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BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

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)

DECISION ADOPTING REQUIREMENTS FOR SMART GRID DEPLOYMENT PLANS PURSUANT TO SENATE BILL 17 (PADILLA), CHAPTER 327, STATUTES OF 2009

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DECISION ADOPTING REQUIREMENTS FOR SMART GRID DEPLOYMENT PLANS PURSUANT TO SENATE BILL 17 (PADILLA), CHAPTER 327, STATUTES OF 2009

1. Summary

This decision provides Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company with the guidance needed to file Smart Grid Deployment Plans with this Commission by July 1, 2011.

As the Commission stated in Decision 09-09-029, modernizing the electric grid with additional two-way communications, sensors and control technologies, key components of a Smart Grid, can lead to substantial benefits for consumers. A Smart Grid can enable the integration of higher levels of renewable energy, energy storage, and, eventually, electric vehicles, at a lower cost to consumers. A Smart Grid can also empower consumers by helping them understand and control their energy use, thereby facilitating their participation in demand response programs and helping them to use energy more efficiently. Greater monitoring and automated controls can also reduce the frequency and duration of outages. Many of the advantages of a Smart Grid will contribute to reducing greenhouse gas emissions. It is imperative that Smart Grid investments deliver these benefits to the utilities' customers.

The California legislature and Governor have enshrined the importance of modernizing the state's electric grid through the enactment of Senate Bill (SB) 17 (Padilla), signed into law on October 11, 2009. SB 17 states that "[i]t is the policy of the state to modernize the state's electrical transmission and distribution system to maintain safe, reliable, efficient, and secure electrical service, with infrastructure that can meet future growth in demand" and achieve purposes

specified in the law. SB 17 further requires the Commission "by July 1, 2010, and in consultation with the State Energy Resources Conservation and Development Commission (Energy Commission), the Independent System Operator (ISO), and other key stakeholders, to determine the requirements for a smart grid deployment plan consistent with the policies set forth in the bill and federal law."[1]

Pursuant to SB 17, this proceeding, in consultation with the Energy Commission and the ISO and other key stakeholders, sets the requirements for Smart Grid Deployment Plans. This decision requires that utilities follow a common outline in preparing their Smart Grid Deployment Plans. The outline consists of eight topics as follows:

1. Smart Grid Vision Statement;
2. Deployment Baseline;
3. Smart Grid Strategy;
4. Grid Security and Cyber Security Strategy;
5. Smart Grid Roadmap;
6. Cost Estimates;
7. Benefits Estimates; and
8. Metrics.

In addition, this decision sets requirements for each of these sections concerning the topics that the Smart Grid Deployment Plans must address, the information that the deployment plans must provide, and how the deployment plans must link each section and topic back to the policies set forth in SB 17 and in relevant federal law. Furthermore, we anticipate that workshops hosted by the Energy

[1] Chapter 327, Statutes of 2009.

Commission concerning research on "Defining the Pathway to the Smart Grid of 2020" and workshops hosted by this Commission prior to the filing of the initial Smart Grid Deployment Plans will provide further opportunities for cooperation with the Energy Commission and the ISO.

The decision requires that the Smart Grid Deployment Plans present a vision of the Smart Grid consistent with legislative initiatives. The vision must address how the plans will enable consumers to capture the benefits of a wide range of energy technologies and energy management products and services that may, or may not, be provided by the utility, while protecting consumers' privacy. The vision must also discuss how the Smart Grid will help the utility meet environmental policies already adopted by statute or Commission action, and promote innovation and competition among companies developing new products and services.

The decision requires that the Smart Grid Deployment Plans provide a deployment baseline so that we understand the character of the California grid today and articulate a strategy for achieving the adopted goals.

The decision requires each utility to address grid security and cyber security issues in their Smart Grid Deployment Plans to ensure that these issues are considered explicitly at the planning stage. The decision, consistent with the intent of SB 17, links California concerns for grid security with the security guidelines identified as under development by the National Institute of Standards and Technology. The decision also adopts security strategy requirements and principles to guide the development of Smart Grid Deployment Plans to ensure alignment with national efforts. Further, we note that we anticipate a separate decision before the end of the year adopting privacy

rules prior to the Commission ordering third-party access to customer data. A ruling will follow this decision setting a schedule for resolving privacy issues.

The decision provides a discussion of the cost and benefit procedures that the Smart Grid Deployment Plans should use to enumerate, quantify, and –- to the extent feasible –- monetize the costs and benefits of Smart Grid investments. The decision requires the plans to follow cost-effectiveness analysis to meet legislatively mandated goals in a cost effective way and requires the presentation of the "business case" analysis for other components of the Smart Grid.

The decision also finds that the Smart Grid Deployment Plans should include metrics that permit the assessment of progress, but the adoption of specific metrics requires additional work by parties. A subsequent decision later this year will endorse specific metrics for inclusion in Smart Grid Deployment Plans and other reports.

This decision also proposes to review the initial deployment plans in a single proceeding. Subsequent utility requests to make specific Smart Grid-related investments, however, would occur in utility-specific proceedings where the reasonableness of particular Smart Grid investments can be determined.

Finally, this decision requires that the utilities file annual reports on their Smart Grid activities, with the first annual reports due on October 1, 2012.

2. Background

Since this proceeding commenced in 2008, new legislation at both the federal and state level have affected policies concerning the Smart Grid and the management of this proceeding.

2.1. Recent Procedural History

This decision is a result of Governor Arnold Schwarzenegger signing into law Senate Bill (SB) 17 (Padilla),[2] which became effective January 1, 2010. SB 17 directs the Commission "to determine the requirements for a Smart Grid Deployment Plan consistent with the policies set forth in the bill and federal law" by July 1, 2010.

The older procedural history leading to this phase of this proceeding can be found in Decision (D.) 09-12-046 and the Assigned Commissioner and Administrative Law Judge's Joint Ruling of September 28, 2009.[3]

The more recent procedural history of direct relevance to this proceeding begins in 2010. On February 6, 2010, a ruling amended the scoping memo to ensure that this proceeding solicits the information needed to implement the regulatory provisions adopted in SB 17.[4] In particular, this ruling sought the information the Commission needs to provide policy guidance to allow electric utilities to develop Smart Grid Deployment Plans by July 1, 2011, as required by SB 17.

The Commission's adoption of D.09-12-046 on December 17, 2009, in addition to fulfilling the state obligations adopted by the Energy Independence

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[2] Chapter 327, Statutes of 2009.

[3] Assigned Commissioner and Administrative Law Judge's Joint Ruling Inviting Comments on Proposed Policies and Findings Pertaining to the Smart Grid Policies Established by the Energy Information and Security Act of 2007, September 28, 2009 (Joint Ruling of September 28, 2009).

[4] Assigned Commissioner and Administrative Law Judge's Joint Ruling Amending Scoping Memo and Inviting Comments on Proposed Policies and Findings Pertaining to the Smart Grid (Ruling Amending Scope) (February 8, 2010). (http://docs.cpuc.ca.gov/efile/RULINGS/113482.pdf.)

and Security Act of 2007 (EISA),[5] also set forth policies to promote access to electricity usage and price information by consumers and authorized third parties. These policies, however, require implementation and the Ruling Amending Scope solicited comments to develop the rules needed to effectuate these policies, consistent with EISA, the public interest, and state privacy rules. Finally, the Ruling Amending Scope also solicited comments in order to develop policies that advance the goals set forth in the Order Instituting Rulemaking that initiated this proceeding and which were not previously addressed.

Opening Comments on the Ruling Amending Scope were due on March 9, 2010. The Alliance for Retail Energy Markets, the Black Economic Council (BEC), the California Cable and Telecommunications Association (CCTA), the California Energy Storage Alliance (CESA), the California Independent System Operator Corporation (ISO), California Large Energy Consumers Association (CLECA), the Center for Democracy and Technology (CDT) and the Electronic Frontier Foundation (EFF) (filing jointly), Center for Energy Efficiency and Renewable Technologies (CEERT), Cisco Systems, Inc. (Cisco), Consumer Federation of California (CFC), the Division of Ratepayer Advocates (DRA), Electronic Privacy Information Center (EPIC), EnergyHub, Inc. (EnergyHub), Environmental Defense Fund (EDF), Google, Inc. (Google), the Greenlining Institute (Greenlining), the Green Power Institute (GPI), Interstate Renewable Energy Council (IREC), Latino Business Chamber of Greater Los Angeles (Latino Chamber), MegaWatt Storage Farms, Inc. (MegaWatt), Pacific Gas and Electric Company (PG&E), Pacific Telephone Company, d/b/a AT&T California (AT&T), Privacy and Cyber Security Law and Policy Researchers

[5] 16 U.S.C. § 2621(d).

(Researchers), QUALCOMM Incorporated (Qualcomm), San Diego Gas & Electric Company (SDG&E), Southern California Edison Company (SCE), Tendril Networks, Inc. (Tendril), The Utility Reform Network (TURN), the Utility Consumers' Action Network (UCAN), Verizon California, Inc., MCI Communications Services, Inc. d/b/a Verizon Business Services, and Verizon Wireless (collectively "Verizon"), and Wal-Mart Stores, Inc. and Sam's West, Inc. (Wal-Mart) submitted comments.

On March 17-19, 2010, public workshops on Smart Grid technologies took place in San Francisco at the Commission offices. On March 17 and March 18, the workshop sessions considered what requirements deployment plans submitted pursuant to SB 17 must meet. On March 19, the workshop considered how to provide customers with timely access to their usage and price data, as required by D.09-12-046.

Reply comments were due on April 7, 2010. AT&T, CDT and EFF (filing jointly), CESA, CEERT, CFC, DRA, EDF, EPIC, GPI, Greenlining, GroundedPower, Inc. (GroundedPower), HomeGrid Forum (HomeGrid), Lantiq Inc. (Lantiq), PG&E, SCE, SDG&E, Sigma Designs, Inc. (Sigma), the Telecommunications Industry Association (TIA), To-the-Point, and TURN filed reply comments.

2.2. Pursuant to SB 17, This Decision Adopts Policies Pertaining to Smart Grid Deployment Plans with the Input of the CEC and the ISO

SB 17 requires that "By July 1, 2010, the commission, in consultation with the Energy Commission, the ISO, and other key stakeholders shall determine the requirements for a smart grid consistent with Section 8360 and federal law, including the provisions of Title XIII (commencing with Section 1301) of the EISA

(Public Law 110-140)."[6] Complying with this statutory deadline is a major priority of this proceeding.

To date, this proceeding has benefited from the participation of the ISO, both as an active party to the proceeding and as presenters and panelists at the workshops held pursuant to SB 17. In addition, the California Energy Commission (CEC) has interacted with the Commission, both through staff-to-staff discussions and by the participation of CEC Commissioners and high-level CEC staff as workshop leaders. The participation of the ISO and the CEC has not only enabled the Commission to comply with the requirements of SB 17, but it has also added greatly to this Commission's understanding of the complex nuances and challenges confronting California energy policy today.

The continuing participation of the CEC and the ISO in our Smart Grid efforts is not only consistent with SB 17, but also remains critical to the success of Smart Grid deployment in California. This Commission understands that the CEC will soon complete research on "Defining the Pathway to the Smart Grid of 2020" and hold a workshop. The staff of this Commission, if requested by the CEC, will gladly participate in this CEC workshop. In addition, approximately three months before the filing of the first Smart Grid Deployment Plans by SDG&E, SCE and PG&E, this Commission will hold a workshop. Commission staff will work with CEC and ISO staff to structure this workshop to assist the CEC and ISO in providing timely input to the utilities preparing their Smart Grid Deployment Plans. These workshops will enable the Commission to continue its consultation with CEC and ISO on Smart Grid matters.

[6] § 8362(a). Unless stated otherwise, citations are to the Public Utilities Code.

Pursuant to SB 17, this decision adopts policies to guide the development of Smart Grid Deployment Plans and sets procedures for the review of the initial plans by the Commission. This decision also requires annual reports from utilities on Smart Grid activities to facilitate the preparation of annual reports to the legislature required by SB 17.

