

BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA



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Order Instituting Rulemaking to  
Consider Smart Grid Technologies  
Pursuant to Federal Legislation and on  
the Commission's own Motion to  
Actively Guide Policy in California's  
Development of a Smart Grid System.

Rulemaking 08-12-009  
(Filed December 18, 2008)

**COMMENTS OF  
THE DIVISION OF RATEPAYER ADVOCATES  
ON SMART GRID RULING**

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The Division of Ratepayer Advocates (DRA) hereby submits these comments in response to the December 29, 2010 *Administrative Law Judge's Ruling Seeking Comments on Proposed Interim Metrics to Measure Progress by Pacific Gas and Electric Company, Southern California Edison Company and San Diego Gas & Electric Company in Implementing A Smart Grid* (Ruling).

**I. INTRODUCTION**

The Ruling seeks comments to enable the Commission to adopt metrics to measure the progress by Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E) in implementing a Smart Grid in California and in achieving the benefits identified in Senate Bill (SB) 17, codified as Public Utilities (P.U.) Code Section 8367. PG&E, SCE, and SDG&E collectively distributed a "Report on Consensus and Non-Consensus Smart Grid Metrics" (Report) to the service list in this docket on October 22, 2010. Here, DRA responds to questions posed in the Ruling, and comments on specific proposed metrics indicated in the Report. Based on this review, DRA recommends the following:

- The Commission should adopt interim metrics and establish a formal review and update process;

- The incremental costs of providing any metric must be evaluated and considered when determining which metrics are appropriate;
- The Commission should establish a webpage or Smart Grid portal for reporting metrics and linking to other relevant metrics already reported;
- The Commission should establish a “Technical Review Group” to consider cyber security metrics; and
- Some metrics need clarification and further consideration.

## II. GENERAL COMMENTS

### A. The Commission Should Adopt Interim Metrics And Establish a Process for Review

As noted in the Ruling, “these consensus metrics should be considered preliminary and for initial guidance only.”<sup>1</sup> DRA agrees that the metrics adopted now will need to be reviewed and updated as the quantitative and qualitative criteria and standards for the Smart Grid evolve over the upcoming months and years. The Commission should adopt the consensus metrics now, refined per DRA’s recommendations below, for use by the investor-owned utilities (IOUs) in filing their initial Smart Grid deployment plans on July 1, 2011. The Commission should then establish technical working groups to develop metrics in the non-consensus areas, and establish a process for adopting metric revisions that dovetails with deployment plan updates.

As recognized in the Report, some metrics may eventually become irrelevant as Smart Grid milestones are achieved. For example, DRA agrees that the proposed metric measuring the “number of advanced meter malfunctions where customer service is disrupted” may be unnecessary as advanced metering deployment is fully realized.<sup>2</sup> Allowing for re-evaluation of metrics is consistent with the principle that Smart Grid

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<sup>1</sup> Ruling at 2, citing Report at 3.

<sup>2</sup> Report at 9-10, Metric A.1, *see* Comments Section.

metrics should be a living document – it should be flexible, provide meaningful information for regulators, and not be costly or burdensome to the reporting utilities.

Further, it has been acknowledged that some metrics will be necessary but impossible to measure at this time, as the technology has not yet been developed or deployed. However, they are important metrics, not only for Smart Grid, but for measuring achievement toward California’s energy goals in general. Most notably, metrics in the areas of plug-in electric vehicles (PEV), energy storage and environmental effects will need further discussion and development, as discussed below. Metrics in these areas must be developed in a technical working group or other multi-party forum so that all IOUs utilize consistent methodologies. Otherwise, it will be difficult to compare the IOUs’ efforts and progress, and may invite potential misstatement of benefits when evaluating Smart Grid investments. To the extent that these evolving metrics are addressed in separate proceedings, they should be correspondingly updated in this proceeding.

The Ruling invites proposals on the best process to review and revise metrics in the future, possibly through technical working groups by topic or workshops. DRA recommends that the Commission adopt interim metrics now, with revisions described below. However, metrics should be reviewed on a regular basis, with revisions made as necessary. The Commission should adopt a formal review process comprised of technical working groups by topic, to be followed by a report of recommendations with an opportunity to comment by all parties. Separate technical working groups by topic will be more efficient than an all-party workshop environment.

