BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Develop a Successor to Existing Net Energy Metering Tariffs Pursuant to Public Utilities Code Section 2827.1, and to Address Other Issues Related to Net Energy Metering.	Rulemaking 14-07-002 (Filed July 10, 2014)

COMMENTS OF NRG ENERGY, INC. ON NET ENERGY METERING TARIFFS

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NRG Energy, Inc. ("NRG") hereby submits the following comments to Administrative Law Judge Simon's *Ruling Seeking Comment on Policy Issues Associated with Development of Net Energy Metering Successor Standard Contract or Tariff* ("NEM Policy Issues") currently under consideration by the California Public Utilities Commission's ("CPUC" or "Commission"). NRG appreciates the thoughtful questions asked by ALJ Simon and provides the following comments on how the Commission can promote Net Metering 2.0 ("NEM 2.0") policies that provide the financial incentives necessary to promote California's renewable energy goals while not unduly compromising the long-term stability of the State's Investor Owned Utilities ("IOUs").

A. SUMMARY

NRG welcomes the opportunity to respond to Judge Simon's questions on compliance with Assembly Bill 327 ("A.B. 327"). The Commission's existing NEM 1.0 policies have contributed to the extensive growth in distributed renewable generation that California is currently enjoying. These comments highlight some of the high-level policy attributes that the Commission's NEM 2.0 strategies should include in order to continue to allow distributed

renewables continue to grow sustainably. In particular, NRG highlights the following policy themes that should guide California's consideration of NEM 2.0 policies:

- NEM 2.0 policies should provide adequate customer savings on their utility bills to warrant the continued adoption of distributed renewables. Those savings should be achieved though some combination of reduced consumption and net earnings from contract payments or tariff payments for net energy;

- NEM 2.0 should also provide for stability in the level of customer savings. To be effective, NEM 2.0 policies must provide customers with assurances that their savings will endure long enough for customers and distributed generation developers to make significant investments (or enter into long-term contractual relationships) in distributed renewable generation facilities;

- As renewables penetration in California continues, both wholesale and retail prices are expected to decline in the middle of the day. NEM 2.0 needs to provide value to customers under this future, especially in light of the Governor's goal of 50% of California's energy coming from renewables and the move towards Time of Use ("TOU") pricing; and

- The Commission should ensure that its Community/Shared Solar policies and its NEM 2.0 policies align in order to allow traditionally disadvantaged customers to enjoy the fruits of distributed renewable generation on a comparable basis with other Californians.

NRG looks forward to further discussion on these and other topics.

B. SPECIFIC RESPONSES TO QUESTIONS POSED BY ALJ SIMON:

1. *The form of the successor to the NEM tariff is described by the statute as a "standard contract or tariff."*

In answering this question, NRG interprets the differences between a "standard contract" and a "tariff" as follows:

A "standard contract" generally specifies the rates and terms of service and fixes key parameters for a period of time. In a contract, the rates, terms and conditions of service are all clearly spelled out in the standard contract and remain static during the period of service, which – assuming the terms are compensatory – gives customers or developers the needed financial confidence to make a long-lived investment in rooftop solar or other qualifying technology.

By contrast, a tariff applies generally to similarly-situated customers under a given rate schedule. Tariffs have historically been subject to change over time, meaning that the rates, terms and conditions associated with the production of renewable energy under a NEM 2.0 tariff could also vary. A tariff format thus generally increases the regulatory risk to homeowners, who may see the economics of their solar system improve or decline if the tariff they are subject to is revised materially.

While both approaches could work,[1] NRG favors moving towards a standard contract approach. A standard contract is best suited towards adopting a means of compensating renewable resources that ensures that the resource receives: (1) a stable and predictable revenue streams; (2) for a fixed period of time; and (3) does so in a format that is relatively easy for end-use customers to understand. While the Commission could achieve many of these same goals in using a tariff construct, tariff rates, terms and conditions are more likely to be subject to revision over time, which makes financing renewable investments more difficult and more expensive.

The obvious caveat to utilizing a standard contract formulation to comply with A.B. 327 is that the terms of the standard contract matter. In particular, any standard contract should emphasize the need for clear provisions allowing the Commission to resolve disputes, encouraging competition, and avoid boiler plate contractual language likely to confuse mass market customers. The Commission's prior standard contracts, such as the Renewable Market Adjusting Tariff ("ReMAT") or Renewable Auction Mechanism ("RAM"), have tended to be geared towards larger projects and include variable pricing and bidding provisions that decrease transparency for retail consumers, and thus are less suitable for a NEM 2.0 arrangement. For

[1] Note that the Commission should achieve the same rate stability through a tariff based mechanism as well. Indeed, various state commissions have adopted tariffs that fixed the rates, terms and conditions for the supply of renewable power to a utility for a given period of time.

example, under ReMAT, customers generally do not know the price they will receive for their solar production until approximately 60 days after the close of a given month. This type of rate uncertainty is difficult to explain to customers and generally makes customer-sited renewables more difficult to sell, finance, or deploy at scale.