2.3. Access to Information and Privacy Protections

Based on a review of the comments, replies, and the information provided at the workshop, it is clear that issues concerning access to information and privacy protections contain subtleties and complexities that prevent their resolution without further deliberation and comments. Although there is a widespread consensus that consumer privacy is important and requires protection and there are numerous principles on which there is major agreement, developing a full host of regulatory requirements and protections cannot be done in this decision. There are, however, some elements of security and privacy that should be addressed in deployment plans, and this decision will provide guidance on these matters.

After the adoption of this decision, this proceeding will focus on information access and privacy protections needed to implement access to price and consumption data. Our goal remains the development of a subsequent decision that resolves these matters in time to meet the policy objectives adopted in D.09-12-046 of providing consumers with access to data, namely a policy objective of providing retail and wholesale price information by the "end of 2010,"[7] a policy objective of providing access to usage data through an agreement

[7] D.09-12-046 at 54.

with a third party by the "end of 2010,"[8] and policy objective of providing access to usage information on a near real-time basis for customers with an Advanced Metering Infrastructure (AMI) meter by the "end of 2011."[9] The Commission will not order utilities to provide an authorized third party with access to the customer's electricity usage information that is collected by the utility without adopting rules that are consistent with Energy Information and Security Act of 2007 standards, the general public interest, and state privacy rules.[10]

2.4. Policies Pertaining to Functionality and Interoperability Standards Await Action by Standard Setting Bodies

SB 17 requires that:

> The commission shall institute a rulemaking or expand the scope of an existing rulemaking to adopt standards and protocols to ensure functionality and interoperability developed by public and private entities, including, but not limited to, the National Institute of Standards and Technology, Gridwise Architecture Council, the International Electrical and Electronics Engineers, and the National Electric Reliability Organization recognized by the Federal Energy Regulatory Commission. An adopted smart grid deployment plan may provide for deployment of cost-effective smart grid products, technologies, and services by entities other than electrical corporations. The smart grid technologies and services shall improve overall efficiency, reliability, and cost-effectiveness of electrical system operations, planning, and maintenance.[11]

The Ruling Amending Scope sought comments from parties over whether the Commission should proceed by:

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[8] *Id.* at 65.

[9] *Id.*

[10] *Id.* at 78.

[11] *Id.*

> 1) deferring Commission consideration in this proceeding until a number of the listed agencies have adopted standards or protocols; 2) deferring Commission consideration of protocols to another proceeding that will commence after a number of the listed agencies have adopted standards or protocols; or 3) adopting a "performance standard" in this proceeding requiring that those implementing a Smart Grid technology take steps to ensure that it has the capability to function and operate with devices developed pursuant to standards adopted by major standard setting agencies, including the National Institute of Standards and Technology, Gridwise Architecture Council, the International Electrical and Electronics Engineers, and the National Electric Reliability Organization recognized by the Federal Energy Regulatory Commission.[12]

We review and discuss the responses of parties to these questions.

2.4.1. Positions of Parties

Concerning the approach the Commission should adopt to comply with the SB 17 requirements to adopt standards and/or protocols to ensure functionality and interoperability of the different parts of the Smart Grid, few parties provided comments.

SCE recommended that:

> … the Commission act in parallel with FERC [Federal Energy Regulatory Commission] to adopt Smart Grid standards as NIST [National Institute of Standards and Technology] achieves consensus. SCE further recommends that Smart Grid standards adoption be taken up as a part of this Rulemaking, rather than opening another proceeding to deal specifically with this issue.
>
> The Commission should also consider, as part of this proceeding, mechanisms adopting those specific standards for which NIST has achieved consensus. We respectfully recommend that the

[12] Ruling Amending Scope at 19.

> Commission incorporate these standards by reference in its final decision in an appropriate proceeding.[13]

SCE, however, provides little information on how this process would work, or how this Commission could "act in parallel" with FERC.

SDG&E argues for a similar approach, stating:

> SDG&E believes development of interoperability standards and protocols is a complicated process which exceeds the scope and opportunity of these proceedings, whereby the Commission should wait for the adoption of uniform standards by recognized standards bodies.[14]

PG&E also supports national standards and recommends that this Commission await national developments:

> PG&E recommends that the Commission continue to defer to the national and international standard-setting bodies, such as NIST, and not attempt to set California only standards for interoperability or functionality at this early stage. National standards will help drive costs down and broaden the availability of new products in the marketplace, while also ensuring the necessary degree of backward systems compatibility. It will be these national standards that determine the capabilities and performance of the Smart Grid.[15]

The ISO states that:

> … development of national standards and open communication protocols will encourage the maximum participation by technology vendors and should encourage greater acceptance by energy service providers and consumers.[16]

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[13] SCE Opening Comments at 10.

[14] SDG&E Opening Comments at 26.

[15] PG&E Opening Comments at 11.

[16] ISO Opening Comments at 5-6.

Thus, an implication of the comments of the ISO is that California policy would benefit from the adoption of national standards.

Communications companies and equipment providers also support national standards. AT&T recommends that the Commission defer the adoption of standards until NIST acts:

> In light of the substantial activity and progress of the NIST proceedings and the significant comments and participation of both public and private stakeholders, AT&T respectfully suggests that the best way to ensure that the resulting standards contemplated by §8362(a) promote the public interest is to defer Commission consideration of adopting state specific protocols and rules until these agencies have completed their review and adopted national standards and protocols.[17]

CCTA similarly states a preference that California standards track national standards, arguing:

> Promoting open interoperability standards now will help ensure that competitors are not materially disadvantaged *vis-a-vis* the IOUs in offering competitive energy management and other Smart Grid services to consumers.[18]

Cisco states:

> Cisco believes that the CPUC should defer its consideration of standards and protocols to another proceeding that will commence after a number of the listed agencies have adopted standards or protocols.[19]

Consumer groups and retailers also endorse waiting for standards bodies to act. DRA calls for the Commission to await national action, arguing:

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[17] AT&T Opening Comments at 10-11.

[18] CCTA Opening Comments at 6.

[19] Cisco Opening Comments at 9.

> The Commission should defer consideration of standards and protocols until the listed agencies – which are in a better position to analyze the technical aspects of interoperability – have adopted appropriate standards or protocols.[20]

The retailer Wal-Mart supports interoperability, stating that "smart grid technology installed by utilities should interoperate seamlessly with equipment developed and installed proactively by any entity using their own resources."[21] Wal-Mart, however, does not opine on how best to achieve interoperability.

Only Tendril supports action now. Tendril states that:

> [W]e favor a phased approach that is consistent with approach #3 ("adopting a "performance standard" in this proceeding…") articulated in the Joint Ruling [Ruling Amending Scope].[22]

We note that even though this approach permits the Commission to act now to adopt a performance standard requiring a device to function with devices built to national standards, this course of action will still likely require participants in the Smart Grid to await the adoption of standards by national bodies to ensure that their devices meet the "performance standard."

2.4.2. Discussion: Interoperability Standards Should be Informed by National Actions

SB 17, in adding § 8360 to the Public Utilities Code, directs that California, among other things, achieve an "[i]dentification and lowering of unreasonable or unnecessary barriers to adoption of smart grid technologies, practices, and services."[23]

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[20] DRA Opening Comments at 11.

[21] Wal-Mart Opening Comments at 2.

[22] Tendril Opening Comments at 6.

[23] *Id.*

Clearly, one way to lower unnecessary barriers is for California's Smart Grid deployment to follow national standards and guidelines for interoperability and incorporate national communication protocols. As the review of the positions of parties makes clear, there is a general consensus that California should follow national standards and guidelines for interoperability and should use communication protocols that Smart Grid operations share throughout the nation.

In EISA, the United States Congress charged NIST with the responsibility "to coordinate the development of a framework that includes protocols and model standards for information management to achieve interoperability of smart grid devices and systems."[24] EISA further requires that once NIST's work has led to sufficient consensus, FERC is required "to institute a rulemaking proceeding to adopt such standards and protocols as may be necessary to insure smart-grid functionality and interoperability in interstate transmission of electric power, and regional and wholesale electricity markets."[25]

We agree with SCE that the Commission should act in parallel with FERC to adopt Smart Grid standards as NIST achieves consensus. We will defer until that time to adopt Smart Grid standards and protocols.

3. Issues before the Commission Pertaining to Use and Content of Deployment Plans

SB 17 charged the Commission with adopting criteria to guide the use, the development and the review of Smart Grid Deployment Plans. This section will address the comments that parties provided on each of these topics, including

[24] EISA § 1305.

[25] *Id.* § 1305(d).

the detailed discussion of the elements of a Smart Grid Deployment Plan that we adopt to ensure that the deployment plans conform to best practices in engineering planning and provide the information that this Commission needs to determine whether the project comports with the provisions of SB 17.

3.1. How Should the Commission use Smart Grid Deployment Plans?

In the Ruling Amending Scope, the Commission identified three different roles that a deployment plan could play as part of the Smart Grid regulatory program: 1) creating a "baseline" against which the Commission could measure progress; 2) providing utilities with approved deployment plans that guide investment and provide the utility with a rationale that could support a proposed investment during review of the project and help in the determination of whether a specific project is reasonable and consistent with the Commission's overall Smart Gird vision; or 3) provide the utility investing in an approved project with an elimination of after-the-fact reasonableness reviews.[26]

The Ruling Amending Scope speculated that using the deployment plans to find a Smart Grid investment to be reasonable would not be appropriate because "[c]onferring a finding of reasonableness on investments made pursuant to a deployment plan would place much more importance on the approval of the plan than the uncertainty of current technology and Smart Grid plans warrants at this time."[27]

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[26] Ruling Amending Scope at 5-6.

[27] *Id*. at 7.

The Ruling Amending Scope invited parties to comment on which approach they believed would best permit the Commission to develop and review Smart Grid Deployment Plans within the timeframe set out by SB 17.

3.1.1. Position of Parties

Many parties commented on the role that deployment plans should play in Commission regulation of Smart Grid investments. SCE advocates for the use of Smart Grid Deployment Plans as a useful guide, but not as a document that controls utility investments. SCE argues:

> Commission review and acceptance of the Deployment Plans should provide strategic guidance for future utility specific Smart Grid investment proposals.[28]

More specifically, SCE contends:

> … that Deployment Plans should be used to establish a strategic baseline plan for evaluating and deploying technology, and to serve as a reference for future Smart Grid technology evaluation and investment proposals by the IOUs. We further agree that the Commission should not evaluate the Deployment Plans to the extent that approval would convey a presumption of reasonableness for all future investments included in the plans. Finally, we agree that a "utility or other party" could cite to an approved deployment plan as part of the rationale for why specific utility investments are or are not reasonable.[29]

PG&E argues that "the deployment plans should be a source of policy guidance, information and evidentiary support for Smart Grid projects and

[28] SCE Opening Comments at 4.

[29] *Id.* at 7.

investments, but not mandatory or binding in individual proceedings."[30] On the other hand, PG&E observes that:

> It is important that the Commission clarify that the "baseline for measuring deployment" established in deployment plans is not prescriptive, but a source of information and policy direction that can inform individual Smart Grid proposals without restricting the Commission's ability to consider those proposals on their own individual merits, on an incremental and flexible basis, as standards and structure for the Smart Grid evolve.[31]

Many of the consumer representatives commenting express similar views to those of the utilities.

UCAN argues that a deployment plan may be a useful guide, but not a document that controls utility investments. UCAN posits:

> … that a Smart Grid deployment plan should serve as a blueprint for a utilities' Smart Grid deployment. It need not be a procurement plan, as per Section 454.5, but they can be if the utility so desires. First, and foremost, it should clearly state the objectives that the utility seeks to achieve. Secondly, it must keep an eye squarely focused upon cost-effectiveness of the measures taken to achieve those objectives. Finally, it should be a living, breathing blueprint that is routinely, if not annually, revised based upon emerging technologies, utilities' experiences, changes in cost and customer responses.[32]

Greenlining reaches a similar conclusion, endorsing the analysis and tentative conclusions of the Ruling Amending Scope:

> As the Joint Ruling [Ruling Amending Scope] tentatively proposed regarding deployment plans: (1) the approval or a deployment plan could establish a baseline for the Commission

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[30] PG&E Opening Comments at 6.

