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September 5, 2013

ED Tariff Unit
Energy Division
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

Submitted electronically to EDtariffunit@cpuc.ca.gov

Subject: Comments of Pacific Gas and Electric Company on Draft Resolution E-4610

Dear Energy Division Tariff Unit:

Introduction

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to comment on Draft Resolution E-4610, "Commission determination authorizing investor owned utilities to implement net energy metering (NEM) aggregation pursuant to Senate Bill (SB) 594 (Wolk, 2012)" ("DR"). Senate Bill (SB) 594 allows NEM customers with multiple meters potentially on multiple parcels to aggregate these loads, provided the California Public Utilities Commission (CPUC) first finds there is no increased cost shift as a result of such aggregation. Draft Resolution E-4610 if adopted would make that finding.

Unfortunately, the CPUC has not established the record necessary for the proposed finding of no cost shift due to the adoption of aggregation. In fact, there are several areas where costs would increase beyond the status quo if this program goes forward. For these reasons PG&E suggests the CPUC either develop further analysis that could support such a finding in an appropriate existing proceeding, such as the Distributed Generation Order Instituting Rulemaking (DG OIR R.12-11-005), or make a finding that it is not authorized to expand the NEM program in this manner. If the Commission permits NEM aggregation to go forward, PG&E urges the CPUC to also provide guidance on cost recovery for costs associated with aggregation.

Basis for the finding that cost shifts will not increase if customers can aggregate load.
The Draft Resolution concludes that there will be no cost-shift based on the following:

- Aggregation will be used by nonresidential customers, who create a lower cost shift than residential customers. Since NEM is capped overall, this will increase nonresidential participation and lower the cost shift.

- There is not enough information to determine whether a single larger installation has higher interconnection costs than a collection of smaller installations.
- Residential customers pay a greater proportionate burden of PPP charges, so the associated revenue loss of PPP in the SB 594 case is less than in the base case of NEM without aggregation.

PG&E has identified issues with each of these points and submits that there **will** be a cost shift if NEM customers can aggregate their load. PG&E addresses each item below.

The Commission has determined that NEM shifts costs to non-participating customers.
The CPUC has completed two studies of the cost shifts associated with NEM, one completed in 2010, and one completed in 2011, both sent to the legislature. Both concluded that NEM shifts substantial costs to non-participating customers. See discussion in D.11-12-053, at page 23 concerning the Commission's finding that "the total costs shifted from solar customers to non-participating customers averaged over 21 cents per kWh." Since aggregation is intended to extend NEM to new customers, in the absence of a new study, these prior studies support a finding of a cost shift and should have answered the question asked by the legislature.

Is the cost shift contained if nonresidential customers are more likely to aggregate?
The DR states that nonresidential NEM customers have a lower cost shift than residential participants and uses the existence of the NEM cap to conclude that increased nonresidential participation in NEM means that overall, the cost shift decreases. This is simply not accurate, for several reasons. First, the legislature did not ask the CPUC to determine if costs would shift in the years 2020 to 2022, when the current NEM cap as interpreted by the CPUC is expected to be reached by PG&E. The legislature asked the CPUC to make such a determination now.

Second, while the E3 study cited in the DR[1] did find that nonresidential customers had a lower cost shift per kWh than residential installations, there were several critical nonresidential tariffs left out of the analysis. Nonresidential customers on Rate Schedule A6 were not included, nor were any agricultural customers. A6 customers do not pay a demand charge and have very high summer peak energy rates (when PV is most likely to be exporting). PG&E believes that agricultural rates in general are below cost of service, which means any PV installation at an agricultural site reduces the customer's contribution to the cost to serve them even more. Both of these omissions from the E3 study mean the findings around nonresidential cost shifts are understated. This is particularly critical for SB 594 because (based on customer enquiries) it is expected that many agricultural or combined agricultural and commercial customers such as wineries are interested in the possibility of aggregating load.

Third, from analysis of California Solar Initiative (CSI) data, we know that the capacity factor for those participants receiving Performance Based Incentives (PBI), which are primarily commercial customers, is significantly higher than the capacity factor for residential rooftop solar customers. Even if the CPUC is correct and more nonresidential customers take advantage of aggregation, it is not clear that the overall cost shift would be lower because the same number of installed megawatts (MW) will produce more kilowatt-hours (kWh).