Finally, NRG would support different standard contract provisions for various technology classes, retail rate schedules or sizes of distributed generation installations, as discussed in Questions 4 – 6 below.

2. *Section 2827.1(b)(1) directs the Commission to ensure that customer-sited renewable distributed generation (DG) "continues to grow sustainably." How should "sustainable growth" be defined? How should the definition be applied to the various elements of customer-sited DG? Include discussion of differing customer classes; differing renewable DG technologies; differing renewable DG applications; and any other groupings that may be relevant.*

In defining "sustainable growth", the most critical thing for the Commission to take to heart is the need to ensure that renewable distributed generation continues to offer customers a compelling value proposition, in terms of savings relative to their utility bill without distributed renewables. Without such a value proposition, customer sited DG growth simply will not be sustained.

NRG urges the Commission to think of "sustainable growth" as a standard contracts or tariffs that delivers three essential outcomes: (1) customers will receive sufficient value, in terms of revenues or savings, from their solar installation to make distributed renewable generation economically attractive when compared with utility-sourced power; (2) competitive renewables suppliers will continue deploying renewable resources at sufficient scale to allow for continued decreases in renewable infrastructure and deployments costs due to innovation, "learning by doing," and competitive market pressure; and (3) continued customer value and competitive deployment of distributed generation as California achieves its goals for renewable energy to

make up an increasing share of California's energy supply. This means NEM 2.0 must be designed to achieve these goals in conjunction with California's ongoing rate redesign efforts, its movement to TOU default rates, and the emerging trend towards daytime wholesale prices being "off peak" and evening prices being "on peak" – all of which will tend to make daytime utility rates, on their own, too low to sustain distributed renewables.

To better illustrate the challenge of achieving the statutory goal of sustainable distributed renewables growth through NEM 2.0, it is useful to first consider how NEM 1.0 created the customer value that has sustained renewable distributed generation growth so far. The value of distributed generation to a customer under NEM 1.0 is the sum of two basic components: the substitution of distributed energy for energy purchased from the utility (*i.e*, avoided utility energy purchases at the retail rate), and credit on the bill for net energy produced in excess of consumption at the retail rate during a billing period. For this value to be positive, the cost to the consumer of the solar system has to be less, on a per kWh basis, than the volumetric rate of the avoided utility purchases, and lower than the value of the net energy credits on the customer's utility bill. This latter condition is automatically true under NEM 1.0, since solar's effective costs per kWh are lower than current volumetric energy rates.

Now consider how NEM 1.0 would perform under mandatory Time of Use rates where the peak price period shifts to after sundown and the off-peak price period shifts to mid-day. With very low wholesale prices and TOU rates when the sun is shining – rates that are likely to fall far below the effective per kWh cost of solar – the customer value of avoided utility purchases could be low, or even negative. And with net energy credited at those same very low rates, the customer value of net energy production could also be close to zero, or even negative. Under such a regime, NEM 1.0 would clearly fail to sustain distributed renewables growth.

Instead, distributed solar could only be sustained by payments for all solar production – whether it avoids utility purchases or creates credit on the bill for a "sale" to the utility – that exceed the per kWh cost of the solar. Under TOU rates with the off peak price during the daytime, this could be achieved through an appropriately designed tariff or standard contract, but it could not be done through the NEM 1.0 mechanism of avoided purchases plus credit for net energy production at the retail rate.

Since the Commission has already determined to move to default TOU rates, with the option for customers to "opt out" to fixed rate schedules, a key question for designing NEM 2.0 is whether the "opt out" provision would create enough of a value proposition to save distributed renewables customers money relative to the TOU option without solar. Designing a NEM 2.0 system specifically for customers who opt out of TOU will only sustain distributed renewable growth if customers can save money by opting out of TOU rates and adopting distributed renewables.

Alternatively, NEM 2.0 may be able to allow competitive DG providers to offer customers value by providing a payment for *all* solar production, not just net energy production. In order to make renewable distributed generation systems attractive under either TOU or fixed rates, such an approach to NEM 2.0 would have to provide payments for solar production that would be sufficient to cover both the costs of installing and operating a distributed renewable system *and* result in a net reduction in the customers utility bill.