While DRA is recommending technical working groups for ongoing work on metrics, this work should also correspond with updating deployment plans. Under the current schedule adopted in Decision (D.) 10-06-047, IOUs will submit initial deployment plans on July 1, 2011, with updated plans submitted each July thereafter.<sup>3</sup>

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<sup>3</sup> D.10-06-147, at 82-83.

The Commission intends to determine the best method for updating deployment plans after the initial filings.<sup>4</sup> The Commission should consider addressing how best to update both deployment plans and metrics after initial deployment plan filings. At minimum, metrics as a whole should be revisited prior to filing of the July 2012 deployment plans. By that time, the Commission will have evaluated initial deployment plans and baseline metrics, and will be better informed about how well the process is working. DRA comments further below on specific metrics that need additional consideration and may be appropriate for a technical working group.

Finally, the IOUs note that D.10-06-047 requires that metrics be reported as of June 30, but the first reporting of these metrics will be in the Smart Grid deployment plans to be submitted by July 1, 2011. The IOUs ask that metrics reported in the initial deployment plans be reported as of December 31, 2010. The IOUs also request that the Commission revisit its decision to use a June 30 annualized date for metrics going forward, and state the utilities are currently investigating whether any incremental expenses would be incurred by reporting a metric as of June 30.<sup>5</sup> As for the initial metrics reporting, DRA is not opposed to reporting them as of December 31, 2010. However, it is worth noting that D.10-06-047 requires the IOUs to file an Annual Report to the Commission on October 1 of each year, with the information therein current as of July 1 of that year.<sup>6</sup> Because the Commission must file an Annual Report to the Legislature on Smart Grid status in January of each year, it determined that the October Annual Reports must contain information more current than the previous December. The same may hold true here. Regardless of what the Commission adopts as a reporting procedure, DRA is also concerned about any incremental expenses incurred from

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<sup>4</sup> D.10-06-047 at 83.

<sup>5</sup> Report at 7.

<sup>6</sup> D.10-06-047 at 89.

reporting metrics as of June 30. DRA urges the Commission to ensure the IOUs provide this information, and will comment further at that time.

**B. The Commission Should Evaluate and Consider the Cost of Proposed Metrics**

As DRA noted in previous comments, data collection and measurement can be costly and wasteful if not carefully tailored and targeted to important goals, and requested that the Commission ask the investor-owned utilities (IOUs) to come to the workshop ready to discuss the costs of recommended metrics.<sup>7</sup> To date, there has been very little discussion of costs related to collecting and reporting the proposed metrics. DRA recommends that costs of providing specific metrics be considered when deciding which metrics to adopt. Costs related to new metrics could include such factors as new software, database reconstruction, staff training, new staffing, and any widgets needed to gather specific quantitative data. Especially for any metrics that seem merely interesting, or are only requested by one party for a specific use, the incremental costs to complete such reporting must be considered. If a particular metric is extremely costly to implement, its potential benefit should be evaluated in that light.

A number of metrics in the Report are already collected by the IOUs for other programs. In order to keep costs down, the Commission should ensure that there is no duplicative data collection. DRA recommends that the Commission establish a webpage or Smart Grid portal maintained by the three utilities for displaying Smart Grid metrics and any other annual reports. For any metric already collected, the webpage or Smart Grid portal can simply have a description of the metric and a link to where that metric is already reported.

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<sup>7</sup> DRA Comments (August 17, 2010) at 4.

**C. The Commission Should Establish a “Technical Review Group” to Consider Cyber Security Metrics**

The Ruling notes that Commission staff proposed creating a “Technical Working Group” to begin a dialogue concerning cyber security metrics. DRA supports the formation of such a group, and recommends that it be called a “Cyber Security Technical Review Group,” similar to the format of the Procurement Review Group established in the Long Term Procurement Plan proceedings. The intent behind this seemingly minor word change is to emphasize that the review group would not be advising the IOUs on cyber security measures, nor necessarily privy to all cyber security information from the IOUs. Rather, the group would collectively formulate and review metrics that will assist in informing the Commission and interested parties on the success or failure of cyber security specifically related to Smart Grid deployment.