[1] Energy and Environmental Economics, "Net Energy Metering (NEM) Cost-Effectiveness Evaluation", Table 21, page 38, report done under direction of the California Public Utility Commission, January 2010.

Fourth, PG&E anticipates more and more residential customers will install the combination of PV, and electric vehicles (EV) (including charging facilities) and will desire service under two tariffs: one for the solar and house load and one for the EV and charger. We fully expect these customers to explore SB 594 aggregation if it were to become available.

Finally, every time the penetration of PV in the market nears the NEM cap, the cap is raised. There is simply no "zero sum game" where nonresidential installations push out residential installations with higher cost shifts.[2] The real effect of SB 594 likely will be to increase overall penetration faster and thus increase the cost shift to nonparticipants.

Interconnection Costs

The Draft Resolution concludes that interconnection costs are too "unknown" to determine whether costs will increase or not. However, NEM customers are exempted from many interconnection costs. This is not a sufficient record to support a finding that there will be no increased cost shift to non-participating customers.

While PG&E agrees with the characterization in the Draft Resolution that "Some NEM systems under SB 594 will be sized larger than they otherwise would be under the NEM base case," PG&E does not agree that "there is not enough information at this time to determine whether a single large installation would result in more distribution upgrade costs than would multiple small systems located in close proximity." Instead PG&E believes there is ample evidence interconnection costs will increase if SB 594 NEM allows aggregation of projects.

First, the Draft Resolution's description of "close proximity" may not be apt in many cases. Some customers that elect to participate in NEM aggregation will be located on properties that are large and have service delivery points that are not in close proximity. We anticipate that customers that elect this aggregation option will be a mixture of residential (e.g. homes with in-laws units and homes with separate electric vehicle charging accounts), agricultural (e.g. wineries and dairies with several service delivery points throughout its property), and commercial customers (e.g. customers with adjacent buildings). The size characteristics of each of these different customer aggregated arrangements can vary as can the distribution system characteristics within the arrangement. For example, a winery with a pumping station and its main building may be on a large property where its separate electric services are served off of two entirely different distribution circuits. Each circuit may have a very different capacity due to varying loads. It is thus important to evaluate the impact of the installation of a larger generating facility on the selected circuit when the aggregated load is split between the two distribution circuits. Even if the service delivery points are located on the same distribution circuit, if the separate delivery points are not in close proximity, there may be impacts as the circuit's capability may be different between the two points.

Second, absent aggregation, each small NEM generating facility would be sized to the electric load served behind the same meter as the generator. In these cases the electric infrastructure has already been established in the various locations in order to serve the load. PG&E's experience with over 80,000

[2] PG&E notes that the Legislature is considering removing the cap altogether (AB 327, Perea, as amended August 30, 2013).

NEM installations is that this existing infrastructure is usually sufficient to support the installation of the NEM generator. Under SB 594, a generating facility may be sized to meet the aggregated load of a number of metered accounts but it is unclear whether the generator account will have the majority of the aggregated load. In fact, due to the footprint of a larger solar installation, it is likely the generator account will be remote.

Thus, the characteristics of the account with the generating facility is more like an account installing generation designed to export for sale. PG&E's experience with this type of generator interconnection reveals that they trigger distribution and transmission system upgrades (depending on circuit location) far more frequently than with NEM generators.

Residential customers do not pay a greater proportion of PPP charges.
The CPUC states that residential customers pay a disproportionate share of PPP charges and therefore this shift towards nonresidential participation in NEM will actually increase PPP charges collected from NEM customers (because the charges avoided by participants goes down). This is simply not true. On a per-kWh basis, residential customers pay the *least* towards PPP, based on information from the most common PG&E rates:

Rate	**Per kWh PPP**
Residential	$0.012
Small Commercial	$0.015
Medium Commercial	$0.014
E-19	$0.013
E-20	$0.012
Agricultural	$0.013

Other Considerations

Efficiencies do not lower costs for ratepayers
The CPUC states that larger installations will be more efficient with a lower installed cost that benefits ratepayers. Larger systems may cost less, but any increased efficiency and lower installed costs will benefit participants, not ratepayers.

