervened in the Commission's administrative case  
16 establishing those guidelines, Case No. 2008-00169. In 2019, myself and others  
17 employed at Mountain Association submitted comments to the Commission's  
18 administrative proceeding to consider the implementation of Senate Bill 100, An Act  
19 Related to Net Metering, Case No. 2019-00256.

20 As for education, I obtained a Bachelor of Science in Mechanical Engineering  
21 from Washington University in St. Louis and a Bachelor of Arts in Mathematics from  
22 Berea College.

23 **Q: What is the purpose of your testimony?**

1 A: The purpose is to examine KPC’s proposal of N.M.S. II tariff, reviewing aspects related to  
2 G.S. and L.G.S. customer participation. Also, I will share some experiences of Mountain  
3 Association clients have had in participating in N.M.S.

4 **Q. What trends have you seen with N.M.S. customer-generators in KPC service**  
5 **territory?**

6 A. Over the last two years I have seen a growing interest in solar and participation in KPC’s  
7 N.M.S. tariff, not only by KPC’s Residential Service (“R.S.”) customers, but also by KPC’s  
8 General Service (“G.S.”) and Large General Service (“L.G.S.”) customers. In KPC’s  
9 response to Staff 4-82, a correction was made listing 10 of 46 net metering customers, as  
10 the end of the test year, being commercial customers. At the beginning of the test year there  
11 was just 5 commercial net metering customers (as shown by the April 2019 commercial  
12 entries with billing values in KPCO\_R\_KPSC\_4-82\_Attachment1). Mountain Association  
13 has been involved in supporting most of these commercial solar installations with financing  
14 and technical assistance. We’ve worked with additional commercial solar installations  
15 since the end of the test year. As such, we question KPC’s response to Joint Intervenors 2-  
16 003, in which they list no change in G.S. or L.G.S. capacity (231.40 kW for G.S. and 30.00  
17 kW for L.G.S.) between the end of the test year and September 16, 2020. In that time span,  
18 we have worked with two L.G.S. customers, one that installed 45.00 kW (AC) capacity  
19 with billing that shows meter change, reflecting new register entry on their bill for kWh  
20 “Rcvd” starting August 17, 2020 and a second L.G.S. customer that installed 12.32 kW  
21 (AC) capacity with billing that shows meter change, reflecting new register entry on their  
22 bill for kWh “Rcvd” starting August 26, 2020. Based on KPCO\_R\_KPSC\_4-  
23 82\_Attachment1, along with these two commercial installs we are aware installed between

1 the test year end and September 16, 2020, we find an increase of capacities since start of  
2 test year for L.G.S. customers going from none to 87.32 kW and an increase since start of  
3 the test year for G.S. customers from 123.80 kW to 231.40 kW, an increase of 87 percent.  
4 During the test year the increase in Residential Service (“R.S.”) capacity, based on  
5 KPCO\_R\_KPSC\_4-82\_Attachment1 increased from 116.30 kW to 318.20 kW, an increase  
6 of 174 percent.

7 While we see growing interest in customer invested net metered solar, across all  
8 three rate classes, with positive impacts on growing an area of work opportunity in the  
9 region, it must still be noted how small current participation in KPC service territory is. At  
10 the end of the test year, the total installed N.M.S. capacity of 579.60 kW was just 0.045  
11 percent of KPC’s 2019 1-hour system peak load of 1,297,000 kW listed in KPC’s response  
12 to Staff 4-82. With net metering cap set forth in Senate Bill 100 as 1 percent of 1-hour  
13 system peak load, there is room to grow over 22-fold from total installed capacity at the  
14 end of the test year before meeting this cap.

15 **Q: Why is it important to highlight G.S. and L.G.S. participation in N.M.S. tariff?**

16 A: G.S. and L.G.S customers, have a billing charge applied to monthly metered demand (kW)  
17 that is not applied to KPC Residential Service (“RS”) customers. Vaughan’s testimony  
18 Page 11 states, “The rate structures for customer classes that employ demand charges are  
19 better aligned with cost causation principles than those that do not because fixed costs are  
20 generally recovered through demand charge.” At the end of the test year, commercial  
21 N.M.S. customer capacity at 261.40 kW was 45 percent of the total N.M.S. customer  
22 capacity of 579.60 kW shown in KPCO\_R\_KPSC\_4-82\_Attachment1. With G.S. and  
23 L.G.S. N.M.S. participants, while true that they only pay for net energy consumed, they

1 are customers served under tariffs with demand rates, and KPC is able to recover much of  
2 its investment in fixed costs through the separate demand charge. Vaughan's testimony  
3 Page 26 and Exhibit AEV-3 describing the calculation of avoided cost rate of \$0.03659 per  
4 kWh for N.M.S. II does not address the impact of G.S. and L.G.S. participants paying  
5 demand charges from which fixed costs are generally recovered.