[31] *Id.*

[32] UCAN Opening Comments at 3-4.

> to monitor a utility's deployment of Smart Grid technologies and capabilities, subject to annual status reports to measure progress; and (2) a utility or other party could cite to an approved deployment plan as a rationale for specific investments (although the inclusion of a specific investment in a deployment will not convey a presumption of reasonableness). … Greenlining agrees that Smart Grid deployment plans should not be treated similar to procurement plans, … [33]

Like Greenlining, DRA also supports the proposed uses of the Smart Grid deployment plans outlined in the Ruling Amending Scope. DRA states that:

> DRA agrees that Plans should be used to assess and monitor a utility's deployment of Smart Grid capabilities and technologies. The development of Smart Grid Plan offers an opportunity to thoughtfully create guidelines to steer development of a Smart Grid. As part of the development of the Plan, DRA recommends the Commission order each utility to provide an inventory of all Smart Grid activities made to date. The inventory would provide a snapshot of California's Smart Grid progress, and provide guidance in how each utility will move forward.[34]

GPI, in a similar vein, argues that:

> The smart-grid deployment plans should certainly be used to establish a baseline that will be used in monitoring the development and deployment of these technologies over at least the next couple of decades. … It is reasonable for the Commission to consider favorably the fact that a proposed project is consistent with a filed and approved smart-grid deployment plant, as long as the favorable consideration is taken in the proper context. We agree with the Joint Ruling [Ruling Amending Scope] that it would **not** be reasonable to use the deployment plans to confer

[33] Greenlining Opening Comments at 11.

[34] DRA Opening Comments at 3.

> automatic approval on proposed projects, given the nature of the plans and their inherent uncertainties.[35]

EDF also supports the analysis of the Ruling Amending Scope, but in addition, it observes that "the consideration of smart grid technologies be part of all utilities' normal infrastructure planning processes."[36]

CFC takes an opposing viewpoint, arguing, "the better use of the plan is to allow the utility to use the plan to justify specific investments."[37] On the other hand, CFC would require that the "costs and benefits associated with a particular investment should be reviewed carefully to assure that the most cost-effective technology was chosen."[38]

CEERT, like other commenters, agrees with the approach suggested in the Ruling Amending Scope. CEERT, however, suggests like CFC that "the Commission may wish to consider preserving the option of utilizing an approach analogous to an approved procurement plan – pursuant to Pub. Util. Code § 454.5 – if it were to prove practical in later years."[39]

3.1.2. Discussion: Deployment Plans Can Set Smart Grid Baseline and Guide Investments

The arguments of commenters confirm our tentative conclusion that the best uses of the deployment plans is to set a baseline indicating the current deployment of Smart Grid technologies and as a document for guiding future Smart Grid investments. We also conclude that deployment plans are not a

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[35] GPI Opening Comments at 2, emphasis in original.

[36] EDF Opening Comments at 8.

[37] CFC Opening Comments at 4.

[38] *Id.*

[39] CEERT Opening Comments at 4.

substitute for a Commission review of specific infrastructure investments that will take place just prior to the time of deployment.

PG&E's observation that any baseline for measuring deployment should not be "prescriptive," is a point well taken. A goal of the deployment plans is to initiate project planning that encourages a deployment of Smart Grid technologies needed to meet current policy objectives or to improve the operations of the grid. In this situation, we seek a descriptive, not prescriptive, characterization of the status quo in a deployment plan that enables the Commission to understand where California is today and better understand where California should go.

CFC, the single commenter stating that a deployment plan can serve in lieu of a subsequent reasonableness review, argues for a detailed review of the costs and benefits at the time of the filing of the deployment plan. This argument, however, is unpersuasive because information on Smart Grid technologies is developing rapidly, and undertaking a detailed review of costs and benefits far in advance of an investment could not yield reliable results. Therefore, it would be wiser to view the Smart Grid Deployment Plans as a policy guide for utility investment, not as a determination that certain investments are reasonable.

3.2. What Elements Must a Smart Grid Deployment Plan Have?

SB 17, in requiring the development and filing of deployment plans, specifies that it is the "policy of the state to modernize the state's electrical transmission and distribution system to maintain safe, reliable, efficient, and secure electrical service, with infrastructure that can meet future growth in

demand…"[40] SB 17 then identifies 10 goals that the Smart Grid should achieve.[41] In addition, SB 17 requires the Commission to "evaluate the impact of deployment on major initiatives and policies" and specified seven initiatives against which the Commission, "in consultation with the Energy Commission, the ISO, and electrical corporations"[42] should use when evaluating proposed deployments of Smart Grid technologies.

Subsequently, the Ruling Amending Scope then proposed seven policy outcomes that constituted a vision of the Smart Grid and are linked to the SB 17 initiatives.[43] The Ruling Amending Scope concluded that:

> … the deployment plan should have the following:
>
> - A demonstrable vision consistent with the goals of SB 17;
> - Timeline (where are you now, and how long will it take to upgrade system); and
> - Projected cost, to the extent possible at this time.[44]

The ruling then invited parties to comment on a proposed structure for deployment plans that would offer a practical way to proceed.

In addition, the workshops held on March 17 and 18, 2010, addressed the topic of deployment plans.

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[40] § 8360.

[41] § 8360(a) - § 8360(j).

[42] § 8366.

[43] Ruling Amending Scope at 12-13.

[44] *Id.* at 13-14.

3.2.1. Position of Parties

Following the workshops, the utilities, filing separate replies, proposed a seven-element format for the filing of deployment plans. These seven elements include (quoting directly):

1. Smart Grid Vision Statement.
2. Deployment Baseline.
3. Smart Grid Strategy.
4. Smart Grid Roadmap.
5. Cost Estimates.
6. Benefits Estimates; and
7. Metrics.[45]

DRA also proposes a strategy to create deployment plans that is consistent with the approach recommended by the three utilities. DRA argues (quoting directly) that:

- The Commission should formally adopt a set of Smart Grid objectives; and
- Plans should contain a vision and strategy, technology evaluation and deployment roadmap, and conceptual cost estimates and timelines.[46]

The ISO expresses support for the direction set forth in the Ruling.[47] The ISO identifies three goals of special concern, namely, 1) increasing the reliability and use of the grid;[48] 2) increasing demand-side participation in ISO markets;[49] and 3) integrating greater amounts of intermittent renewable resources.[50]

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[45] See SCE Reply Comments at 3-4; SDG&E Reply Comments at 5 include the first six elements, but SCE's Reply Comments include metrics as part of its "Deployment Baseline;" and PG&E Reply Comments at 3 support the same six elements as SDG&E.

[46] DRA Reply Comments at 2.

[47] ISO Opening Comments at 2.

[48] *Id.* at 3.

Greenlining asks that a discussion of General Order (GO) 156 be a required part of each deployment plan, arguing that "the Commission and the utilities should act prospectively to address the negative impact on supplier diversity that is sure to result from the development of the Smart Grid."[51]

HomeGrid recommends that deployment plan "guidelines call out capabilities, not technologies."[52]

EDF asks that the utility deployment plans, in addition to the items outlined in the Ruling Amending Scope, also address the following three points (quoting directly):

1. Enable maximum access by third parties to the grid, creating a platform for innovation in technology and services.
2. Have the infrastructure and policies necessary to enable and support the sale of demand response, energy efficiency, distributed generation, and storage into wholesale energy markets as a resource, on equal footing with traditional generation resources; and
3. Significantly reduce the total environmental footprint of the current electric generation and delivery system in California.[53]

CEERT states that it "agreed with the Commission's recommendation that deployment plans should be used to establish a baseline from which it can monitor a utility's progress in deploying a smart grid."[54] CEERT asks for a tight

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[49] *Id*.

[50] *Id.* at 4.

[51] Greenlining Reply Comments at 3.

[52] HomeGrid Reply Comments at 3.

[53] EDF Reply Comments at 12-13.

[54] CEERT Reply Comments at 3.

link between the deployment plans and the legislative requirements, the inclusion of a timeline, and projected costs.[55] Finally, CEERT asks that deployment plans tie back to California's Energy Action Plan's priorities for meeting the loading order.[56]

IREC, although expressing broad agreement with the direction proposed in the Ruling Amending Scope, states that "successful implementation of SB 17 requires an ongoing forum through which stakeholders can identify necessary Smart Grid functionality."[57]

CESA argues that "Smart Grid deployment plans should include integration of advanced storage and peak shaving technologies."[58] In addition, CESA recommends that the deployment plans show how they "address each element of the policies embedded in § 8360 and § 8366."[59]

Wal-Mart also supports a consideration of storage as part of the Smart Grid.[60]

Cisco argues for flexibility in the consideration of deployment plans, and believes that the planning process produces benefits:

> … as a vision statement and a planning tool, deployment plans containing information about how a utility will address these topics is a useful means to ensure that there is policy agreement between a regulated utility and the CPUC on what is important in the deployment of the Smart Grid. The regulator needs to

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[55] CEERT Opening Comments at 6.

[56] *Id.*

[57] IREC Opening Comments at 4.

[58] CESA Opening Comments at 5.

[59] *Id.* at 6.

[60] Wal-Mart Opening Comments at 2.

> specify what is important to it in the deployment of the Smart Grid by stating broad policy outcomes the state wants to achieve, and the utility needs the flexibility to produce those outcomes in a way that makes sense for its operations and customers.[61]

Tendril, on the other hand, calls for more specificity in the approach set out in the Ruling Amending Scope. Tendril argues that the criteria are not linked closely enough to those set out in SB 17, stating:

> While we agree that these are all valuable criteria, we respectfully submit that they are incomplete with regard to the policies established in § 8360 of SB 17 and the evaluation criteria established in § 8366 of SB 17. Specifically, both the policies and the criteria of these sections include provisions that focus on (1) deployment of renewable energy technologies, (2) reduced carbon emissions and (3) technology innovation that "provide the ratepayers with new options in meeting their individual energy needs."[62]

CLECA asks that the Commission, in reviewing deployment plans, make sure that it remains focused on the effectiveness and the costs and benefits of proposed Smart Grid investments.[63]

Verizon voices general support for the Commission's efforts to ensure the open review of Smart Grid Deployment Plans to ensure compliance with the goals of SB 17, stating:

> Verizon concurs with the Commission's view that defined plans for the design, implementation and management of smart grid projects are needed and will benefit all parties, as it will provide a logical, practical and visible method for the parties to follow.[64]

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[61] Cisco Opening Comments at 7.

[62] Tendril Opening Comments at 2.

[63] CLECA Opening Comments at 3-4.

[64] Verizon Opening Comments at 5-6.

Qualcomm argues that:

> … a plan should address how the IOU plans to meet the need for communications, especially broadband communications, which is essential for so many Smart Grid applications. … Smart Grid plans should address the extent to which an IOU plans to rely on such technology. Including these provisions will ensure that the Smart Grid plans are comprehensive and fully describe how the IOUs intend to meet the policy objectives established by state and federal law.[65]

GPI endorses the use of deployment plans for establishing a baseline against which to measure infrastructure development. GPI states:

> The smart-grid deployment plans should certainly be used to establish a baseline that will be used in monitoring the development and deployment of these technologies over at least the next couple of decades.[66]

3.2.2. Discussion: The Deployment Plan Should Have Eight Elements

The comments of parties on the Smart Grid Deployment Plans make clear both the use and limitations of these planning documents. Indeed, there is substantial agreement concerning the appropriate format of the deployment plans.

Concerning the format of the deployment plans, we find that the elements of a Smart Grid plan recommended by SCE, SDG&E, PG&E, and DRA have so much in common that they are essentially the same. As proposed by SCE, the Smart Grid Deployment Plan elements provide a framework whereby the parties can both discuss the general elements of a Smart Grid Deployment Plan, such as a vision statement, a deployment baseline, a Smart Grid strategy, a Smart Grid

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[65] Qualcomm Opening Comments at 3-4.

[66] GPI Opening Comments at 2.

roadmap, cost and benefit estimates, and metrics and also address the specific requirements for complying with the provisions of SB 17.