Gaming
PG&E believes there is the potential for gaming. Allowing aggregation, instead of continuing the current limitation that NEM generators behind a single meter be sized to the load behind that meter, sets up a situation where customers who wish to participate in a program to sell their generation but avoid paying interconnection costs can first participate in NEM. NEM customers avoid payment of most interconnection costs, whereas customers participating in other renewable generation programs (ReMAT, RES-BCT, RAM) pay these costs. Where oversizing occurs in remote rural areas, necessary system upgrade costs can be significant. If this Resolution is adopted, customers wishing to participate in power purchase agreements could interconnect for free under the NEM exemption and switch afterwards.

Billing Costs

The cost of setting up the billing is a major consideration with any new rate structure, and NEM aggregation will be no exception. For SB 594, the newly added PU Code Section 2827(h)(4)(H) only partially addresses this cost concern when it requires participating customers to pay the cost of billing. Owing to the unique complexity of the billing requirements under SB 594, any such service charges will likely provide inadequate coverage. The set-up cost will involve additional, significant cost shifts, especially given the uncertainty of any large scale adoption to amortize costs. And if the service charges prove inadequate, efforts to recover these costs at a future date once participation and costs are better known, would be contentious and complex. If the goal is that costs should be covered by NEM aggregation participants with service fees, there is no assurance this will occur.

That the set up costs will be significant for the SB 594 billing implementation is likely, as the aggregation is unique. SB 594 requires allocation of exports on a monthly basis,[3] a provision that is considerably different from any of PG&E's other rate schedules that involve billing across multiple accounts. For existing NEM-type tariffs with multiple accounts, the allocation percentages are "fixed" by the customer at the time the account is set up, and the percentages don't change monthly as they do under SB 594. Due to the billing complexity and the inability to build off other programs, PG&E estimates the cost of the IT work required will be in the hundreds of thousands of dollars.[4]

Additional administrative costs for day-to-day billing will also be incurred as a direct result of the aggregation. For example, the aggregated accounts have inherent meter dependencies so that any meter with data issues will prevent the billing process from continuing, since generation allocation and billing cannot occur until aggregation of all meters is complete. Furthermore, adjustments in metered data for any of the aggregated meters will impact the total monthly aggregation, resulting in an increase in manual exception processing and a larger volume of cancel/rebills.

Conclusion

PG&E believes the DR does not provide sufficient justification for the finding that there will be no additional cost shift if NEM aggregation is allowed under SB 594. PG&E suggests the CPUC complete the analysis necessary either to support such a finding; or to determine that there is an increased cost shift. However, if the CPUC adopts Resolution E-4610 with its current finding, PG&E requests that the DR be expanded to provide for cost recovery for the additional costs identified above, in particular the IT costs necessary to implement the billing arrangement and interconnection costs due to the fact the generation is over-sized to the load at the interconnection site.

Brian Cherry /K4C

Vice President – Regulatory Relations

[3] PU Code Section 2827(h)(4)(C)

[4] Virtual Net Energy Metering (Schedule NEMVMASH), which is of comparable complexity, cost about $700k to implement.

cc: President Michael R. Peevey
Commissioner Michel P. Florio
Commissioner Catherine J.K. Sandoval
Commissioner Mark J. Ferron
Commissioner Carla J. Peterman
Frank Lindh, General Counsel
Karen Clopton, Chief Administrative Law Judge
Edward Randolph, Director, Energy Division
Gabe Petlin, Energy Division, CPUC
Energy Division Tariff Unit
Service List R.12-11-005
Service List R.10-05-004

Appendix
PG&E's Comments on Draft Resolution E-4610

Correction of Errors and
Recommended Revisions to Findings and Conclusions and Ordering Paragraphs

Reference to Draft Resolution	Corrections and Revisions
Finding & Conclusion 3: Senate Bill 594 does not change or raise the net energy metering cap, which is presently set at 5% of an electric utility's aggregate customer peak demand. The same amount of net energy metering capacity will be installed regardless of passage of Senate Bill 594 -- assuming that the net energy metering program cap will be fully subscribed.	The CPUC has found that NEM shifts costs to non-participating customers. Aggregation may increase overall penetration of rooftop solar, which may increase the overall cost shift to other customers.
Finding & Conclusion 4: Net energy metering aggregation pursuant to Senate Bill 594 will likely be utilized primarily to offset the load of non-residential meters, and will increase the proportion of larger net energy metering projects relative to small residential projects.	Delete