6 **Q. What are some benefits to G.S. and L.G.S net metering customer-generators that will**  
7 **be lost if N.M.S. II implemented?**

8 A. KPC's Equal Payment Plan ("Budget") and Average Monthly Payment Plan ("AMP") are  
9 only an assured option for R.S. customers (KPC Tariff Sheet No. 2-4). N.M.S. allows  
10 enterprises taking service under G.S. and L.G.S., not just an opportunity to invest in  
11 equipment to reduce their electricity use, but also an opportunity invest in equipment to  
12 level out their electric payments. Under N.M.S. excess generation kWh credits after netting  
13 within a billing cycle carry forward and offset billing cycles whereby customer's kWh  
14 consumption exceeds their generation. The proposal for N.M.S. II will greatly undo this  
15 investment opportunity to G.S. and L.G.S. customers for leveling out their electric  
16 payments by reducing the credit value that can be carried forward from one billing cycle  
17 to the next. Just as there are many homes heated with electricity in KPC's service territory  
18 that experience high winter electric bills, we've also realized through numerous billing  
19 evaluations, that many small business facilities in the territory are similarly heated with  
20 electricity and experience high winter electric bills that could be offset some from excess  
21 solar generation in non-winter months.

22 **Q. What other differences can you point out in regard to G.S. and L.G.S. N.M.S.**  
23 **participation versus R.S.?**

1 A. KPC’s response to Joint Intervenors 2-004 stated that commercial customers that have  
 2 three-phase service, taking N.M.S. do not need a meter replacement. With three-phase  
 3 service the meter would only need to be reprogrammed.

4 Commercial customers tend to have larger load profiles during the day than  
 5 residential customers. As such, commercial customers taking net metering service,  
 6 especially with current 45 kW individual system capacity cap, tend to receive a much  
 7 higher ratio of energy from their electric service provider than they deliver to the local  
 8 distribution grid. This holds true based on data in KPCO\_R\_KPSC\_4-82\_Attachment1.  
 9 Shown in Table below is the data summed up for residential and commercial totals.

	Annual					
	Billed (\$)	Billed (kWh)	Delv (kWh)	Rcvd (kWh)	Net (kWh)	Ratio Rcvd to Delv
Residential Total	\$ 38,938.55	305171	415115	113169	301946	27%
Commercial Total	\$ 106,569.53	844289	917375	74170	843205	8%

11  
 12 In our experience, KPC refuses to allow delta three-phase customers from  
 13 interconnecting generation equipment, without a service upgrade to wye three-phase  
 14 service. This upgrade cost, even for Level 1 applicants, defined as a generating facility that  
 15 is inverter-based and is certified by UL 1741 in the current Interconnection and Net  
 16 Metering Guidelines, is charged to the commercial customer. We are aware of one example  
 17 of this where the customer charge for the service upgrade exceeded \$5,000. We know of  
 18 two commercial N.M.S. customers that have had to pay for three-phase service upgrades  
 19 from delta to wye. Such commercial N.M.S. customers are paying for distribution upgrade,  
 20 which might otherwise be paid for by KPC. This is one issue to raise in a future review of  
 21 Interconnection and Net Metering Guidelines as this requirement does not hold true for  
 22 other utilities.

1 **Q: Describe some utility safeguards in current Interconnection and Net Metering**  
2 **Guidelines established in Case No. 2008-00169?**

3 A. The Final Net Metering-Interconnection Guidelines that came out of PSC Administrative  
4 Case 2008-0169 addressed aspects utilities raised at the time concerning cost-recovery. In  
5 the 23 page Guidelines, is included (condition 2—generation capacity will not exceed  
6 transformer nameplate rating on shared secondary and condition 1—on a distribution  
7 circuit, the aggregated generation on that circuit, including the proposed will not exceed  
8 15 percent of the Line Section’s most recent annual one hour load). This requirement limits  
9 utility costs that could associated with distributed net metering output getting to a point of  
10 potentially back-feeding a substation. This requirement virtually assures net metering  
11 generation never sees transmission infrastructure. It only interacts with the local  
12 distribution circuit. From the substation, someone installing solar panels has the same  
13 effect as insulating their house and downsizing their air conditioner capacity. From the  
14 substation view net metering is an energy efficiency measure.