In addition, the framework proposed by these parties has sufficient flexibility to enable the Smart Grid Deployment Plans to address in advance critical interests of concern to the Commission. For example, the section on Smart Grid Strategy should enable the utilities to discuss how the utility can advance the goals of GO 156, as recommended by Greenlining and other parties, even as it makes Smart Grid investments to develop California's infrastructure.

We do, however, adopt one minor change. Although the issues of grid security and cyber security could be addressed as part of the strategic planning section, this decision requires that deployment plans include a separate section on the topic of security. The section on security will require the utility to discuss the security needed to ensure the operation of the grid and the security needed to prevent unauthorized access to consumer data.

We therefore adopt an eight element proposal, based on the seven element proposal of SCE, as the organizing structure for the sections of the Smart Grid Deployment Plans that all utilities must file. The eight elements are:

1. Smart Grid Vision Statement.
2. Deployment Baseline.
3. Smart Grid Strategy.
4. Grid Security and Cyber Security Strategy.
5. Smart Grid Roadmap.
6. Cost Estimates.
7. Benefits Estimates; and
8. Metrics.

These eight topic areas will permit the development of Smart Grid Deployment Plans that demonstrate compliance with the policy initiatives of SB 17.

As many parties note, the systematic presentation of a Smart Grid Deployment Plan can enable the Commission to understand and assess the baseline condition of today's grid even as we plan for the grid of the future. A common structure for the Smart Grid Deployment Plans will also facilitate participation by interested parties in Commission proceedings. Moreover, the flexibility of the adopted structure allows for the ready incorporation of a discussion of infrastructure issues, such as using energy storage technologies as part of a Smart Grid and considering the use of public communications networks to serve the communications needs of the Smart Grid.

In the sections that follow, we will discuss in more detail the topics that each of the eight sections should address.

In summary, the eight part outline for the presentation of Smart Grid Deployment Plans offers a practical way for the utilities to organize their Smart Grid Deployment Plans and to demonstrate compliance with the policies adopted in SB 17. The use of a common structure in all deployment plans, when combined with the guidance offered below, should produce deployment plans that permit simple comparisons to the approaches each utility proposes. In addition, the common structure of all utility deployment plans should facilitate participation by interested parties addressing the topics either omitted or included in the deployment plans.

3.3. What Should the Smart Grid Vision Statement Include? How Should the Vision Statement be Structured?

The Ruling Amending Scope stated that a Smart Grid must:

- Be self-healing and resilient – Using real-time information from embedded sensors and automated controls to anticipate, detect, and respond to system problems, a Smart Grid can automatically avoid or mitigate power outages, power quality

problems, and service disruptions. (§ 8360 a, b, and d; § 8366 a, e, f, and g.)

- Empower consumers to actively participate in operations of the grid – A Smart Grid should enable consumers to change their behavior around dynamic prices or to pay vastly increased rates for the privilege of reliable electrical service during high-demand conditions. (§ 8360 c, d, e, f, g, and h; § 8366 a, b, c, and d.)
- Resist attack – A Smart Grid system should better identify and respond to man-made or natural disruptions. A Smart Grid system using real-time information should enable grid operators to isolate affected areas and redirect power flows around damaged facilities. (§ 8360 a, b, and d; § 8366 a, e, f, and g.)
- Provide higher quality power that will save money wasted from outages – A Smart Grid system should create and provide more stable and reliable power to reduce down time. (§ 8360 a and b; § 8366 a, e, f, and g.)
- Accommodate all generation and storage options – A Smart Grid system should continue to support traditional power loads, and also seamlessly interconnect with renewable energy, micro-turbines, and other distributed generation technologies at local and regional levels. (§ 8360 b, c, d, e, f, and g; § 8366 a, e, f, and g.)
- Enable electricity markets to flourish – A Smart Grid system should create an open marketplace where alternative energy sources from geographically distant locations can easily be sold to customers wherever they are located. Intelligence in distribution grids should enable small producers to generate and sell electricity at the local level using alternative sources such as rooftop-mounted photo voltaic panels, small-scale wind turbines, and micro hydro generators. (§ 8360 b, c, d, e, f, g, h, i, and j; § 8366 a, b, c, and d.)
- Run more efficiently – A Smart Grid system should optimize capital assets while minimizing operations and maintenance

costs (optimized power flows reduce waste and maximize use of lowest-cost generation resources). (§ 8360 a; § 8366 g.)

- Enable penetration of intermittent power generation sources – As climate change and environmental concerns increase, the demand for renewable energy resources will also increase; since these are for the most part intermittent in nature, a Smart Grid system should enable power systems to operate with larger amounts of such energy resources. (§ 8360 c, g, and j; § 8366 a, b, c, and d.)

These characteristics are also policy goals enumerated by SB 17 as noted in the citations that were included in the Ruling Amending Scope and repeated above. The next step in providing guidance on the development of a Smart Grid vision plan is to specify what the statement should include and how it should be structured.

3.3.1. Position of Parties

In general, parties who commented on the Smart Grid vision statement argue that a vision is needed, but did not elaborate on the details or the structure of one.

DRA, for example, argues that the entire deployment plan should serve as a guiding vision statement. DRA also warns:

> While an approved Plan may serve as one factor in reasonableness reviews of specific investment requests—depending upon the specificity of the plan—they cannot be both visionary guidelines and carry weight in a determination of reasonableness at the expense of a thorough cost-benefit analysis and technological feasibility.[67] SCE argues that the vision statement in each deployment plan "should be consistent with the Commission's Smart Grid objectives as contained in the eight

[67] DRA Reply Comments at 3.

> bullet-pointed 'must haves' listed on pages 12 and 13 of the [Ruling Amending Scope]."[68]

SDG&E[69] argues that a vision statement is needed to advance the Smart Grid deployment. SDG&E and PG&E both express support for SCE's argument that the vision statement must be consistent with the eight "must haves" that were included in the Ruling Amending Scope.[70]

EDF suggests that the list be expanded to include:

- Enable maximum access by third parties to the grid, creating a welcoming platform for deployment of a wide range of clean energy technologies and energy management services;
- Have the infrastructure and policies necessary to enable and support the sale of demand response, energy efficiency, distributed generation, and storage into wholesale energy markets as a resource, on equal footing with traditional generation resources; and
- Significantly reduce the total environmental footprint of the current electric generation and delivery system in California.[71]

3.3.2. Discussion: Vision Statement Should Present a Vision of Smart Energy Markets, Smart Consumers and a Smart Utility

We agree with the views of commenters that a vision statement is needed.

Based on the nine workshops that we have held as part of this proceeding and the comments we have received, we conclude that a Smart Grid vision

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[68] SCE Reply Comments at 2.

[69] SDG&E Reply Comments at 2.

[70] SDG&E Reply Comments at 5; PG&E Reply Comments at 3.

[71] EDF Opening Comments at 12-13; EDF Opening Comments on Proposed Decision at 6.

statement will help orient a utility's efforts to upgrade its electrical system to meet today's requirements and tomorrow's needs using the latest technologies.

In filing their deployment plans, Investor-Owned Utilities (IOUs) should address how their vision of the Smart Grid will perform in each of the eight areas stated in Section 3.3 above with particular reference to the relevant sections of § 8360 and § 8366.

Additionally, the vision should address the three areas identified by EDF, i.e.:

- Enable maximum access by third parties to the grid, creating a welcoming platform for deployment of a wide range of energy technologies and management services;
- Have the infrastructure and policies necessary to enable and support the sale of demand response, energy efficiency, distributed generation, and storage into energy markets as a resource among other things, on equal footing with traditional generation resources; and
- Significantly reduce the total environmental footprint of the current electric generation and delivery system in California.

The workshops and the record of this proceeding show that a Smart Grid is a system of networked utility and consumer devices that use communications technology to exchange information that enables intelligent consumers, devices, and utility generation, transmission and distribution equipment in order to optimize the secure, reliable and efficient production, delivery and consumption of electricity.

Therefore, the IOUs' vision statements must not only discuss the broad policy objectives that are referenced in SB 17 and in the earlier sections of this decision, but also provide sufficient detail concerning the qualitative benefits and opportunities for each participant in the Smart Grid.

To guide the utility vision statements, below we provide a schematic presentation of the types of benefits that the Smart Grid can provide.

We direct that the IOUs' vision statements divide their discussion of the Smart Grid vision into three sections: 1) Smart Market, 2) Smart Customer, and 3) Smart Utility as depicted below.

The Smart Market that emerges from the Smart Grid should be transparent and provide price, tariff and usage information sufficient to facilitate, among other things, demand response and distributed generation.

In addition, the Smart Grid should have sufficient communications capabilities to enable and support the reflection of the value of, for example, demand response, energy efficiency, distributed generation, and storage in wholesale energy markets.

In addition, because prices play such a critical role in the functioning of the Smart Market, the vision statement should also describe the types of pricing structures needed to ensure cost-effective demand response, distributed generation, and conservation responses needed to benefit customers.

Concerning the section called Smart Customer, the Smart Grid vision statement should address how a utility will enable customers to become more informed about the Smart Grid and allow customers to use electricity more efficiently and save money. The vision statement should consider the expectations of consumers concerning the Smart Grid and how to meet customer expectations and educate customers so that they can align their expectations with the realities of the technology. In addition, the Smart Grid should be able to support smart consumer devices, such as electric vehicles or appliances that can alter operations in response to system conditions or prices. In general, the Smart Grid Deployment Plans should demonstrate a proactive approach to consumer education and outreach and draw on consumer research and past experiences. The evolution of a utility customer from a recipient of energy and into a participant in the grid must also involve a detailed education and marketing of why Smart Grid is beneficial to the individual consumer.

The Smart Customer section should also address how the Smart Grid will enable consumers to capture the benefits of a wide range of energy technologies and management services that may, or may not, be offered by the utility, while protecting consumers' privacy, and promote innovation and competition among companies developing new products and services.

Concerning the section on Smart Utility, the vision statements should reflect how the Smart Grid will enable a utility to operate its transmission and distribution system in ways that anticipate events, enable responsiveness, and

permit automatic or "self-healing" responses by the grid. The Smart Utility section should also discuss how the Smart Grid will help the utility meet environmental policies already adopted by statute or Commission action.

In summary, each IOU's vision statement should consider how the utility plans to promote a Smart Market, a Smart Customer, and a Smart Utility.

3.4. What Should the Deployment Baseline Include?

In presenting a Smart Grid Deployment Plan, the reasonableness of the proposed steps depends on the current state of a utility's deployment of Smart Grid infrastructure. Due to the interconnectedness of Smart Grid technology with the utility's existing distribution, transmission and control infrastructure and the overall interconnectedness of the electric grid, this decision will provide guidance on what the utility should include and exclude in the description of the baseline situation.

3.4.1. Position of Parties

DRA recommends that the IOUs provide an inventory of current Smart Grid investments that would "provide a snapshot of Smart Grid progress." Further, DRA recommends that this inventory, which can be used as a baseline, be filed by October 1, 2010.[72]

UCAN suggests that a deployment plan baseline should include the "Scorecard and Decision-maker's Checklist"[73] in the absence of interoperability

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[72] DRA Opening Comments at 3; DRA Reply Comments at 9.

[73] The "Decision-Maker's Interoperability Checklist" is a document created by the Gridwise Architecture Council and "is a tool to help regulatory and utility decision-makers evaluate options … to determine whether they have the characteristics and attributes that contribute to interoperability." The "Smart Grid Scorecard" is a document developed by EnerNex for the Gridwise Architecture Council and Smart

Footnote continued on next page

standards. UCAN argues that "until official standards are adopted [the Scorecard and Decision-makers Checklist] are the best measurement for ensuring the utilities are adopting technology that is interoperable."[74]

GPI supports a baseline in the deployment plans that can "be used in monitoring the development and deployment of [Smart Grid] technologies over at least the next couple of decades."[75]

Tendril and MegaWatt support the use of a deployment plan as a means to establish a baseline to monitor Smart Grid deployments.[76]

PG&E supports using the deployment plan to gather information and data "that can inform individual Smart Grid proposals," but not be used in a prescriptive manner. Rather, the baselines should provide the Commission with the flexibility to consider proposals individually as the Smart Grid evolves.[77] Both PG&E and SDG&E agree that this baseline should list projects and activities, "including status and metrics as appropriate over time."[78]

CESA states that a baseline should be established to allow the Commission to monitor Smart Grid deployments and "be included as an important factor in the evaluation of the reasonableness" of Smart Grid investments.[79]

Grid News that is to assist decision-makers in evaluating products developed for the Smart Grid. *See* UCAN Opening Comments at Attachments C and D.

