BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

In the matter of the General Investigation to Examine Issues Surrounding Rate Design For Distributed Generation Customers	)))	Docket No. 16-GIME-403-GIE

Reply Comments of Cromwell Environmental, Inc.

Comes Now Cromwell Environmental, Inc., and pursuant to the Scheduling Order governing this docket, submits its reply comments to the initial comments of other parties. The parties participated in two round table discussion sessions convened March 30, 2017, and April 13. 2017, which elucidated additional issues addressed here. CEI submits that the comments and discussion to date have failed to produce sufficient evidence to warrant the development of a separate tariff for net-metered renewable energy customers. The evidence does show that an independent study of the characteristics of usage patterns of net-metered renewable customers would be invaluable in guiding the future rate setting for customers with distributed generation. While the parties have discussed rate design alternatives, CEI submits that there is insufficient data to determine rates that would collect only those costs reasonably allocated to DG customers; however, once sufficient data can be obtained to allocate costs, CEI suggests that a minimum bill approach is superior to other proposed rate designs for DG customers.

CEI notes at the outset that the utility positions in this docket are apparently motivated by concern over fully collecting fixed operating costs and investment. This concern is most apparent in the comments of Westar where the fixed cost to serve a typical residential customer is portrayed as $77 while the customer charge is only $14.50, leaving the remainder of fixed costs to be collected through energy charges for energy consumed. (Initial Comments of Westar Energy, Inc., and Kansas Gas & Electric Company, p. 10, hereinafter "Westar Comments.") The real complaint of Westar is that it wants to collect more fixed costs through a fixed monthly rate;

it is the DG customer that Westar is singling out as the target for a higher fixed monthly rate, although DG customers comprise only a miniscule fraction of the total customers covered by current residential rates.

1. There is no need for a separate tariff for Distributed Generation customers at this time.

The distributed generation market in Kansas is still in its infancy; the number of customers and their usage is too small to have any meaningful impact on utility operations or revenue collection. In the evaluation of a distributed generation market, the Commission must distinguish between net-metered and parallel generation customers.

The characteristics of energy production and the statutory governance between the two forms of distributed generation are different and must be recognized as distinct. The two methods to interconnect DG are starkly different in their compensation to the DG customer and in the way the systems are designed. Net metered systems are generally designed to produce no more electricity than the customer's lowest month of consumption because excess credits hold little value at the end of the billing period. On the other hand, parallel generation systems are designed to minimize any excess electricity at any time to prevent any kWh from flowing back onto the grid. For a residential customer, this would be based on the customer's baseload consumption, which can be quite low in an empty house in the shoulder months. With parallel generation systems designed to avoid excess power to be distributed back onto the grid, the utility complaint that DG customers use their grid without paying for it, is even less applicable for those interconnected under parallel generation. The focus of this proceeding is net metered customers, and throughout this pleading only net metered customers will be discussed using the designation "DG."

While some utility participants in this docket raised the specter of dramatic under-collection of their fixed costs (Westar Comments, pp.2 ¶ 4, 11 ¶ ¶22 – 23), such fears are unfounded in face of actual statistics. For example, Empire District Electric Company states in its initial comments that it only has six DG customers and five of those connected in the past few months. (Empire Initial Comments, p. 2 ¶4.) Similarly, Midwest Energy, which concurs there should not be a separate rate class for DG (Midwest Energy Initial Comments, p. 5-6), indicated in responses to data requests that it has only 13 net-metered customers with an aggregate demand of 203.25 kw. (Response to CEI DR-2, Exhibit 1 attached.) Southern Pioneer Electric Cooperative weighs in with a total of 3 net metered customers with a total demand of 21.36 kw. (Response to CEI DR-2, Exhibit 2 attached.) Clearly the impact of these customers on the respective systems is deminimus. For these utilities, the sample size is so small that fashioning a rate to anticipate future DG customers could not reasonably be expected to produce accurate, reliable results.