Without some such provisions, under either opt-out TOU rates or through some other form of tariff or contract, growth in renewable distributed generation is unlikely to be sustained as the amount of renewable energy increases in California. Such an outcome would clearly be at

odds with the statutory mandate of A.B. 327 to ensure that renewables penetration continues to grow at "sustainable" levels. The Commission will need to design NEM 2.0 to work, in combination with its evolving rate designs and with the inversion of peak and off peak prices that should be expected as renewable energy makes up an increasing share of California's energy supply.

Another challenge to sustainable renewables growth is the scheduled decrease of the federal Investment Tax Credit from 30% to 10% of a qualified investment at the end of 2016, which will put downward pressure on the customer value of distributed renewables. . NRG recommends that the Commission take into account both of these potentially bearish factors in crafting its NEM 2.0 policies.

One way to overcome both of these concerns is for the Commission to compensate distributed renewables at a fixed-price under the standard contract model discussed above. Otherwise, retail customers face a more difficult investment decision: install distributed renewable facilities today and hope that they remain economic, or wait on installing distributed renewables until there is additional rate clarity. A standard contract model (or a tariff that fixes the rate of compensation for a sufficient period of time) would avoid these concerns by giving retail customers an easy-to-understand and compelling economic case for being an early distributed renewable adopter.

NRG agrees that it would make sense to differentiate the payment stream for various technology classes, retail rate schedules or sizes of various distributed generation installations, as discussed in Questions 4 – 6 below.

3. *Section 2827.1(b)(1) directs the Commission to ensure that the standard contract or tariff includes "specific alternatives designed for growth among residential customers in disadvantaged communities."*

One of the most effective means of bringing the benefits of distributed renewables to customers in disadvantaged communities is to provide them the opportunity to subscribe to distributed energy resources that may be remote from their home or sized to accommodate multiple customers, thereby allowing for economies of scale. By untethering customers from needing to physically locate solar panels on their roofs (or other renewables at their homes), the Commission could open up the promise of distributed renewable power to many more people, including those in disadvantaged communities. In particular, shared solar allows for lower credit metrics to be used in signing customers up, in part because it is far easier to resell a subscription to shared solar than a rooftop system.

While issues surrounding community and shared solar are at least partially being considered in other Commission proceedings, it is desirable to keep shared solar projects and customer benefits for shared solar comparable with the benefits under NEM 2.0. Consideration here is appropriate to ensure that the Commission has a holistic approach to benefiting lower income or otherwise disadvantaged customers.

4. *Section 2827.1(b)(3) directs the Commission to ensure that the standard contract/tariff is "based on the costs and benefits of the renewable electrical generation facility."*

NRG interprets Public Utilities Code Section 2827.1(b)(3) as focusing on whether NEM 2.0 rules provides compensatory revenues to individual *facilities*. In other words, the Section 2827.1(b)(3) appears to require that the Commission establish rules such that a distributed energy resource provides a value stream sufficient to make investment in the facility attractive.

In determining the "costs" of distributed renewable, the Commission should include the costs of installing and operating a distributed renewable resource. In determining the "benefits" of distributed renewable generation, the Commission should consider factors such as the

decreased need to upgrade the transmission and distribution systems, decreased line losses,[2] and other general electric system benefits.

5. *Section 2827.1(b)(4) directs the Commission to ensure that the "total benefits of the standard contract or tariff to all customers and the electrical system are approximately equal to the total costs."*

NRG interprets Section 2827.1(b)(4) as requiring the Commission to examine the total benefits of encouraging the growth of distributed renewable at sustainable levels, which includes the long-run societal benefits of reducing the costs and improving the integration of distributed renewables.. The Legislature's use of the word "total" suggests that it intended the Commission to include such factors as the benefits of continued renewables growth in driving down the cost of renewables, improving the quality of California's air and water, reducing Greenhouse Gas emissions, and enhancing the growth of California's "green jobs" economy. Put another way, Section 2827.1(b)(4) suggests that the Commission should not limit the growth of distributed generation, as long as the total benefits of additional renewable facilities outweigh the costs.

6. *What, if any, inconsistencies might exist between the results of applying the directive in § 2827.1(b)(4) and the results of applying the directive in § 2827.1(b)(3), above?*

There is a potential tension between determining the costs and benefits of a particular facility (*i.e.*, the metrics specified (b)(3)) against the longer-term societal benefits in (b)(4). By their nature, the short-term cost/benefit analysis in (b)(3) understates the longer-term societal benefits of increased renewables penetration, such as lower cost renewable technology, improved integration of renewables, and more efficient energy utilization. In particular, the Commission should consider the benefits to California (and indeed the world) of using California rate design

[2] According to the New York Public Service Commission, "[a]voided line losses achieved by distributed generation can further improve system efficiency. Total line losses cost approximately $200-400 million per year." Case 14-M-0101 – Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision at p. 20 (issued Feb. 26, 2015).

policy to drive distributed renewables further down the cost curve towards mass deployment by ensuring that the development and deployment of distributed renewables remains financially attractive to the average California rate payer.