[74] UCAN Opening Comments at 19.

[75] GPI Opening Comments at 2.

[76] Tendril Opening Comments at 1; MegaWatt Opening Comments at 9.

[77] PG&E Opening Comments at 6.

[78] PG&E Reply Comments at 3; SDG&E Reply Comments at 5.

[79] CESA Opening Comments at 6.

CDT-EFF suggests that a privacy impact assessment should be included as part of the IOUs' deployment baseline. This assessment should be based on privacy standards suggested by CDT-EFF or as adopted by the Commission.[80] CDT-EFF further suggests that these baseline privacy standards should also apply to third parties.[81]

EPIC supports the need for minimal, or "baseline," privacy standards.[82] Researchers also offer several privacy standards suggestions that should be part of any initial deployment baseline.[83]

SCE "agrees that Deployment Plans should be used to establish a strategic baseline plan" that will be useful for evaluating and deploying technology, and be a reference point for future Smart Grid investments.[84] Additionally, SCE argues that a baseline "should describe the current state of each IOU's Smart Grid systems, identify the Smart Grid technologies that have been deployed by the IOU in the past 10 years, and describe the basic scope of the deployment of those technologies. According to SCE, this baseline will serve as an initial point in evaluating the IOUs' deployment plans.[85]

EDF, CEERT, TURN, Greenlining and TIA support the Ruling Amending Scope's tentative decision to use the deployment plans to establish a baseline.[86]

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[80] CDT-EFF Opening Comments at 24.

[81] CDT-EFF Reply Comments at 6.

[82] EPIC Reply Comments at 4.

[83] Researchers Opening Comments at 7-9.

[84] SCE Opening Comments at 7.

[85] SCE Reply Comments at 2.

[86] EDF Opening Comments at 8; CEERT Opening Comments at 4; TURN Opening Comments at 2; Greenlining Opening Comments at 11; TIA Reply Comments at 2.

CFC comments that certain parties have requested that a baseline be established "so that the Commission can determine the extent to which the electric grid needs to be upgraded to accommodate state policy goals." CFC cautions that a Smart Grid may already exist in California, and the establishment of a baseline will help avoid the risk of paying twice for duplicative installations.[87] Further, CFC argues that a state-wide baseline should be developed as one of the goals of SB 17 is "to modernize the state's electrical transmission and distribution system."[88]

3.4.2. Discussion: Elements for Deployment Baseline

Parties are in near total agreement that a baseline, or inventory, of current Smart Grid infrastructure investments is necessary to enable the Commission to understand where the utilities are today and can be used to gauge how much "smarter" the grid is in the future. The Commission agrees that a baseline should be undertaken by the utilities and included in their deployment plan filings, due by July 1, 2011. We decline to adopt the recommendation of DRA to have the inventory of technologies due on October 1, 2010 since such an early date is inconsistent with the statutory intent.

The baseline methodology we adopt follows the proposal made by SCE in its Reply Comments, that is, the baseline should include information on the current state of the grid for each utility, describe smart technologies that have been deployed and the scope of those deployments and investments. We are cognizant of CFC's concerns that ratepayers not pay for the same investment twice, and this will be a central issue in the Commission's review of proposed

[87] CFC Reply Comments at 2-3.

[88] *Id.* at 5 (emphasis in original).

investments. The Commission will strictly scrutinize and use this baseline report as a comparison against future requests for funding for Smart Grid and other infrastructure investments.

Additionally, we agree with CDT-EFF and Researchers that an assessment of privacy and grid security issues should be included as part of this baseline report. CDT-EFF suggests that this privacy assessment should be responsive to the principles outlined in the Fair Information Practices, which include:

- Smart Grid service providers should limit collection of consumers' personal data; any such data collected should be obtained by lawful means and with the consent of the consumer, where appropriate.
- Data collected by Smart Grid service providers should be relevant to a specific purpose, and be accurate, complete and up-to-date.
- The purpose for collecting Smart Grid data should be settled at the outset.
- The use of Smart Grid personal data ought to be limited to specified purposes, and data acquired for one purpose ought not to be used for others.
- Smart Grid data must be collected and stored in a way reasonably calculated to prevent its loss, theft, or modification.
- There should be a general position of transparency with respect to the practices of handling Smart Grid data.
- Smart Grid consumers should have the right to access, confirm, and demand correction of their personal data.
- Those in charge of handling Smart Grid data should be responsible for complying with the principles of the privacy guidelines.

We agree with CDT-EFF and Researchers that at a minimum this privacy impact assessment should address the following questions that pertain to current privacy practices:

- What data is the utility now collecting?
- For what purpose is the data being collected?
- With whom will the utility currently share the data?
- How long will the utility currently keep the data?
- What confidence does the utility have that the data will is accurate and reliable enough for the purposes for which the data will be used?
- How does the utility protect the data against loss or misuse?
- How do individuals have access to the data about themselves? and
- What audit, oversight and enforcement mechanisms does the utility have in place to ensure that the utility is following their own rules?[89]

As discussed elsewhere, the Commission will address customer access and specific privacy and cyber security rules in a separate phase; but the IOUs can provide these privacy and cyber security assessments in time for the filing of their deployment plans. Moreover, independent of the specific rules adopted concerning privacy and access to-date in the short-term, long-term security requires an incorporation of these concerns at the project planning stage.

Finally, we note that CDT-EFF requests that the Commission require similar reports from demand response providers and other third parties that plan to access customers' usage data via the customer's meter. At this time, the

[89] Note that we ask a variant of these questions in the cyber security section below. In that setting, the emphasis is on utility plans, whereas in this section of the plan we solicit information on current practices.

Commission declines to adopt such a request. The Commission is aware of the concerns of certain parties regarding the need to enforce privacy standards upon these third parties, but at this time the Commission requires more time to assess whether any rule, law or mandate authorizes the Commission to apply this section to third parties.[90]

3.5. What Should the Smart Grid Strategy Include?

Since each Smart Grid Deployment Plan will include a statement of the utility's strategy towards this key infrastructure investment, it is logical to ask what a strategy statement should include. This section reviews the recommendations made by parties, provides parties with guidance, and describes what the Commission will look for in a strategy statement.

3.5.1. Position of Parties

Concerning the Smart Grid strategy, SCE provides the most comprehensive view of what the strategy should include. SCE recommends that:

> Each IOU should describe their strategy for evaluating Smart Grid technologies and deploying those technologies that it deems will create sufficient customer value and are technologically mature and commercially available. This strategy section should demonstrate how an IOU prioritizes its technology evaluation and deployment efforts against the Smart Grid objectives described … above. The IOU's strategy section should describe a formal decision-making framework.[91]

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[90] The Commission is aware that privacy protections and the reach of Commission jurisdiction are under review by legislation pending before the State Legislature. Legislative action may provide greater legal clarity in this matter. If there is no action on this matter by the Legislature, then the Commission will consider inviting legal briefs to clarify the extent of the Commission's jurisdiction and to recommend the best procedure for protecting consumer interests.

[91] SCE Reply Comments at 3.

SCE agrees with the Ruling Amending Scope that "Deployment Plans should be used to establish a strategic baseline plan for evaluating and deploying technology, and to serve as a reference for future Smart Grid technology evaluation and investment proposals by the IOUs."[92]

SDG&E provides a more general description of what a Smart Grid strategy should include. SDG&E argues that

> … the question for the Commission in considering any utility's Smart Grid application should be limited to whether the utility's proposal for achieving those objectives through Smart Grid investments is the most cost effective alternative available, in light of existing technologies and the specific system requirements and customer needs confronted by that particular utility.[93]

PG&E states that the Smart Grid Deployment Plans should include a strategy that includes "[t]echnology deployment decision making criteria and strategy that the utility proposes to use to move forward with incremental projects, programs and investments."[94] PG&E cautions that "the evolution of the Smart Grid will not follow a neat and prescribed set of goals and criteria."[95]

DRA supports the proposal of SCE for the inclusion of a strategy as part of a deployment plan.[96] DRA also supports the comments of SDG&E and PG&E that the deployment plans should provide guidance and direction.[97]

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[92] SCE Opening Comments at 7.

[93] SDG&E Reply Comments at 6-7.

[94] PG&E Reply Comments at 3.

[95] PG&E Opening Comments at 7.

[96] DRA Reply Comments at 2.

[97] *Id*.

Qualcomm argues that "each Smart Grid plan should be required to state the extent to which the IOU plans to use cellular technology for broadband communications and justify construction of a new broadband network by any IOU planning to do so."[98] AT&T similarly "recommends the Commission support rules that allow for and encourage the use of existing commercial carrier networks and services."[99] Verizon asks "the Commission to consider the extensive and tested information technology capabilities that Verizon and other communications carriers can bring to any smart grid project."[100] CCTA similarly argues that "in evaluating IOUs' Smart Grid Deployment Plans, the Commission should encourage the use of existing network providers in smart grid deployments."[101]

Concerning the issue of what communications protocols the Smart Grid should include, we note that the Commission cannot reach a decision on this matter until national standards become clearer. Nevertheless, two standards are currently emerging and parties have provided comments that warrant consideration now.

Concerning a standard known as "SEP 2.0 [Smart Energy Profile 2.0]," SCE states that it "strongly supports SEP 2.0 as the appropriate standard for the exchange of customer data" and comments that this standard "has the full support of five of the six major smart meter providers."[102]

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[98] Qualcomm Comments at 3.

[99] AT&T Opening Comments at 5.

[100] Verizon Opening Comments at 1.

[101] CCTA Opening Comments at 2.

[102] SCE Opening Comments at 27.

Concerning a different standard known as OpenADR, Lawrence Berkeley National Laboratory (LBNL), in response to questions at a workshop, provided information that indicates that OpenADR offers many attractive features and is already in use in many commercial settings. In addition, LBNL comments that OpenADR and SEP can coexist and both can be integrated into the Smart Grid. LBNL states that "OpenADR could be included as a standard infrastructure deployment plan requirement for Smart Grid implementation."[103]

A number of parties provided comments on how to incorporate or whether to incorporate the Commission's GO 156 requirements into the Smart Grid Deployment Plans. Greenlining recommends that the requirements of GO 156 be included in the utilities' Smart Grid Deployment Plans, with the reporting and diversity requirements of GO 156 specifically applied to the discrete portion of the utilities' plans that consists of the development of the Smart Grid.[104]

The BEC in its comments urged the Commission to extend its regulatory authority over a number of new participants in the energy industry.

The Latino Chamber urged this commission to increase, not decrease, its effectiveness and jurisdiction by including all corporations that could and should benefit from the Smart Grid system, including those likely to supply most of the new technology for the Smart Grid system. Specifically, it urged that every Silicon Valley company with $500 million or more in revenue that could benefit or participate in the Smart Grid system be a part of this proceeding.[105]

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[103] Administrative Law Judge (ALJ) Ruling, March 20, 2010, Attachment A at 7.

[104] Greenlining Opening Comments at 4.

[105] Latino Business Chamber of Greater Los Angeles Opening Comments at 4.

3.5.2. Discussion: Smart Grid Strategy Should Provide Direction and Demonstrate Consistency with SB 17 and GO 156 Goals

The comments of parties demonstrate a general consensus that deployment plans should include a discussion of an IOU's Smart Grid strategy, and that the strategy should offer a sense of direction and guidance, rather than setting rigid requirements. This is clearly a reasonable approach since there are significant uncertainties surrounding future technologies that may be part of a Smart Grid.

As SCE points out, each utility's Smart Grid strategy must explain how the utility will prioritize its technology evaluation and deployment efforts against the goals identified for California by SB 17. We expect each utility to explain how its decision-making framework will specifically address each of the eleven areas listed in Section 3.3.