Kansas City Power & Light Co. has slightly greater experience with DG installations, with 131 solar systems and 7 wind systems in place in its Kansas service area. (Brad Lutz Initial Comments, p. 5 – 7.) The installed solar capacity is 1200 kw which is still a very minor portion of the total usage of the KCPL Kansas System.

The Kansas utility with the greatest experience with distributed generation is Westar Energy. Westar reports a total of 508 net metered solar customers with an aggregate demand of 4460.083kw. Westar also reports 544.7kw demand from customers with net metered wind energy. Although these figures are more substantial than the number of customers at other utilities, the total customers and usage are a small fraction of the Westar system. The number of net metered customers is a small fraction of the total customers, and the demand of these net

metered customers is only 0.097% of the total Westar system demand. It is worth noting that the reported installed capacity per customer ranges from 0.119kw to 118kw. (Response to CEI DR-1, Exhibit 3 attached.)

The stated concern that fixed costs of operating the utility are not being collected simply cannot be occurring with any significance given the small number of customers and even smaller proportions of total service involved.

2. Data is insufficient to establish rates that will be just and reasonable.

Those who advocate the creation of a separate rate for DG customers rely upon generalizations and assumptions that are not specific to the Kansas experience. Studies presented previously by CEI for the states of Nevada, Mississippi, and Maine demonstrated the great diversity in DG in different regions of the country. It is known that even within the State of Kansas there is significant difference in the wind and solar potential from the west to the east. The impacts of these differences on the operation of distributed generation systems in Kansas are not known at this time. Not only are the differences in operation of the DG systems unknown, but the relationship to the different utility systems is also unknown. For example, Empire is a winter peaking system with system peaks occurring in the morning (Empire Initial Comments, p. 4 ¶ 8), while Westar is a summer peaking system with peaks occurring in the early evening (Westar Comments p.6 ¶10).

Perhaps the large number of unknowns in Kansas may explain the numerous incorrect observations made by various parties about the operational impacts of DG solar in Kansas. For example, in Figure 2, Witness Faruqui presents a comparison of a typical customer in Wichita, Kansas, with and without a solar installation. (Westar Comments, p. 6.) The comparison assumes that the solar array will equally offset the normal customer usage. However, since 2014

when the excess power rules were modified, solar arrays are not generally sized to equal the customer's usage, but instead are smaller than the customer's typical usage, particularly in the common case of a customer with a winter peak. This sizing maximizes the economic benefit to the customer but produces an operational characteristic different than that portrayed in Figure 2 presented by Witness Faruqui.

Likewise, Witness Brown offers multiple comments on the business plans and leases of Solar City, a firm that doesn't operate in Kansas and whose practices are markedly different than those of CEI and others who do operate in Kansas.

CURB expresses a number of concerns about ***potential*** problems with DG that ***may*** arise as DG is developed. CURB observes that widespread DG ***may*** result in additional operational costs (CURB Initial Comments, p. 9 ¶14) and fears that cross subsidization between customers ***may*** occur without proper rate design (CURB Initial Comments, p.11 ¶16). CURB does not argue that these concerns are present now, and acknowledges that currently DG customers make up only 0.02% of the customers in Kansas. (CURB Initial Comments, p. 18 ¶25) CURB tacitly concedes that DG poses no immediate threat to fairness and equity when it recommends that any rate design changes be pursued gradually. (CURB Initial Comments, p.18 ¶23) CURB also embraces thorough study to accurately determine costs and benefits of DG. (CURB Initial Comments p. 19 ¶26.)

In the Initial Comments of CEI, the contrasting usage patterns of sample solar customers were presented to illustrate the variations and complications of generalizing among solar DG customers. For convenience, these are repeated below:

Table 1: Examples of two consumers with average monthly electricity consumption			
	Modest demand, summer peak		**Heat pump with high winter demand**

Month	Usage (kWh)	Demand (kW)		Usage (kWh)	Demand (kW)
January	862	9.92		2,937	28.03
February	517	5.63		2,635	27.71
March	1,774	9.2		1,588	20.9
April	1,623	7.33		555	14.45
May	974	9.18		294	10.91
June	1,507	10.55		323	10.03
July	1,467	9.78		336	10.36
August	1,154	7.89		463	9.59
September	988	6.91		294	8.08
October	591	6.52		275	13.8
November	724	6.7		1,457	21.33
December	756	7.06		1,887	21.97
	12,937	8.06 (Avg)		13,044	16.43 (Avg)

Table 2: Examples of Moderate Energy users with varying monthly consumption and demand.