DRA echoes the utilities’ concern regarding potential breaches of sensitive cyber security information, and recommends each utility use the proposed Cyber Security Technical Review Group to provide annual presentations on the development and progress of cyber security, in lieu of the annual written report required for the other metrics. Utilizing a Technical Review Group and annual presentations in this manner will allow regulators and interested parties to ask pertinent questions on the state of cyber security measures the utilities are taking, while minimizing the risk of inadvertent disclosure of sensitive material.<sup>8</sup>

DRA also notes that part of the intention behind the Technical Review Group is to develop cyber security metrics that do not compromise the utilities’ security, but do measure how well Smart Grid is meeting the state’s objectives. DRA continues to support its recommended cyber security metrics reporting the number and percentage of customers whose personal data has been compromised by a cyber security attack, and the

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<sup>8</sup> At workshops the utilities expressed concern that any cyber security information submitted to the Commission, even under seal, could be subject to the Public Records Act (Cal. Govt. Code §§ 6250 - 6276.48).

number and percentage of customers notified of a breach of their personal data. While not seeing a risk to reporting these metrics, DRA supports further discussion in the Cyber Security Technical Review Group.

DRA further recommends that participating parties (with the exception of Commission and DRA staff<sup>9</sup>) would need to sign a non-disclosure agreement. While participation in the Cyber Security Technical Review Group does not necessarily make one privy to highly confidential material that may compromise the utilities' cyber security efforts, the review group should be considered confidential.

### **III. CONSENSUS METRICS**

#### **A. Customer/AMI Metrics**

##### **1. Number of advanced meter malfunctions where customer electric service is disrupted**

DRA agrees with this metric and has no further comments.

##### **2. Load impact from Smart Grid-enabled, utility administered demand response (DR) programs (in total and by customer class, to the extent available)**

##### **3. Percentage of DR enabled Automated Demand Response (AutoDR) by individual DR impact program**

DRA agrees with metrics 2 and 3, but cautions that duplication of reporting should be avoided since DR has its own separate proceeding and already reports data. If the Commission establishes a webpage or web portal for Smart Grid metrics, the utility can simply link to existing data.

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<sup>9</sup> Commission staff, which includes DRA, are bound by confidentiality of utility information per Ca. Pub. Util. Code § 583.

**4. The number of utility-owned advanced meters with consumer devices with Home Area Network (HAN) or comparable consumer energy monitoring or measurement devices registered with the utility (by customer class, CARE, and climate zone, to extent possible)**

DRA agrees with this metric theoretically, but notes that HAN and comparable devices have not yet fully entered the market, and smart meters are not yet fully deployed. As noted in the Report, this metric will only include devices registered with the utility’s HAN.<sup>10</sup> Devices connected with a different gateway would be excluded. This metric may be a useful indicator of HAN adoption, but it may also prove useless depending upon whether the market develops in a manner that encourages or necessitates customers registering their devices with the utility. The Commission should adopt this metric as a placeholder, and evaluate it later to see whether it is relevant once devices are in the marketplace. In the meantime, the IOUs should assess and report the estimated costs of providing this information.

**5. Number of customers that are on a time-variant or dynamic pricing tariff (by customer class, CARE, and climate zone, to the extent available)**

DRA agrees with this proposed metric.

**6. Number of escalated customer complaints related to (1) the accuracy, functioning or installation of advanced meters or (2) the functioning of a utility-administered HAN with registered consumer devices**

DRA agrees with the concept of this proposed metric, but the metric needs further clarification. While each of the utilities in workshops described what each considers an “escalated complaint” to mean, this is not clearly explained in the Report. The Report

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<sup>10</sup> Report at 14.

provides a definition of “escalated complaint”, but part of that definition itself is an escalated complaint. This should be further clarified. All three IOUs should collect this information using the same definition and parameters. In addition, it is not clear whether the type of complaint will be tracked (i.e. whether it is regarding a meter or utility-administered HAN, and whether it is related to accuracy, function, installation, or something else), and whether those complaints have been resolved. The number of escalated complaints, by itself, would have no meaning without specific categorizations. The Commission should order the utilities to track and classify the types of escalated complaints in the final set of metrics. Finally, the cost of implementing this metric should be evaluated.