It is also reasonable to require that a utility's Smart Grid strategy demonstrates how the utility will evaluate whether third party communications networks can provide cost-effective communications that meet the security and performance requirements of the Smart Grid. We expect that before the Commission approves a specific Smart Grid infrastructure investment, the Commission will wish to ascertain whether investments in Smart Grid communications are cost-effective and whether a utility has adequately considered a range of alternatives, especially those concerning the use of existing and future communications infrastructure operated by third parties.

Similarly, concerning interoperability standards, prudence requires that the strategy section of a utility's deployment plan should consider how standards will be used and how the utility will minimize the risk of stranded costs in cases where standards are evolving. In that context, the strategic plans

should discuss whether it would be feasible and cost-effective to offer OpenADR via dedicated servers that can communicate with devices in the home even as the advanced meters communicate with customers and customer devices via SEP 2.0. The strategic plans should also describe and discuss the utility's plans for adopting and developing interoperable architecture designed to protect the privacy of customer data. Utilities' plans should explain how they will evaluate the impact of standards on privacy and should explain, in the strategy section of their deployment, the privacy implications of the standard they chose to adopt.

GO 156 was created over two decades ago to ensure that women, minority, and disabled veteran business enterprises are encouraged to become potential suppliers of products and services to the utilities. The purposes of this GO are to:

- Encourage greater economic opportunity for women, minority, and disabled veteran business enterprises;
- Promote competition among regulated public utility suppliers to enhance economic efficiency in the procurement of electrical, gas, and telephone corporations' contracts; and
- Clarify and expand the program for the utilities' procurement of products and services from diverse enterprises.

Smart Grid investments may create new economic opportunities as utilities move away from traditional infrastructure investments toward advanced technologies. The Commission encourages the utilities to be mindful that diverse suppliers may not be as familiar with these new opportunities. Also, the utilities may be unaware of some diverse suppliers of advanced technologies. Consequently, the Commission encourages the utilities to engage with the small business community to educate and inform this community about the emerging business potential that may result from Smart Grid investments.

Currently, the Commission has an open proceeding reviewing the issues surrounding GO 156, Rulemaking (R.) 09-07-027. The existing language in GO 156 includes all goods and services that a utility purchases, which, by definition, includes Smart Grid-related expenditures. Therefore, the issue of whether Smart Grid-related costs will be included is moot since they are already included.

The issue of whether and how GO 156 should be extended to non-utility entities is best addressed in R.09-07-027, and is beyond the scope of this proceeding.

However, we agree with Greenlining that the strategy section of each utility's deployment plan should address the utility's strategies for meeting GO 156 goals and requirements in regards to Smart Grid, including how the utility intends to use its subcontracting program to encourage its prime contractors to utilize women, minority, and disabled veteran business enterprise subcontractors.

3.6. What Should be in the Grid Security and Cyber Security Section of the Deployment Plan?

SB 17 states that it is the "policy of the state to modernize the state's electrical transmission and distribution system to maintain … secure electrical service."[106] SB 17 also seeks to achieve "cost-effective full cyber security."[107] Due to the strong legislative and consumer interest in this aspect of the Smart Grid and because of the highly technical and new direction in which this takes state electric policy, we will require that Smart Grid Deployment Plans contain a

[106] § 8360.

[107] *Id.*

separate discussion of electric grid security, including cyber security. In this section of the decision, we identify the grid security and cyber security topics the Smart Grid Deployment Plans should address.

3.6.1. Position of Parties

All parties who discussed security agree with the Commission that security of California's electric grid, including cyber security, is critical. Many parties provided extensive comments which we summarize in this section.

SCE states cyber security is "critical to the proper functioning of the Smart Grid"[108] and is "a critical policy area for the Commission."[109] Nevertheless, after citing actions by NIST and other national agencies, SCE opines that "[t]he Commission does not need to take specific action with respect to cyber security, apart from adopting consensus Smart Grid standards identified by NIST."[110]

In addition to its own work on cyber security, SCE states that a "need exists for independent product certifications and a national vulnerability and incident response clearinghouse."[111] Furthermore, SCE identifies four specific roles for state and federal regulators in the area of cyber security (quoting directly):

1. Define performance criteria in the context of meeting public policy objectives. California's "six criteria" for advanced metering is one example.
2. Provide oversight on utility expenditures and enforce interoperability and cyber security standards adoption.

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[108] SCE Opening Comments at 24.

[109] SCE Reply Comments at 23.

[110] SCE Opening Comments at 33.

[111] SCE Reply Comments at 23.

3. Ensure utility participation in a centralized incident response effort.
4. Refine performance criteria based on continuous improvement.[112]

Concerning cyber security, PG&E states:

> PG&E agrees with the Ruling that maintaining robust and fully compliant cyber security protection for utility systems and customer information is of utmost importance as we move forward with new Smart Grid technologies. To that end, we believe that rules relating to third-party access to customer and utility information need to be evaluated in light of national cyber-security protections and standards. PG&E is and has been continuously monitoring and participating in the national standard-setting forums on cyber-security, and updating and assimilating new "best practices" and security measures to enhance our existing protocols and protections. We do not believe that California-specific cyber-security standards are necessary and in fact could be counter productive, inefficient and costly. However, we do believe that the Commission, utilities and interested parties should directly monitor and keep updated on national cyber-security forums and developments.[113]

SDG&E also acknowledges the importance of security, stating:

> To minimize [security attacks and cyber-threat] risks, a continuing investment in a cyber security program is necessary to prevent current threats from materializing and to anticipate future cyber security threats. Cyber security risks are not a new problem to SDG&E, and existing approaches can address those issues when combined with a continuous and consistent effort to manage risk. To this end, SDG&E advocates a proactive and preventative security approach which programmatically addresses architectural, design, engineering, comprehensive

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[112] *Id*.

[113] PG&E Opening Comments at 18-19.

> testing, and operational monitoring and maintenance stage of cyber security lifecycle.[114]

SDG&E argues that "[t]he Commission should consider ensuring that Smart Grid proposals, regardless of their technical differences, adhere to fundamental security principles and concepts."[115] Regarding security, SDG&E argues that the Commission should evaluate Smart Grid projects to ensure adherence to basic security principles including: 1) availability, integrity, and confidentiality; 2) defense in depth; and, 3) role based access controls and least privilege.[116]

The ISO comments on the importance of security and the steps it has taken to increase the security of its own operations. The ISO states:

> … the ISO maintains a secure network in accordance with applicable regulations of the North American Electric Reliability Corporation. The ISO's standards are available to all whom wish to participate in the ISO market.[117]

DRA argues that "[c]yber security is critical to insulating the grid from external, unlawful influences, and protecting the flow of consumer information."[118]

TURN agrees that cyber security issues are critical and states that such issues arise "both due to the potential to invade the grid through the encrypted 'backhaul' communications platform, as well as through the portal associated with the customer's own computer (or other device) when it becomes linked with the meter through the Home Area Network." TURN identifies work

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[114] SDG&E Opening Comments at 16-17.

[115] *Id.* at 31.

[116] *Id.*

[117] ISO Opening Comments at 8.

[118] DRA Reply Comments at 19.

conducted for the CEC as "excellent" and asks the Commission to take official notice of a particular report.[119]

UCAN also comments on the importance of cyber security and argues that "[t]he risk of interrupted energy service has the potential of being much more devastating to a consumer then the dropped calls that occur in the cellular communications network."[120]

CDT-EFF argues that the Commission should "broadly adopt cyber security and privacy principles to ensure that smart grid proposals will provide sufficient privacy protections."[121] As part of their security planning, CDT-EFF argues that the utilities should follow the Fair Information Practice principles. In particular, they argue that as part of a basic security practice, the utility should be required to "articulate the purpose or purposes for which customer information will be used" and collect only "data directly relevant and necessary to accomplish a specific purpose" and retain that data only "for as long as necessary to fulfill the specified purpose."[122] CDT-EFF also argue for a variety of "good practices" that should be included at the planning stage, including, for example the "encryption … for all communications that are sent over open wireless protocols…"[123] CDT-EFF also recommend that "[i]f a security or other

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[119] We hereby take official notice of the report, listed as P.A. Subrahmanyam, et al., "Network Security Architecture for Demand Response/Sensor Networks," October 2005 (revised June 2006), CyberKnowledge and University of California at Berkeley, Draft Consultant Report for CEC, PIER Contract No. 500-01-043, which is available at http://www.law.berkeley.edu/files/demand_response_CEC.pdf

[120] UCAN Opening Comments at 36.

[121] CDT-EFF Opening Comments at 10.

[122] *Id.* at 17.

[123] *Id.* at 21.

breach results in the loss or exposure of customer information, the regulable entity should be required to notify affected customers and take all reasonable steps to minimize harm to customers."[124]

Verizon, in its comments on cyber security, also stresses the importance of integrating "security measures into the initial design, development and provisioning of a smart grid network in California."[125]

Researchers argues that:

> The Commission's decisions about Smart Grid privacy and cybersecurity will have far reaching implications. For the state of California, the Smart Grid infrastructure will function over a long period of time; therefore it is crucial that privacy and cybersecurity are incorporated into the Smart Grid from the beginning. Retrofitting privacy and cybersecurity could incur prohibitive costs while exposing California's citizens to serious privacy and security risks.[126]

Researchers argues that the Commission should articulate a common set of questions that Smart Grid Deployment Plans should address and propose a series of questions in their Opening Comments.[127] Among other things, Researchers argues that the Smart Grid Deployment Plans should ask:

- What measures are employed by the utility to protect the security of customer information?
- Has the utility audited its security and privacy practices, both internally and by independent outside entities? If so, how often are the audits and what are the audit results.[128]

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[124] *Id.* at 21.

[125] Verizon Opening Comments at 8.

[126] Researchers Opening Comments at 2-3.

[127] *Id.* at 7-9.

[128] *Id.* at 8-9.

Researchers also recount a series of security issues that have arisen in the last year on voting systems and relying in inadequate standards for securing critical new technologies. Based on their analysis of these security issues, Researchers recommend (quoting directly):

- Participate in NIST's conformance assessment development effort, to ensure that assessments will subject Smart Grid devices and systems to a full range of cybersecurity tests, and that the details of those assessments—including methodologies and results—will be made public to the fullest possible extent.
- Since the Smart Grid is developing, and attackers are adaptive, recognize that cybersecurity assessments will have to be adaptive, too. For example, we recommend that the Commission develop a process for identifying the steps that are necessary to update hardware, software, and firmware in deployed devices in order to eliminate known vulnerabilities.
- Review utility-vendor contracts for clauses that govern (1) the identification of applicable cybersecurity standards; (2) the parties' respective obligations in the event that applicable standards change, or any contractual representation with respect to security proves false.[129]

EPIC takes a different route, recommending that the Commission adopt end-to-end security requirements. Among other things, EPIC recommends that the Commission specifically "establish robust cryptographic standards,"[130] as well as that the Commission "eliminate the use of wireless technology" for the Smart Grid.[131]

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[129] *Id.* at 17.

[130] EPIC Opening Comments at 27.

[131] EPIC Reply Comments at 3.

CEERT seeks to tie California security efforts closely to national standards. CEERT argues that "to the greatest extent possible, CERRT recommends that the Commission adopt the standards, guidelines, and protocols adopted by NIST"[132] and "that the Commission adopt the cyber-security standards adopted by NIST in 2010."[133]

AT&T also suggests that the Commission defer adopting state specific protocols and rules until NIST adopts national standards and protocols.[134] In addition, AT&T encourages the Commission to remain active in coordinating with NIST and FERC particularly regarding cyber security standards.[135] Similarly, TIA argues that "[t]he Commission should work with stakeholders to identify cybersecurity best practices and consider seeking the opinion of a qualified neutral third party on technical aspects related to cybersecurity."[136]

HomeGrid[137] and Lantiq[138] also support a NIST-based approach.

Cisco points out the complexity of the security issue, noting "[t]here is not one technology or approach that will secure the Smart Grid completely; however, there are industry best practices and approaches to public-private partnership that have proved effective and valuable in addressing security threats to other communications systems."[139] Cisco recommends that "[f]or cyber security, the

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132 CEERT Opening Comments at 9-10.

133 CEERT Reply Comments at 14.

134 AT&T Opening Comments at 11.

135 *Id.*; AT&T Reply Comments at 7.