	Summer peak, Lower demand			Winter peak, higher demand	
Month	Usage (kWh)	Demand (kW)		Usage (kWh)	Demand (kW)
January	3,130	15.66		5011	29.42
February	2,781	14.00		5,177	31.46
March	2,370	13.65		3,452	27.4
April	1,427	10.55		1,410	29.15
May	1,850	11.38		639	25.72
June	2,454	12.85		767	12.93
July	2,540	13.00		957	12.48
August	2,951	15.94		1,069	13.6
September	1,795	14.26		574	11.02
October	1,275	10.40		454	19.85
November	1,855	9.83		3,111	28.36
December	2,829	11.11		4,134	28.83
	27,257	12.72		26,755	22.52

Table 3: Two customers with installed solar with varying monthly consumption

	Summer peak and 8.25 kW solar array			Summer peak and 5.72 kW solar array	
Month	Usage (kWh)	Demand (kW)		Usage (kWh)	Demand (kW)
January	**453**	9.78		**692**	**NA**
February	**280**	9.83		**307**	**NA**

March	**138**	8.25		**319**	**NA**
April	**-79**	8.67		**592**	**NA**
May	**159**	9.85		**1,381**	**NA**
June	**710**	11.28		**2,378**	**NA**
July	**546**	11.95		**2,316**	**NA**
August	**576**	13.26		**1,766**	**NA**
September	**243**	10.95		**1,044**	**NA**
October	**78**	9.17		**827**	**NA**
November	**289**	11.37		**766**	**NA**
December	**919**	9.8		**1,134**	**NA**
	4,312	10.35		13,522	

These examples show the actual diversity of usage patterns among solar customers. Deployment of a heavily demand-related tariff structure will result in equally dramatic differences in each respective customer's contributions to fixed utility costs, although all are residential customers.

Another significant variable involved in the calculation of a just and reasonable rate for customers with DG solar, is the amount of kwh of energy contributed by such customers to the utility grid when such customers' solar systems are producing more than needed for their own usage. Since July of 2014, customers no longer rollover their excess credits for future use, but instead get compensated at the utility's avoided cost rate for any excess (many utilities consider excess kWh a gift to the utility at the end of each billing period). From discovery responses in this docket (Exhibits 2 and 4 attached) it is clear that there are excess kilowatt hours being contributed and the trend is for increasing contributions of excess kwh. This is an important benefit conferred by DG customers that should be recognized in any DG tariff, but at this point the value of this benefit is uncertain.

One of the criticisms leveled against DG customers is that the intermittent usage patterns are incompatible with the utility system operations. (CURB Initial Comments, p.9 ¶14; Westar Comments, pp. 3-4,) Residential DG customers' power consumption patterns—like all

residential customers—are intermittent and determined more by the exigencies of appliances, weather, and work schedules, than by choice of the customer. Therefore, the usage patterns are not a justification for a separate rate structure. It is the contribution of power from the DG system that sets them apart from other residential customers.

Westar points to the infamous "duck curve" to support its claim that DG solar customers will impose additional costs on its operating system which costs are not collected under the present rate structure. (Westar Comments, Fig. 5, p. 18.) CEI first notes that the duck curve is developed from data in other jurisdictions where the solar market is developed to many orders of magnitude greater than the Kansas market. . Likewise, the utilities themselves are largely to blame for the "duck curve" as utility-scale solar dwarfs distributed generation in states like California, Arizona, North Carolina, and New Jersey and others. To wit, in early 2016, DG solar only accounted for 37% of installed solar in California, while in Arizona, North Carolina, and New Jersey, those percentages are 35%, 6%, and 66% respectively. (Stumo-Langer, Nick, "The State(s) of Distributed Solar", Institute for Local Self-Reliance, 29 Feb 2016, https://ilsr.org/the-states-of-distributed-solar/) While solar DG in Kansas probably contributes a percentage of total solar closer to New Jersey at this time, the interest of utilities in owning their own larger scale solar farms, will likely alter that in coming years. As far as the "duck curve" is an issue in states with larger penetrations of solar development, DG is but a minor contributor. In Kansas, too, in the last two years, the utilities have installed an estimated 3 MW of solar power, which is a high percentage of total installed solar capacity during this time period.