NRG recommends the Commission read the plain language of A.B. 327 as requiring more than simply summing the direct costs and benefits associated with distributed renewables deployment in setting NEM 2.0 policy. No matter how comprehensive, any study taking into account avoided transmission and distribution systems costs, decreased short-run and long-run marginal costs of running the distribution system, wholesale production cost savings, and the like, will not appropriate account for the "total" long-run societal benefits of increased deployment of environmentally beneficial renewable generation.

The best way for the Commission to avoid the conflict is to design its renewables compensation metrics in a manner that provides commercially available, competitive distributed renewable resources a reasonable opportunity to earn a profit while competing for customers. In other words, the Commission should design NEM 2.0 in a manner that expands the deployment of renewable distributed generation, continues to support competitive participants in the market, leading to further cost decreases in renewables deployment, again leading to further renewable deployment. This virtuous cycle appears to be exactly what the Legislature intended.

7. *Section 2827.1(b)(5) directs the Commission to allow, in the successor NEM program, projects larger than one megawatt (MW) that do not have a significant impact on the distribution grid, are sized to onsite load, and are subject to reasonable interconnection charges established pursuant to Rule 21 and applicable state and federal requirements.*

NRG recommends that the Commission use this proceeding to (1) align NEM 2.0 rules with the existing requirements around Rule 21 resources; and (2) adopt a rebuttable presumption that projects under 3 MW do not have a "signifiant impact" on the distribution grid, unless the

projects require upgrades or studies of the bulk power system performed by the CAISO. We discuss each issue in turn.

First, the Commission should consider increasing the maximum size of projects eligible for NEM treatment to 3 MW. This increase in size would be consistent with Rule 21 policies that allow fast track interconnection for projects up to 3 MW. Under current NEM rules, if a project smaller than 1 MW triggers distribution or network upgrades, those upgrade costs are socialized (*i.e.*, not directly assigned to the interconnecting NEM project). Increasing the MW size at which a NEM project is exempt from financing such upgrades would facilitate additional development of NEM projects and apply this same beneficial policy to a larger suite of renewable projects.

Second, NRG recommends that "significant impacts" should be defined in terms of NEM project's electrical impacts on the distribution circuit to which the NEM project is connecting. In general, the Commission should adopt a strong presumption that NEM projects do not have a significant impact on the system *unless* the project would require upgrades to the bulk power system administered by the CAISO. In that rare circumstance, NRG recommends that the project proceed through the CAISO interconnection queue and follow the CAISO's cost allocation policies.

a. How should the requirement to be "sized to onsite load" be measured?

Because the statutory language is subject to several interpretations, NRG recommends that the Commission define "sized to onsite load" should mean that the NEM project's total annual energy production should be similar to the expected energy consumption of the customer load at the same site. Load is typically, but not always, described in MW, which would mean a 1 MW load would be paired with a 1 MW generator. However, because NEM is primarily a solar

program, the sizing should recognize that the sun does not shine 24 hours a day, and that for solar facilities, it makes sense to ensure that "onsite load" is defined on an energy basis. In other words, so long as the projected annual onsite load (*i.e.*, consumption in MWh) matches the projected annual generation (in MWh), the facility should be deemed to be "sized to onsite load." Outside of the NEM framework, the interconnection process, as specified by Rule 21, will ensure system reliability.

b. How should the size requirement be enforced? By whom? Responses should consider at least: the situations of customers with historical energy usage; customers with new construction (i.e., no historical energy usage); and customers with anticipated future load growth, regardless of historical usage.

The size requirement should be enforced through (1) verification of historical energy usage data; (2) where insufficient history exists by, verifying that there are sufficient energy resources either currently on-site or planned to be located on-site.

8. What, if any, issues may arise with the interconnection of projects described in § 2827.1(b)(5) under the rules and charges established in Rule 21? Please be specific about any potential issues you identify, including descriptions of current practices or rules. What specific actions could reduce or eliminate the possible issues you have identified?

Please see answer Question 7.