136 TIA Reply Comments at 5.

137 HomeGrid Reply Comments at 7.

138 Lantiq Reply Comments at 6-7.

139 CISCO Opening Comments at 15.

CPUC should encourage best practices sharing with and among utilities, and explore public-private, security event-related information sharing."[140]

EDF asks that the Commission act "without slowing innovation."[141] Wal-Mart responds affirmatively to whether the Commission should undertake reviews of Smart Grid developers to assure that privacy and security issues are addressed appropriately. Greenlining asks that in addressing cyber security "care be taken to not impede the participation of third parties in the Smart Grid as that could impede innovation."[142]

Tendril argues that "[c]yber security is a critical component of any smart grid deployment."[143] EnergyHub argues that "[t]he utility must allow consumers to connect Home Area Network (HAN) equipment to the smart meter in a way that ensures adequate security for the grid without restricting consumers' choice of technology."[144]

CFC emphasizes cost-effectiveness when considering security[145] and also stresses its concern that advanced metering infrastructure security weaknesses could enable penetration of presently secure systems.[146] CLECA believes it is premature to adopt detailed standards and protocols for the customer side of the Smart Grid.[147]

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[140] *Id.* at 4.

[141] EDF Reply Comments at 22.

[142] Greenlining Opening Comments at 23.

[143] Tendril Opening Comments at 11.

[144] EnergyHub Opening Comments at 2.

[145] CFC Opening Comments at 2.

[146] CFC Reply Comments at 15.

[147] CLECA Opening Comments at 5.

Google comments that it agrees "that the Commission should issue clear guidance and rules on how consumer's privacy and security will be protected by utilities and those authorized third parties with whom utilities share user data."[148]

3.6.2. Discussion: Deployment Plans Should Address the Security of Smart Grid

With the current and planned deployment of a Smart Grid, there is an urgent need to ensure that the utilities have appropriate security programs in place for physical and cyber threats and/or attacks. Smart Grid technologies will introduce millions of new intelligent components to the electric grid that communicate in much more advanced ways than in the past. The Commission and the public have good cause to be concerned and a right to expect that the electric grid will remain secure with the deployment of Smart Grid technologies. The goal of a security program is to provide security while not impeding operations.

The critical role of security, including cyber security, is a key component in the effective operation of the Smart Grid is cited in both state and federal law.[149] Physical and cyber security of the Smart Grid is needed to advance the reliability of the grid and the privacy and confidentiality of the information that is transmitted and to contain and mitigate any cyber-security incidents.

The Smart Grid Deployment Plans can provide the Commission and the public with insight into the security of the Smart Grid. The security strategies

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[148] Google Reply Comments at 5.

[149] In state law, references to cyber security include sections 8360 and 8362 of the Pub. Util. Code and in federal law, references include the provisions of Title XIII (commencing with Section 1301) of the EISA (Public Law 110-140).

should address physical, cyber and human threats for grid operations with implementation of Smart Grid technologies.

Like many commenters, we conclude that the developing NIST framework will address many of the security issues that are arising. For this reason, every Smart Grid Deployment Plan should discuss how it plans to incorporate NIST requirements and guidelines into the security program of the utility.

Still, we note that the February 2010 Draft National Institute of Standards and Technology Smart Grid Cyber Security Strategy and Requirements (February 2010 Draft NISTIR 7628) stated: "The security requirements and the supporting analysis that are included in this report may be used by implementers of the Smart Grid, e.g., *utilities*, equipment manufacturers, *regulators*, as input to their risk assessment processes."[150] Thus, NIST sees a continuing role for regulators in risk assessment.

Following the work of NIST, we find that "cyber security includes preventing damage to, unauthorized use of, or exploitation of electronic information and communications systems and the information contained therein to ensure confidentiality, integrity, and availability. Cyber security also includes restoring electronic information and communications systems in the event of an attack or natural disaster."[151]

As SCE points out, the NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 1.0 identifies smart grid standards, including those for which "there is a strong stakeholder consensus."[152] NIST and the

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[150] February 2010 Draft NISTIR at 1-2, emphasis added.

[151] Section 1.2 of the February 2010 Draft NISTIR.

[152] SCE Opening Comments at 32.

Department of Homeland Security (DHS) have prepared and identified several key documents that provide guidance on cyber security issues that are applicable to Smart Grid Deployment Plans. These include:

- Security Profile for Advanced Metering Infrastructure, v 1.0, Advanced Security Acceleration Project – Smart Grid, December 10, 2009 provides guidance and security controls to organizations developing or implementing AMI solutions, including the meter data management system (MDMS) up to and including the HAN interface of the smart meter;[153]
- Catalog of Control Systems Security: Recommendations for Standards Developers, U.S. DHS, National Cyber Security Division, September 2009 presents a compilation of practices that various industry bodies have recommended to increase the security of control systems from both physical and cyber attacks;[154] and
- DHS developed the Cyber Security Procurement Language for Control Systems to provide guidance to procuring cyber security technologies for control systems products and services.[155]

Although it is premature to adopt specific Smart Grid security standards at this time, we note that the three documents listed above provide guidance on cyber security issues and issues affecting the Smart Grid. Therefore, the Commission will require that each utility's Smart Grid Deployment Plan's

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[153] Available at: http://osgug.ucaiug.org/utilisec/amisec/Shared%20Documents/AMI%20Security%20Profile%20(ASAP-SG)/AMI%20Security%20Profile%20-%20v1_0.pdf

[154] Commission staff notes that there has been a recent new release of the Catalog of Control Systems Security in March 2010 available at: http://www.us-cert.gov/control_systems/pdf/Catalog%20of%20Recommendations%20March%202010.pdf.

[155] Available at: http://www.us-cert.gov/control_systems/pdf/FINAL-Procurement_Language_Rev4_100809.pdf

security strategy demonstrate that it has used these guidance documents in preparing its security plans.

The security strategy should be based on a systematic risk assessment, including a security audit based on industry best practices, that addresses the prevention of, preparation for, protection against, mitigation of, response to, and recovery from security threats for the utilities' advanced meter and communications infrastructure, distribution grid management, and distribution grid management with implementation of other Smart Grid technologies and infrastructure, including all major subsystems and utility storage of customer information.

Neither the detailed security strategy nor the security assessment and analysis supporting it, however, need be released publicly. If deemed necessary, the utilities should file appropriate portions of this material under seal as long as they identify what remains under seal and provide their reasoning.

At this point, however, we clarify that in contrast to the security strategy and security assessments, security audits should not be filed at the Commission at this time. We plan to consider the issues surrounding security audits in a security workshop to be held later this year. We note, however, that even if security audits are not filed at the Commission, the Commission, under current law, can get access to the audits as needed. We plan to resolve issues concerning audits in the Commission decision that reviews the Smart Grid Deployment Plans that SCE, SDG&E, and PG&E must file in 2011.

Protecting consumers' privacy is a critical dimension of Smart Grid security. Accordingly, SB 17 places special emphasis in SB 17 on security issues relating to customers. We therefore order that the Smart Grid Deployment Plans discuss the following:

- What types of information about customers are or will be collected via the smart meters, and what are the purposes of the information collection? Could the information collection be minimized without failing to meet the specified purposes?
- Does the utility have or expect to have other types of devices, such as programmable communicating thermostats, which can collect information about customers? If so, what types of information is collected, and what are the purposes of the information collection? Could the information collection be minimized without interfering with the specified purposes?
- What types of information, if any, does the utility plan to collect from the smart meter and HAN gateway?
- How frequently will the utility take readings from the smart meter? Is this frequency subject to change? Will customers control this frequency?
- For each type of information identified above, for what purposes will the information be used? The purposes should be articulated with specificity, e.g., "targeted marketing" instead of "promoting energy efficiency."
- For each type of information collected, for how long will the information be retained, and what is the purpose of the retention? Could the retention period be shortened without diminishing the specified purpose?
- What measures are or will be employed by the utility to protect the security of customer information?
- Has the utility audited or will it audit its security and privacy practices, both internally and by independent outside entities? If so, how often will there be audits? What are the audit results to date, if any?

Further requirements or guidelines concerning security and reporting on security matters to this Commission may arise later in this proceeding as we consider reporting metrics and address privacy and security matters in more detail before providing additional access to customer data.

3.7. What Should be in the Smart Grid Roadmap?

Any deployment plan requires a roadmap that indicates where the utility is going and how it proposes to get there. We discuss what the Smart Grid roadmap should contain.

3.7.1. Position of Parties

SCE provides the most thoughtful statement of what a Smart Grid Roadmap should include:

> Each Deployment Plan should contain a Roadmap that lists the areas of technology evaluation and deployment under consideration by the IOU. The Roadmap should also provide provisional guidance on the timing of evaluations and deployments in each of these areas between years 2011 and 2020. The Commission should not dictate specific technology areas to be covered in Deployment Plans; instead, the Commission should ensure that the Plans address the Commission's eight Smart Grid objectives. Technology areas included in the Deployment Plans are dynamic and evolving, and are subject to change as public policy, business conditions, and technological capabilities change over time.[156]

SDG&E endorses a "roadmap of technologies and/or functionality planned over time as SDG&E drives towards meeting its Smart Grid vision."[157] PG&E also advocates a similar approach.[158] DRA endorses SCE's proposal for a roadmap.[159]

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[156] SCE Reply Comments at 3.

[157] SDG&E Reply Comments at 5.

[158] PG&E Reply Comments at 3.

[159] DRA Reply Comments at 2.

3.7.2. Discussion: A Roadmap Can Help Identify How Technology Deployment Aligns with Policy and Statutory Deadlines

There is a consensus among those parties providing comments that a roadmap can provide useful information concerning technologies and their deployment, even though they will remain subject to change. The projection of the timing of Smart Grid investments can help the Commission and stakeholders plan to review the projects that are part of a utility's infrastructure plans in a timely fashion and assist the Commission in its own budgeting and planning.

A key part of the roadmap should lay out how the proposed deployment of infrastructure would help to achieve important statutory and other policy requirements. At a minimum, the roadmap should explicitly address how the technology areas that the utility is considering in its deployment plan will facilitate achievement of each of the following policies:

- Global Warming Solutions Act of 2006 (AB 32), which requires California to reduce its greenhouse gas emissions to 1990 levels by 2020;
- The California Long Term Energy Efficiency Strategic Plan;
- Achievement of the energy efficiency and demand response goals as required by Sections 454.5 and 454.55;
- Achievement of the renewable portfolio standard program; and
- Full solar photovoltaic deployment under the California Solar Initiative.

The roadmap should also include the essential infrastructure steps that must be taken to provide customers with the access to consumption and pricing data pursuant to D.09-12-046.

3.8. What Should the Section on Cost Estimates Include?

It is reasonable that parties would seek to have an assessment of both the costs and the benefits that a Smart Grid deployment would produce. Due to the rapidly evolving state of Smart Grid technology, it is likely that costs will change as time goes on. Nevertheless, an early analysis of costs and benefits can help identify which technologies are mature enough to deploy. This section will provide guidance on how, in the face of uncertainty, Smart Grid Deployment Plans can provide useful information on Smart Grid costs.

3.8.1. Position of Parties

SDG&E argues that cost estimates "can only be of a very general nature" due to the early state of Smart Grid technology and that actual deployment will be based on lessons and pilots that have not been implemented.[160] Additionally, SDG&E warns that public estimates could create a technology backlash based on estimates that include a large amount of unknowns, including costs and technology viability. SDG&E suggests that any cost benefit analysis be specifically identified with the benefits outlined in Pub. Util. Code §§ 8360(a)-(g), as well as the Energy Action Plan adopted by the California Public Utilities Commission and California Energy Commission. SDG&E advises that any review of the deployment plans' cost effectiveness "should be limited to whether the utility's proposal for achieving those objectives through smart grid investments is the most cost-effective alternative available in light of the specific system requirements and customer needs confronted by that particular utility."[161]

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[160] SDG&E Opening Comments at 6.

[161] SDG&E Opening Comments at 6-7.

