



## ORA

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August 14, 2018

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

**Subject: Protest of the Office of Ratepayer Advocates to Southern California Edison Company's Advice Letter 3829-E, Regarding Methodology to Monitor the Frequency and Duration of Frequency Events**

### **INTRODUCTION**

The Office of Ratepayer Advocates (ORA) submits this Protest to Southern California Edison's (SCE) Advice Letter (AL) 3829-E regarding Methodology to Monitor the Frequency and Duration of Frequency Events. SCE submitted the AL on July 25, 2018 as directed in California Public Utilities Commission (CPUC or Commission) Resolution E-4898.<sup>1</sup>

ORA recommends the following:

1. SCE should submit a supplemental AL that either proposes monitoring system frequency data at one specific location that is as close to the distribution system as possible or explains why monitoring at the currently proposed location – “one of [SCE's] transmission substations”<sup>2</sup> – will accurately predict how frequency events will impact smart inverters connected to the distribution system.
2. The Commission should direct SCE to include in its frequency monitoring reports the frequency measurements, in Hertz (Hz), taken by the measurement device during the frequency events that SCE believes will impact smart inverters. This would allow industry

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<sup>1</sup> Commission Resolution E-4898, under Decision (D.) 16-06-052.

<sup>2</sup> SCE AL3829-E, p. 2.

stakeholders – and specifically inverter manufacturers – to gain insight into the exact frequency conditions to which smart inverters are exposed, helping the industry to collaborate on frequency stability issues more efficiently.

Adopting ORA’s recommendations would help meet the goals of Commission Resolution E-4898 by ensuring that frequency events that could impact smart inverters are reported in a manner that is detailed, effective and consistent across all three Investor-Owned Utilities (IOUs). Such reporting would allow developers, inverter manufacturers and utilities to effectively collaborate on frequency stability issues.

## **BACKGROUND**

Commission Resolution E-4898 modifies California Electric Rule 21 to incorporate Smart Inverter Phase 3 advanced functions in compliance with (D.) 16-06-052. Commission Resolution E-4898 adopts Function 5, Frequency Watt mode, as a mandatory smart inverter setting. Frequency Watt mode is a default inverter setting that decreases real power production when grid frequency rises above 60.036 Hz and increases real power production when frequency drops below 59.964 Hz, in accordance with the Institute of Electrical and Electronics Engineers (IEEE) Rule 1547. Commission Resolution E-4898 states that “it is feasible for the IOUs to monitor the number of [frequency] events per year and report to the Commission on their duration and *estimated impact* on DER [Distributed Energy Resource] customers.”<sup>3</sup> Commission Resolution E-4898 directs PG&E, SCE, and SDG&E to file Tier 1 Advice Letters “proposing a methodology for annual monitoring of frequency events and estimating their likely impact on DER customers with Phase 3 compliant smart inverters. The advice letters will propose the data variables and data sources that can be reported.”<sup>4</sup>

AL 3829-E proposes a reporting methodology to monitor frequency and duration of frequency events pursuant to Commission Resolution E-4898. SCE proposes to monitor grid frequency at one of its transmission facilities and report the “count of instances where a continuous frequency event had the potential to reduce output of smart inverters.”<sup>5</sup> The reporting parameters for such instances are in Table 1 below.

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<sup>3</sup> Commission Resolution E-4898, p. 24.

<sup>4</sup> Commission Resolution E-4898, p. 24.

<sup>5</sup> SCE AL 3829-E, p. 2.

**Table 1 – Proposed Methodology for Monitoring Impact of Frequency Events on Smart Inverters, Per SCE AL 3829-E<sup>6</sup>  
Increase or Reduced Output for a Specified Duration**

Increase or reduce output:	For what duration:
Up to 5%	5 Minutes
Up to 15%	1 Minute
Up to 30%	1 Minute
Greater than 30%	1 Minute

Because Function 5 does not become mandatory until February 22, 2019, SCE proposes to submit 4 quarterly reports starting on June 22, 2019.<sup>7</sup> After that, SCE proposes to file annual reports on frequency events via Tier 1 Advice Letters on March 22 for five years.<sup>8</sup>

## **DISCUSSION**

SCE’s current proposal to monitor at a transmission facility may not meet the goals of Commission Resolution E-4898. Comments submitted during the Smart Inverter Working Group by the California Solar and Storage Association (CalSSA) and the California Energy Storage Alliance (CESA) stated that Function 5 – the mandatory increase or decrease of real power from smart inverters to stabilize grid frequency - would force customers to “lose on storage energy that they were counting to be available.”<sup>9</sup> In essence, developers were concerned because this function forces smart inverters, most of which are installed on private residences or businesses by private contractors, to increase or decrease their output to help maintain grid-wide frequency stability. The Commission pointed out that frequency events are rare and would generally have a *di minimis* impact on DER production but agreed to require regular reports that would assess the impact of frequency events on smart inverters.<sup>10</sup> Smart inverters are generally connected at the distribution level and installing a frequency monitoring device as close to the distribution system as possible would provide a more

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<sup>6</sup> SCE AL 3829-E, p. 2.

<sup>7</sup> SCE AL 3829-E, p. 2.

<sup>8</sup> SCE AL 3829-E, p. 3.

<sup>9</sup> Commission Resolution E-4898, p. 20.

<sup>10</sup> Commission Resolution E-4898, p. 21.

accurate view of the frequency conditions in which the inverters operate. SCE's current proposal to monitor at an unspecified transmission facility is vague, and, because frequency is generally more stable at the transmission level than the distribution level, monitoring at a transmission substation may not capture the measurements needed to meet the goals of Commission Resolution E-4898. Before approving SCE's proposal to monitor frequency events at a transmission substation, the Commission require SCE to submit a supplemental AL that explains why installing monitoring equipment at the transmission level is the most effective way to gauge the impact of frequency events on smart inverters.

The Commission should also direct SCE to include in its monitoring reports the frequency measurements, in Hz, taken by the measurement device during the frequency events that SCE believes will impact smart inverters. Including the frequency measurements in Hz would enhance these frequency reports to make them more useful to stakeholders. SCE AL 3829-E proposes to "count the instances"<sup>11</sup> where grid frequency events would decrease smart inverter output. The reported instances would be the result of the SCE's own estimations. Adding the frequency measurements taken by SCE's monitoring device during these frequency events would allow inverter manufacturers to gather specific information regarding what smart inverters are exposed to and give industry researchers and other stakeholders a more granular view of grid conditions.

## **RECOMMENDATIONS**

ORA recommends that the Commission:

- 1) Direct SCE to submit a supplemental Advice Letter that either proposes monitoring frequency data as close to the distribution system as possible or provides a detailed explanation as to how the currently proposed location will accurately assess the inverter impact of frequency events.
- 2) Direct SCE to include the frequency measurements, in Hz, taken during such events in its monitoring reports.

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<sup>11</sup> SCE AL3829-E, p. 2.

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If you have any questions regarding these comments, please contact Steven Shoemaker at either [Steven.Shoemaker@cpuc.ca.gov](mailto:Steven.Shoemaker@cpuc.ca.gov) or (415) 696-7330.

Respectfully submitted,

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