15 **Q. Does the design of KPC’s N.M.S. II tariff reflect benefits to KPC that could result**  
16 **from updating Interconnections and Net Metering Guidelines?**

17 A. I did not see mention in Vaughan’s testimony of any consideration of updated  
18 Interconnection and Net Metering Guidelines impacts relating to KPC’s proposed N.M.S.  
19 II tariff.

20 As mentioned in our comments to the Commission’s administrative proceeding to  
21 consider the implementation of Senate Bill 100, An Act Related to Net Metering, Case No.  
22 2019-00256, we believe collaboration can bring the greatest benefit both to customer-  
23 generators and retail electric providers. Technology, including smart advanced inverters,



1 battery and solar module level control has improved substantially since the 2009 issued  
2 interconnection guidelines. Benefits available today include sophisticated monitoring and  
3 communication of the grid status, the ability to receive offsite operation instructions, and  
4 the capability to make autonomous decisions to maintain grid stability and reliability, such  
5 as:

- 6 • *Capability of “riding through” minor disturbances to frequency or voltage:*

7 Advanced inverters can direct a distributed generation system to stay online during  
8 relatively short, minor frequency or voltage disturbances.

- 9 • *Capability to inject or absorb electricity into or from the grid:* The capability of  
10 advanced inverters to feed electricity into or take electricity from the grid can help  
11 maintain system stability by keeping voltage and frequency level within specified  
12 limits.

- 13 • *Capability to provide a “soft start” after power outages:* Staggering the timing of  
14 the reconnection of distributed generation to the grid after an outage can help avoid  
15 spikes in active power being fed into the grid, limiting the risk of triggering another  
16 grid disturbance.

17 It is promising that the Commission has initiated a case to investigate and potentially  
18 modify and update net metering interconnection guidelines, Case No. 2020-00302. I urge  
19 KPC to hold off on implementation of N.M.S. II, or any changes to N.M.S. until Case No.  
20 2020-00302 is completed. Additionally, I second Mr. James Owen’s proposal in his  
21 written testimony that the Commission convene a Workshop or Administrative Case, to  
22 which all regulated utilities and interested stakeholders would be party, to develop a fair,

1 just, reasonable, and consistent methodology for analyzing the value of distributed  
2 generation and net metering, using a comprehensive benefit-cost analysis framework.

3 **Q. Does that conclude your testimony?**

4 A. Yes.

### CERTIFICATE OF SERVICE

This is to certify that electronic version of the *Direct Testimony of Joshua Bills*, is a true and accurate copy of the same document being filed in paper medium; that the electronic filing has been transmitted to the Commission on October 7, 2020; that there are currently no parties that the Commission has excused from participation by electronic means in this proceeding; and that an original and one copy in paper medium will be filed after the lifting of the state of emergency, in accordance with Commission Orders.



---

Tom FitzGerald

COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION

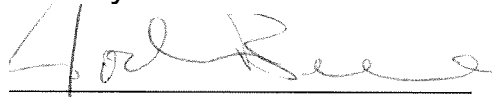
In the Matter of:

ELECTRONIC APPLICATION OF KENTUCKY )  
POWER COMPANY FOR (1) A GENERAL )  
ADJUSTMENT OF ITS RATES FOR ELECTRIC )  
SERVICE; (2) APPROVAL OF TARIFFS AND )  
RIDERS; (3) APPROVAL OF ACCOUNTING )  
PRACTICES TO ESTABLISH REGULATORY )  
ASSETS AND LIABILITIES; (4) APPROVAL OF )  
A CERTIFICATE OF PUBLIC CONVENIENCE )  
AND NECESSITY; AND (5) ALL OTHER )  
REQUIRED APPROVALS AND RELIEF )

CASE NO.  
2020-00174

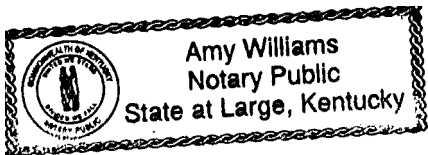
**AFFIDAVIT**

I hereby affirm that my prefiled direct testimony in the matter of *Electronic Application Of Kentucky Power Company For ( 1) A General Adjustment Of Its Rates For Electric Service; (2) Approval of Tariffs And Riders; (3) Approval Of Accounting Practices To Establish Regulatory Assets And Liabilities; (4) Approval of A Certificate Of Public Convenience And Necessity; And (5) All Other Required Approvals And Relief,* is true and accurate to the best of my information and belief.



Josh Bills

Subscribed and sworn to before me, a notary public in the  
of                                           by Josh Bills, this   10   day of October  
2020.



/: | . 'o  
; ; ; 'Py' lit' i' l' ; ; ; ; 79401

My commission expires   11/1   :   11/1     11/1