**7. Number of utility-owned advanced meters replaced annually before the end of their expected useful life**

DRA generally agrees with this metric, but some clarification and possible additions may be necessary. The wording of the metric is a little confusing, and DRA interprets this metric to mean “the number of advanced meters replaced before the end of their expected useful life during the course of one year, reported annually.” The Commission should adopt this clarification in the final decision. In addition to the number replaced, the utility should also track the reason the meter is replaced. Possible reasons could include a manufacturing malfunction (which should be tracked against advertised manufacturer failure rate), installation error, or tampering. Without this additional information, the number of replaced advanced meters would hold little meaning.

**8. Number of advanced meter field tests performed at the request of customers pursuant to utility tariffs providing for such field tests**

DRA sees some value in this metric, as it may signify an increase in awareness of smart meters and interest in their function and capabilities. However, it is not an indicator of meter accuracy unless the results of the field tests are reported. Subject to the cost of reporting, this metric should be included. DRA recommends the utilities also

report the results of the field tests — reported as number of advanced meters field tested at the request of customers pursuant to utility tariffs providing for such field tests that are measuring usage correctly/incorrectly.

**9. Number and percentage of customers with advanced meters using a utility administered internet or web-based portal to access energy usage information or to enroll in utility energy information programs**

DRA generally supports this metric, but it should be clarified to ensure that each utility is tracking in a consistent manner. The incremental costs of providing this metric should be evaluated.

**B. Plug-In Electric Vehicle Metrics**

**1. Number of customers enrolled in time-variant electric vehicles tariffs**

DRA agrees with this metric, and agrees with the comment in the Report that it should be updated based on the outcome of the Alternative Fuel Vehicle (AFV) Order Instituting Rulemaking (OIR). A potential change could include number of customers who select different types of metering (i.e. whole-house, separate metering, or sub-metering).

**C. Storage Metrics**

**1. MW and MWh of grid connected energy storage interconnected at the transmission or distribution system level**

DRA agrees with this metric. However, the Commission recently issued an OIR related to energy storage. This metric should be subject to revision depending on the outcome of the storage OIR. Like the PEVs, this area is nascent. In the longer term, this metric should be revisited to make changes based on evolving knowledge about such things as storage penetration levels, technology types, and application of each technology. A technical working group could be formed to discuss the specific technical information needed.

#### **D. Grid Operations Metrics**

- 1. The system-wide total number of minutes per year of sustained outage per customer served as reflected by the System Average Interruption Duration Index (SAIDI), Major Events Included and Excluded**
- 2. How often the system-wide average customer was interrupted in the reporting year as reflected by the System Average Interruption Frequency Index (SAIFI), Major Events Included and Excluded**
- 3. The number of momentary outages per customer system-wide per year as reflected by the Momentary Average Interruption Frequency Index (MAIFI), Major Events Included and Excluded**
- 4. Number of customers per year and circuits per year experiencing greater than 12 sustained outages**

DRA agrees with proposed metrics 1-4 above, and with the Report recommendation to use the information reported in the Annual Reliability Reports to produce information required for this metric. If the Commission establishes a webpage or Smart Grid web portal to be administered by the three utilities for reported metrics, it can include a link to locations where this information is already provided, and should not incur any additional cost.

#### **5. System load factor and load factor by customer class**

DRA agrees with this proposed metric, and agrees with the Report-proposed method of basing it on data collected for the purpose of Annual Rate Group Load Studies. When more advanced methods are deployed, the data provided can be measured directly, rather than calculated using estimates.

- 6. Number of and total nameplate capacity of customer-owned or operated grid-connected distributed generation (DG) facilities**
- 7. Total Annual electricity deliveries from customer-owned or operated grid-connected DG facilities**

DRA agrees with proposed metrics 6 and 7, and with the proposed definitions and data sources. DRA would add that DG may be a large growth area in the near future, with potential sizeable impact on many aspects of generation, transmission and distribution in California. This metric should be revisited in the future when the actual trend of DG becomes more apparent.

- 8. Number and percentage of distribution circuits equipped with automation or control equipment, including Supervisory Control and Data Acquisition (SCADA) systems**

DRA supports this proposed metric.