Finding & Conclusion 5: As of 2008, net energy metered solar non-residential generators supplied about 56% of the capacity enrolled in the net energy metering program, but were responsible for just 10% of the total cost of the program.	Delete
Finding & Conclusion 6: The 2010 Net Energy Metering Cost Effectiveness Evaluation found that, because of lower non-residential rates, non-residential projects cost non-participating ratepayers substantially less then residential projects per kWh exported to the grid.	Aggregation may be used by many agricultural customers. The 2010 Net Energy Metering Cost Effectiveness Evaluation did not include agricultural rates, thus there is no record at present to determine whether increased agricultural adoption of NEM will increase or decrease the cost shift for other customers.
Finding & Conclusion 7: Avoided public purpose program charges and other non-commodity charges would likely decrease through implementation of meter aggregation.	Delete

Finding & Conclusion 8: Aggregation of multiple meters behind larger distributed generation systems will improve the cost-effectiveness of net energy metering by enabling larger more efficient installations with a lower cost per kWh exported, which represent a lower cost to ratepayers.	Larger installations resulting from use of SB 594 aggregation may be more efficient with a lower installed cost; but any increased efficiency and lower installed costs will benefit participants, not ratepayers.
Finding & Conclusion 9: The Commission finds that allowing eligible customer-generators to aggregate their load from multiple meters, pursuant to Senate Bill 594, will not result in an increase in the expected revenue obligations of customers who are not eligible customer – generators.	At this time, the Commission finds that allowing eligible customer-generators to aggregate their load from multiple meters, pursuant to Senate Bill 594, may result in an increase in the expected revenue obligations of customers who are not eligible customer-generators.
Additional Finding and Conclusion not mentioned: PG&E suggests the following Findings and Conclusions be inserted before Finding and Conclusion 9.	
	Due to the unique kWh allocation required by SB 594, it is likely IT costs may not be recovered from participants, thus increasing the cost shift to non-participating customers.

	The ability to size generation to aggregated load could lead to increased interconnection costs, which NEM customers do not pay, causing an increased cost shift.
Ordering Paragraph Changes:	
Ordering Paragraph 1: Within 14 days of the issuance of this resolution, Pacific Gas & Electric Company, Southern California Edison Company, and San Diego Gas & Electric shall each file a Tier 2 Advice Letter revising their Net Energy Metering (NEM) tariffs to enable meter aggregation pursuant to Senate Bill 594.	Delete

Ordering Paragraph 2: The advice letters and revised net energy metering tariffs must comply with all provisions of Senate Bill 594 pertaining to meter aggregation, including the provisions that were conditioned on the Commission making the determination contained in this resolution as well as the provisions that were not conditioned on the determination contained in this resolution.	Delete
Ordering Paragraph 3: The advice letters must be served on all parties to the Rulemaking for the California Solar Initiative, Self-Generation Incentive Program, and other Distributed Generation issues (Rulemaking 12-11-005, and its predecessor Rulemaking 10-05-004).	Delete
Additional Ordering Paragraph:	

	The Commission finds that based on the current record that it is likely that NEM aggregation will increase cost shifting to non-participating customers. As a result, since the requirements of the statute prohibit NEM aggregation in these circumstances, the Commission declines to order NEM aggregation at this time. This Resolution satisfies the requirement that the CPUC make a finding on cost-effectiveness. The Commission may reconsider implementation of SB 594 at such time that the CPUC has a record that can support an alternate conclusion.

CERTIFICATE OF SERVICE

I certify that I have by mail, e-mail, or hand delivery this day served a true copy of Pacific Gas and Electric Company's comments on Draft Resolution E-4610 on:

1) President Michael R. Peevey
2) Commissioner Mark J. Ferron
3) Commissioner Michel P. Florio
4) Commissioner Catherine J.K. Sandoval
5) Commissioner Carla J. Peterman
6) Edward Randolph, Director, Energy Division
7) Karen Clopton, Chief Administrative Law Judge
8) Frank Lindh, General Counsel
9) Gabe Petlin, Energy Division, CPUC
10) Energy Division Tariff Unit
11) Service List R.12-11-005
12) Service List R.10-05-004

/S/ KINGSLEY CHENG
Kingsley Cheng
PACIFIC GAS AND ELECTRIC COMPANY

Date: September 5, 2013