9. Section 2827.1(b)(7) states that any fixed charges for residential customer generators that differ from the fixed charges allowed pursuant to subdivision (f) of Section 739.9 shall be authorized only in a rulemaking proceeding involving every large electrical corporation, and that the commission shall ensure customer generators are provided electric service at rates that are just and reasonable.

a. Should this proceeding include consideration of developing fixed charges for residential customer-generators that may differ from any fixed charges that may be set for all residential customers as a result of a decision in the pending residential rate design proceeding, Rulemaking 12-06-013? Why or why not?

Yes. The decision in R. 12-06-13 to move California towards TOU rates necessitates a change in how net metering compensation works. As discussed above, the increasing penetration of renewables during times traditionally considered as peak demand hours is going to

have a ripple effect throughout California's retail rate structure. With high levels of renewable energy production during the middle of the day, the least expensive retail rates under a TOU regime may be in the middle of the day, rather than the highest. A system that credits back to customers this reduced rate is unlikely to make installation of distributed renewable generation "sustainable," as mandated by A.B. 327.

10. *Current law (§ 2827(g)) includes several secondary benefits to NEM customer-generators. These include exemption from "any new or additional demand charge, standby charge, customer charge, minimum monthly charge, interconnection charge," or any other charge that would increase an eligible customer-generator's costs beyond those of customers who are not customer-generators in the same customer class.*

NRG recommends that the Commission keep these benefits in place. Standby charges and departing load charges keep a yoke of oppression on existing customers seeking to deploy innovative energy solutions. Moving to impose these onerous charges on today's net metered customers would destroy the value of those renewable investments in a manner that is not foreseeable or predictable, and would work a significant injustice.

11. *The current NEM program includes several variations within the NEM tariffs themselves, including virtual net energy metering (VNEM), multi-family affordable solar housing (MASH) VNM, and NEM aggregation.*

These programs extend the benefits of the NEM program to a broader array of customers and allow for more efficient sizing of the solar energy system. MASH VNM was adopted in 2008 so that residents of multifamily affordable housing would not be excluded from the CSI program because they rented their residences or because the rooftops of their residences were shared with other families. In 2011, the Commission adopted the VNEM program to extend the virtual net energy metering option to other types of multi-family or multi-meter properties, not just affordable housing properties. After passage of Senate Bill 594 in 2012, NEM aggregation allowed for an extension of the NEM program to properties adjacent or contiguous to the

property where the renewable energy generator is located, as long as the eligible customer-generator owned, leased, or rented the adjacent or contiguous property. Each of these programs should be retained.

- The MASH VNM program is essential to ensuring that the NEM program benefits not only well-off homeowners, but also tenants in multifamily affordable housing facilities. To the extent that funds are available to provide the incentives for installations qualifying for the MASH VNM program, this program should continue.

- The VNEM program extends the NEM program to additional markets--market-rate multifamily properties and commercial multi-meter properties. These properties tap into a wider range of properties that can help improve the effectiveness of the NEM program.

- NEM aggregation extends the benefits of the NEM program beyond the property line where the generating facility is located to adjacent and contiguous properties owned or rented by the owner of the property where the generating facility is located.

Eliminating any of these programs could reduce the access to solar energy in general and would deny the benefits of the NEM program in particular to members of disadvantaged communities, renters, small commercial enterprises, and similar groups that would otherwise not participate in any of the programs promoting renewable energy. These programs also provide a platform for innovation that could improve the effectiveness of the NEM program in ways that are not currently included in the evaluation of these programs.

12. *What, if any, consumer protection issues should the Commission consider as part of the successor standard contract/tariff? Responses should address at least the following topics: (a) Maintaining approved equipment lists; (b) Warranty requirements; and (c) Customer complaints and policing bad actors.*

The Commission should not require that suppliers utilize only equipment off of an approved equipment list. Solar technology is changing incredibly fast, and there is no benefit to the government picking technology winners and losers. Standard consumer protection laws already prohibit deceptive trade practices, and would be sufficient to deal with false or misleading advertising of solar facilities. Any standard contract/tariff should include ample

disclosure requirements regarding the warranty. In particular, facilities installed on small residential customers (below about 20 kW) should require disclosure of warranty terms and conditions, written in plain language. However, the Commission should design the rules to allow for a wide-array of service levels, depending on the customer's risk tolerance. The Commission should make clear that it will refer bad actors to the Attorney General's office for prosecution.

C. CONCLUSION

NRG respectfully submits that appropriate NEM 2.0 policies can provide California citizens the benefits of rooftop solar without unduly undermining the long-term stability of the State's IOUs. NRG appreciates this opportunity to provide comments in this proceeding and looks forward to participating further in this important proceeding.

Respectfully submitted this 16th day of March, 2015.

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