Further, the "duck curve" is an issue that can be solved with technology. In the early 2000's Kansas electric utilities worried about integrating wind power to their grid due to its intermittent nature. Now, they are adding wind to their production mix without mandate, due to

its low price of energy. Any technological obstacles that may have once existed, obviously are no longer an issue with wind generation. Similarly with rooftop solar, load control devices and storage enhancements promise relief if not outright solutions to the supposed duck curve problems.

There is reason to doubt the Kansas solar market will approach that of California because prices in the California market are much higher and incentive programs much more pronounced. To premise rates and tariffs in Kansas upon the duck curve projections is tantamount to setting rates upon conjecture while ignoring the obvious diversity in consumption and production of energy by DG customers. Such an approach is unreasonable and cannot be relied upon to develop effective rates.

In summary, the actual energy consumption, usage patterns, and operational characteristics of DG customers in Kansas are not sufficiently known to allow development of a rate design that is just and equitable. What is known is that there is substantial variation in both usage and energy production among DG customers. There is need for a Kansas-specific evaluation of DG usage before rates can be determined.

3. If separate rate structures are justified for DG customers, a minimum bill is the preferred mechanism for collecting additional fixed costs associated with DG customers.

CEI acknowledges that all customers must pay for the utility's costs of serving them, but no customer should be forced to pay more than the reasonably allocated cost plus reasonable return. At this juncture, it cannot be said that costs of serving a DG residential customer is significantly different than the costs of serving a typical residential customer. As discussed above, the group of DG customers in Kansas is simply too small and too diverse to allow valid generalizations to be drawn. For this reason, CEI has consistently advocated an in-depth study

of the Kansas experience to assess the actual costs attributable to DG customers taking into account variable usage and contributions to the system.

After gathering sufficient data, CEI suggests exploring the use of a minimum bill for DG customers rather than the three-part tariff with specific demand charge proposed previously by Westar. The demand rate presents equity issues because the measured demand may have no relationship to the utility operating costs, especially if a customer's peak demand is at times not-coincidental with the utility's peak demand. As the utilities frequently note, DG customers may require service at the most costly time of operation, or conversely, they may be a net producer of energy at the most costly time of operation. A monthly demand measurement would not capture this disparity. While this problem could be addressed in part with coincident peak demand rates, large scale deployment of this kind of rate at the residential level may not be feasible.

A minimum bill could be established using the actual costs of serving the DG group of customers, if those costs are demonstrably different than other residential customers. DG customers would pay energy costs and other customer charges and riders attributable to residential customers.

CONCLUSION

Net metered customers are a very small portion of the Kansas utility market and pose no immediate threat. There are significant variables that can dramatically affect the costs and benefits of DG customers to the utility system, including weather, the energy usage patterns of DG customers, changes in those patterns, the time and amount of energy produced. The actual costs and benefits cannot be determined without a full study of the Kansas market. If it is ultimately determined that DG customers impose additional costs, rates should be designed using

a minimum bill rather than three-part rates including a demand rate. In all cases, parallel generation customers must be distinguished and treated separately from net metered customers.

Respectfully submitted:

C. Edward Peterson, Ks. Bar No. 11129
5522 Aberdeen
Fairway, KS 66205
Tel. 816.365.8724
Fax. 913-722-0181
Email: ed.peterson2010@gmail.com
Attorney for Cromwell Environmental, Inc

Certificate of Service

The undersigned certifies that a true and correct copy of the foregoing pleading was served electronically upon all persons on the service list this 5th day of May, 2017.

C. Edward Peterson