BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Regarding Policies, Procedures and Rules for the California Solar Initiative, the Self-Generation Incentive Program and Other Distributed Generation Issues.	Rulemaking 12-11-005 (Filed November 8, 2012)

REPLY COMMENTS OF SUNVERGE ENERGY, INC. ON THE ASSIGNED ADMINISTRATIVE LAW JUDGE'S PROPOSED DECISION REGARDING NET ENERGY METERING INTERCONNECTION ELIGIBILITY FOR STORAGE DEVICES PAIRED WITH NET ENERGY METERING GENERATION FACILITIES

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I.   SUMMARY

Sunverge Energy, Inc. ("Sunverge") hereby provides the following comments in reply to opening comments filed on May 5, 2014 by various parties pursuant to *Assigned Administrative Law Judge's Proposed Decision Regarding the Net Energy Metering Interconnection Eligibility for Storage Devices Paired with Net Energy Metering Generation Facilities* issued April 15, 2014. There is some confusion and concern regarding the use of the proposed decision (PD) equation to de-rate net energy metered (NEM) credits in circumstances where revenue grade metering is not required (10kW or below) or cost effective (when more than $500) and therefore, we outline a more robust interpretation of the methodology and illustrative case example table herein. Though we appreciate and agree with the regulatory perspective put forward by the IOUs[1], prior to entering the de-rate factor into the billing system to adjust the revenue grade meter NEM export credits the PD methodology isolates and neutralizes non-revenue grade metering inaccuracies. To the extent that it is needed, the CEC maintains a list of eligible

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[1] Opening Comments of IOUs do not oppose an alternative method, but they are opposed to the use of inaccurate energy data collected from non-revenue grade metering for billing purposes. SDGE p.6, SCE p.6, PG&E p.9

performance monitoring equipment and data format standards created within the California Solar Initiative that provides a sufficient framework from which to qualify and provide data to each utility. Finally, the IOU proposals seeking to limit storage kilowatt discharge capacity to the NEM generator AC power output capacity, or qualify the storage and generator inverter capacities as separate and additive, do not reflect a clear understanding of single-inverter systems and we ask that the commission consider our opening comments specific to single-inverter system sizing or, as an alternative, the peak demand relative sizing option offered by CESA and others[2].

II.   CLARIFY THE USE AND APPLICABILITY OF THE PD EQUATION

The PD de-rate methodology is both a sound and fair alternative to requiring system-specific revenue grade metering for energy storage systems. For all systems 10 kW and under, plus any system up to 40 kW whose additional metering costs exceed $500, the de-rate method is more conservative than separately metered subtractive billing yet more accurate than the IOUs overly simplistic proposal that arbitrarily assumes the battery output should be equal to the amount of energy dispatched with one cycle per day. Though originally envisioned for single-inverter generator facilities (GFs), we believe it is broadly applicable to other configurations as well and we created Table 1 to illustrate various use case examples and to also compare the PD method with the IOU proposed method. In reply to comments made by CESA and Outback Power[3], AC energy drawn into the GF from the "upstream" grid and then dispatched to "downstream" loads is easily accounted for by measuring the AC energy dispatched to the downstream loads

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[2] CESA Opening Comments p. 3-4, Outback Power Opening Comments p. 6
[3] CESA Opening Comments p. 6, Outback Power Opening Comments p. 2-4

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Table 1: PD Alternative Method Use Case Examples

*All energy units are AC	Single-Inverter Enh. NEM Generator	Single-Inverter Enh. NEM Generator	Solar Only NEM Generator	Storage Only Non-NEM Generator
Storage Maximum Continuous AC Power Capacity (kW)	4.5	6.0	2.5	3.0
Useable Battery Capacity (kWh)	9.9	9.9	0	6.6
Solar Generating Capacity (kW-AC)	3.1	4.2	2.5	0
Energy Charged to GF (kWh)	150	85	0	80
- Energy Dispatched to Downstream Loads (kWh)	40	0	0	30
Charged Energy Available for Upstream Dispatch (kWh)	110	80	0	50
Total Upstream Energy Dispatched from GF (kWh)	450	525	188	30
-Charged Energy Available for Upstream Dispatch (kWh)	110	80	0	NA
NEM Eligible Energy Dispatched from GF* (kWh)	340	445	188	-30