#### **IV. NON-CONSENSUS METRICS AND AREAS FOR FURTHER CONSIDERATION**

##### **A. Customer/AMI Metrics**

- 1. Number of customer reported outages**

DRA is unclear on the value of this metric, but believes that it merits further consideration. DRA agrees with the comments in the Report that the metric is not directly related to Smart Grid performance and does not reflect a measurement of impact of deployment on the Smart Grid. For example, the number by itself does not indicate whether the utility was able to detect and respond to the outage prior to notification of the customer. However, there may be some value in tracking outages reported by customers that are not otherwise detected, on systems that are equipped with automation or control equipment, or whether the utility was able to avoid a prolonged outage due to smart grid investments. Such a metric could show whether such equipment is functioning as intended. Further discussion is necessary about what data can be collected related to this

metric, and the implications of that data. DRA recommends that this be a topic for a technical working group.

**2. Peak/off-peak price differential**

DRA does not see the value of this metric, and agrees with the comments in the Report explaining that the differential between on-peak and off-peak rates is a function of many factors that are not directly related to Smart Grid deployment. DRA recommends removing this metric.

**3. Load impact from Smart Grid-enabled DR programs; Number of customers with advanced meters and HAN; and Number of customers on time-varying or dynamic pricing tariffs**

DRA agrees with the Report that this type of information is useful for developing future metrics, and should be revisited when more information is available in these areas.

**B. Advanced Automation and Measurement Technologies**

**1. Power quality; Line losses; Dynamic line rating; T&D load factors**

DRA agrees with the Report that many of these technologies are in their early stages and some are not yet available. Although there may currently be methods for estimating and measuring things like line losses and T&D factors, the more advanced automated measurement methods may not be available yet. DRA recommends that the Commission revisit this area as technology develops and is deployed.

**C. Environmental Metrics**

**1. Avoided greenhouse gas emissions (GHG); Changes in consumptive water use per unit of electricity generated; Avoided costs; Achieved Renewable Portfolio Standards (RPS) goals; Economic value of avoided line losses**

DRA agrees with the Report that many of these metrics should be explored in a technical working group with input from experts in applicable environmental fields.

## **D. Cyber Security Metrics**

- 1. Number and duration of outages attributable to grid and cyber attacks; Number and percentage of customers whose data is compromised by cyber-attack; Number and percentage of customers notified of data breach; Number of attempted cyber-attacks on utility; Number of security breaches experienced by utility**

As discussed above, DRA recommends that the Commission establish a Cyber Security Technical Review Group. Further, DRA notes that much work is currently going on at the federal level by the National Institute of Standards and Technologies (NIST) to define and establish cyber-security standards. The Commission should monitor those federal efforts and utilize any useful recommendations.

## **E. Plug-in Electric Vehicle Metrics**

- 1. Metering-related metrics; Smart charging**

As mentioned, the AFV OIR is currently underway, and the Commission should soon be issuing a decision on PEV issues including metering choices. The Commission should revisit this metric after PEV policy is adopted in that decision. It might be useful to establish a technical working group that will begin meeting after the decision is adopted.

## **F. Energy Storage Metrics**

- 1. Magnitude and percentage of total load served by advanced energy storage and peak-shaving technologies; MW and MWh of capacity of peak-load reducing energy storage installed**

DRA agrees with the Report that the “peak-shaving” future of energy storage cannot be measured in isolation. Rather, it will be more useful to determine the magnitude and percentage of storage (including MWs and MWhs) served by various energy storage technologies, as compared to total load.

## V. CONCLUSION

The Commission should adopt the interim metrics as modified by DRA, and establish technical working groups for further work on additional metrics. Additionally, the Commission should evaluate proposed metrics in relation to the cost of providing them. Finally, the Commission should ensure (by reopening this rulemaking, if necessary) that all metrics are once again reviewed and updated prior to filing of 2012 deployment plans.

Respectfully submitted,

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January 24, 2011

**CERTIFICATE OF SERVICE**

I hereby certify that I have this day served a copy of “**COMMENTS OF THE DIVISION RATEPAYER ADVOCATES ON SMART GRID RULING**” to the official service list in **R.08-12-009** by using the following service:

**E-Mail Service:** sending the entire document as an attachment to all known parties of record who provided electronic mail addresses.

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Executed on **January 24, 2011** at San Francisco, California.

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