Scenario 1 - 1 x Single-Inverter System

Generator Facility Total Continuous AC Power Capacity (kW)	4.5
Separately Metered Cost (Using PG&E Example)	$596
Size or Metering Cost Exempt?	Yes - Size
PD % Derate Factor per System	76%
PG&E & SCE Method	60%
Total Energy Exported to Grid, Measured by IOU (kW)	100
NEM Credit Value (assume avg $0.12)	$12.00
PD Adjusted NEM Credit Value	$9.07
PG&E & SCE Method	$7.15

Scenario 2 - 2 x Single-Inverter Systems

Generator Facility Total Continuous AC Power Capacity (kW)	10.5	
Separately Metered Cost (Using PG&E Example)	$1,192	
Size or Metering Cost Exempt?	Yes - Cost	
PD % Derate Factor per System	76%	85%
All Systems NEM Generator Energy Supply (kWh)	785	
Site Contribution Weighting per System	43%	57%
PD % Derate Factor All Systems (Site)	81%	
PG&E & SCE Method	63%	
Gross Energy Exported to Grid, Measured by IOU (kW)	300	
Gross NEM Credit Value (assume avg $0.12)	$36.00	
PD Adjusted NEM Credit Value	$28.98	
PG&E & SCE Method	$22.77	

Scenario 3 - 1 x Single-Inverter System and 1 Stand-Alone PV System

Generator Facility Total Continuous AC Power Capacity (kW)	8.5	
Separately Metered Cost (Using PG&E Example)	$1,192	
Size or Metering Cost Exempt?	Yes - Size and Cost	
PD % Derate Factor per System	85%	100%
All Systems NEM Generator Energy Supply (kWh)	633	
Site Contribution Weighting per System	70%	30%
PD % Derate Factor All Systems (Site)	84%	
PG&E & SCE Method	76%	
Gross Energy Exported to Grid, Measured by IOU (kW)	388	
Gross NEM Credit Value (assume avg $0.12)	$46.50	
PD Adjusted NEM Credit Value	$38.90	
PG&E & SCE Method	$35.28	

Scenario 4 - 1 x Single-Inverter System and 1 Stand-Alone PV System

Generator Facility Total Continuous AC Power Capacity (kW)	11.5		
Separately Metered Cost (Using PG&E Example)	$1,788		
Size or Metering Cost Exempt?	Yes - Cost		
PD % Derate Factor per System	85%	100%	-100%
All Systems NEM Generator Energy Supply (kWh)	603		
Site Contribution Weighting per System	74%	31%	-5%
PD % Derate Factor All Systems (Site)	81%		
PG&E & SCE Method	65%		
Gross Energy Exported to Grid, Measured by IOU (kW)	388		
Gross NEM Credit Value (assume avg $0.12)	$46.50		
PD Adjusted NEM Credit Value	$37.73		
PG&E & SCE Method	$30.37		

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and subtracting it from the energy charged from upstream. Further, we disagree with Outback's hardware comments[4] and offer that the Sunverge DAS measures AC energy into and out of the inverter at both "upstream" and "downstream" connections. As illustrated in Table 1, power that flows downstream is isolated from the grid and thus is not available for grid export. To clarify, we propose to write the PD alternative method equation such as:

% De-rate =

NEM Eligible Energy Dispatched from GF / Total Upstream Energy Dispatched from the GF

Where…

NEM Eligible Energy Dispatched from GF =

Total Upstream Energy Dispatched from GF – Charged Energy Available for Upstream Dispatch

And…

Charged Energy Available for Upstream Dispatch =

Total Energy Charged to GF – Energy Dispatched Downstream to Loads

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To account for stand-alone storage systems or non-NEM generators, 100% of the measured energy generated or dispatched from those systems should be subtracted from the NEM Eligible Energy Dispatched from GF, as illustrated in Table 1 Scenario 4. Appropriately, this estimation method is more conservative than direct metering and any reduction in NEM credits should therefore be viewed as a trade-off with purchasing revenue grade metering or other designs that could prevent export and thereby eliminate the need for net energy metering.

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[4] Outback Comments p. 3-4

Executed on May 12, 2014 in Stockton, CA

Respectfully submitted,

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