SCE states that it "will provide filed costs or conceptual cost ranges for technologies" that are being evaluated or considered for deployment during the period covered by the deployment plans,[162] but that the estimates should be regarded as provisional and subject to change, and should be used for informational purposes only. SCE argues that its estimates can also include future technologies but "costs, benefits and ensuing rate impacts associated with these emerging technologies … may prove impossible to accurately estimate" within the timeframe set by SB 17.[163]

PG&E states that there should be an estimate of costs necessary to build a Smart Grid. However, "the assessment of costs and benefits needs to continually be updated as new technologies develop" since some technologies may work and some may fail; as such, it will be difficult to provide specific costs to specific technologies and functions.[164]

Greenlining requests that a preliminary cost-benefit analysis take place during the consideration of the deployment plans. Greenlining suggests that utilities prepare "information on various alternatives in each phase of the Smart Grid" with an associated cost-benefit analysis for each alternative. Greenlining states that it is important for the Commission to consider costs and benefits at an early stage as it will allow the Commission and the utility "to make a fully considered decision regarding the best means to implement the Smart Grid."[165]

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[162] SCE Reply Comments at 3.

[163] SCE Opening Comments at 6-7.

[164] PG&E Opening Comments at 7-8.

[165] Greenlining Opening Comments at 12-13.

CLECA states that the Commission should ensure that "all associated utility investments are cost-effective."[166] CLECA also argues that due to a large amount of uncertainty regarding future investments, "there is likely to be insufficient information on the costs and benefits of most smart grid applications."[167] Furthermore, "smart grid technology should be deployed in a manner to maximize benefit and minimize cost to ratepayers."[168] Finally, CLECA recommends that a deployment plan should include an explanation of how a cost-effectiveness analysis will be performed, using which data, how reliability and other benefits will be determined and how those will be linked. Additionally, costs per customer for each project should also be estimated in the plans.[169]

CFC suggests that the IOUs prepare a joint implementation plan on upgrades needed to meet national and state design standards and find efficiencies through consolidation of systems. This joint implementation plan would include a business case analysis with detailed cost estimates for bringing their systems into compliance with national and state standards and would be subject to public review.[170] In addition, CFC suggests that any deployment plan should include "an estimate of the financial investment necessary to build" a Smart Grid and demonstrate that the investment is cost-effective.[171]

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166 CLECA Opening Comments at 2.

167 *Id.* at 3.

168 *Id.*

169 *Id.* at 4.

170 CFC Opening Comments at 3.

171 *Id.* at 6.

DRA supports a requirement for cost estimates in the deployment plans. DRA cautions that "any provision of cost estimates does not eradicate the need for a full reasonableness review."[172] Further, DRA suggests that the Energy Division develop a standard business plan outline for use by the IOUs to allow a side-by-side comparison of the deployment plans.[173]

3.8.2. Discussion: Smart Grid Deployment Plans Should Include Cost Estimates

No party disagrees on the need for the inclusion of cost estimates in an IOU's deployment plan. In addition, there is near universal agreement that it is difficult to provide a reliable cost estimate based on future and unknown technologies and infrastructure investments. Nevertheless, as DRA comments, that does not dismiss the need for a cost estimate. As SCE states in its comments, it is already beginning preparation of projected costs for Smart Grid investments as part of the 2012-2014 General Rate Case (GRC) cycle.[174,175] The Commission understands the concerns raised by Greenlining and CFC regarding the need for detailed cost estimates as part of the deployment plans, but the Commission does not find that it would be possible to require detailed, projected cost estimates for technology that is undergoing dramatic changes in costs and technology today, or has yet to be invented.

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[172] DRA Reply Comments at 4.

[173] *Id.* at 5.

[174] SCE Opening Comments at 3.

[175] PG&E, on the other hand, comments that it will provide "detailed and specific Smart Grid related investment proposals" in its next GRC filing for 2011-2013. *See,* PG&E Opening Comments at 9.

The Commission understands that cost estimates provided as part of a deployment plan will be preliminary and conceptual. Commission approval of costs for specific investment projects will still require either a GRC or special application process, as explained in Section 4.2 below. IOUs in their deployment plans shall provide high level (or aggregated), conceptual cost estimates of Smart Grid technologies and infrastructure investments that they expect to undertake in the next five years, and provisional cost ranges for potential Smart Grid technologies and investments for the following five years. IOUs shall also explain how their cost-effectiveness projection was made. The analysis of costs should also indicate any specific legislated or Commission ordered goal that requires a particular investment. Further, the analysis should identify which cost and performance data offer the best approach, and the reliability of both cost and performance estimates. Additionally, to facilitate Commission review, the cost per customer (or participating customer) for each project should also be estimated in the plans. If an IOU cannot provide this information, it should explain why this information cannot be provided. Such information will help the Commission in our planning and make the deployment plans more useful.

3.9. What Should the Section on Benefits Include?

Logically, the benefits that arise from the deployment of the Smart Grid fall into several categories: 1) monetary benefits that result in lower electric bills and better use of the electric infrastructure; 2) non-monetary benefits, such as increased reliability of electric power and the safety of grid operations that may be difficult to quantify; and 3) benefits that arise from the fact that the deployment of the Smart Grid facilitates compliance with California energy policies.

This section will address how the deployment plans should structure the discussion of the benefits that will result from a Smart Grid. This discussion, when combined with the discussion on costs directly above, seeks to facilitate a comparison of a utility's Smart Grid costs and benefits and to enable comparison with the Smart Grid Deployment Plans of other utilities.

3.9.1. Positions of Parties

SCE provides the most extensive statement of what this section of the deployment plan should include, arguing that:

> IOUs should identify the types of benefits that they expect will be generated by each technology included in a Deployment Plan. SCE proposes that three overall categories of benefits should be used for this section of the Deployment Plans:
>
> (1) Policy Requirements – the technology is beneficial because, after evaluation and study, the utility believes the technology serves as a "best fit" for achieving compliance with regulatory or statutory mandates.
>
> (2) Reliability and Safety – the technology is beneficial because the utility deems it a "best fit" technology for improving system reliability, or maintaining or improving safety for our customers, employees, and members of the public.
>
> (3) Business Case – the technology is beneficial based on traditional net present value revenue requirement cost-benefit analysis.[176]

On the other hand, SCE cautions that:

> Costs, benefits and ensuing rate impacts associated with these emerging technologies may not yet be fully understood, and it may prove impossible to accurately estimate such items in the timeframe set by statute for Deployment Plans.[177]

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[176] SCE Reply Comments at 4.

[177] SCE Opening Comments at 7.

PG&E similarly cautions that "… the assessment of costs and benefits needs to continually be updated as new technologies develop, are proven and then scaled up."[178] PG&E argues that "a 'Smart Grid' is not an end in itself, but is a process leading to a series of technology choices made in light of accepted and focused objectives and cost-benefit analyses."[179] In its Reply Comments, PG&E asks that deployment plans include "[e]stimates of the potential benefits of deployment plans in quantitative or qualitative terms where available and current."[180]

SDG&E also advises caution in assessing a program, stating that:

> Smart Grid Deployment Plans should follow two paths for decision criteria: one path necessary to comply with state policy goals and the second path designed to pilot new technologies, learn, and on the basis of this experience, to build business cases based on existing technology and agreed-upon methods and procedures for evaluating costs and benefits.[181]

DRA provides broad support for the explicit consideration of the benefits that arrive from a Smart Grid plan, arguing:

> Plans should include descriptions of how Smart Grid technology can be "deployed in a manner to maximize the benefit and minimize the cost to ratepayers and to achieve the benefits of smart grid technology" as stated in Pub. Util. Code § 8366.[182]

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[178] PG&E Opening Comments at 7-8.

[179] *Id.* at 4.

[180] PG&E Reply Comments at 3.

[181] SDG&E Opening Comments at 4.

[182] DRA Opening Comments at 7.

EDF sees environmental benefits as a key element of the Smart Grid and wants to ensure that such benefits are considered so that they become "a clear objective of smart grid deployment in California."[183]

CEERT argues that "[b]enefits from Smart Grid deployment may also be measured in terms of reduced growth in annual consumption or peak load or reductions in the average cost of capacity or energy."[184]

HomeGrid argues that "the Commission should evaluate utility proposals based on benefits to the ratepayer; attempting to mandate specific technologies, standards, or protocols at the current time in no way translates into ratepayer benefit, and could in fact be detrimental to the short-term and long-term health of California's Smart Grid."[185]

Concerning the Smart Grid and the provision of data to customers, TURN states:

> … the Commission should focus on providing 'actionable' data to residential customers. Moreover, irrespective of any quantitative cost/benefit analysis, any significant spending to provide wholesale prices to residential customers must at a minimum show that there are at least some qualitative 'benefits' resulting from these data.[186]

CESA asks that the Commission track "all storage-related benefit streams including those related to cost, demand reduction, energy usage, and overall system efficiency enhancement."[187]

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[183] EDF Reply Comments at 2.

[184] CEERT Reply Comments at 16.

[185] HomeGrid Reply Comments at 4.

[186] TURN Reply Comments at 5.

[187] CESA Opening Comments at 6.

CCTA comments that § 8360 itself:

> … highlights several benefits of smart grid technologies including increased use of *cost-effective* digital information and control technology to improve reliability, security, and efficiency of the electric grid; dynamic optimization of grid operations and resources; deployment and integration of *cost-effective* distributed resources and generation; development and incorporation of *cost-effective* demand response, demand-side resources, and energy-efficient resources; and deployment of *cost-effective* smart technologies.[188]

CFC endorses the use of a comprehensive cost-benefit analysis, stating "the utilities should sponsor a cost-benefit analysis supporting their planned development of the smart grid, in which the benefits and costs have been quantified, then allow others to critique the utilities work and develop alternative analyses."[189]

CLECA asks for a stringent use of cost-benefit analyses, arguing that "SB 17 makes it clear that Smart Grid technology should be deployed in a manner to maximize benefit and minimize cost to ratepayers and to achieve the benefits of smart grid technology, including meeting stringent cost vs. benefit assessments."[190] More specifically, CLECA recommends (quoting directly):

- Each deployment plan should also include an explanation of how the cost-effectiveness analysis of elements of the plans will be performed, using which data, how the reliability and other benefits will be determined, and how the two will be linked. Costs per customer for individual projects should also at least be estimated in the plans.

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[188] CCTA Opening Comments at 3, emphasis in original, footnotes omitted.

[189] CFC Opening Comments at 4.

[190] CLECA Opening Comments at 3.

- Each deployment plan should demonstrate how the technology would be targeted in order to maximize customer benefits. Certain technologies for analyzing the state of the transmission grid, for example, may be best located only on certain parts of the grid rather than the entire grid.[191]

MegaWatt argues that in evaluating the planned deployment of storage as part of a Smart Grid, care should be taken to evaluate all the benefits, including, "transmission or distribution deferral benefits, reliability benefits, VAR management benefits, blackstart benefits, power quality benefits, ancillary service benefits, and other benefits. Moreover, since many forms of storage have zero emissions, zero water usage and are quiet, permitting is easier, increasing the probability of successful deployment."[192]

3.9.2. Discussion: Smart Grid Deployment Plans Should Assess All Benefits

There is significant agreement that the deployment plans should include a discussion of the benefits of proposed Smart Grid projects.

The parties see three general types of benefits. Parties view achievement of policy requirements as one of the benefits that we would expect from a Smart Grid. In those cases, where the investment in a Smart Grid is necessary to achieve a policy requirement, then a least-cost analysis may be appropriate. However, in cases where the Smart Grid investment will produce benefits beyond simple compliance with a regulatory requirement, we believe a cost-benefit analysis is appropriate.

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[191] *Id.* at 4.

[192] MegaWatt Opening Comments at 5.

In addition to facilitating the achievement of other policy goals, Smart Grid investments could produce other benefits that are difficult to quantify, but potentially significant, such as achievement of environmental goals. Smart Grid investments could both improve the overall reliability of the electric grid and enable the development of work procedures that improve worker safety. In particular, knowing quickly whether a section of the grid is energized could enable the development of additional procedures to protect workers. The benefit section of the Smart Grid Deployment Plan should attempt to quantify these benefits. Furthermore, Smart Grid investment could also produce quantifiable environmental and economic benefits. The benefits estimates in the deployment plans should identify and estimate such benefits.

Finally, we note that several parties commenting on the role of storage commonly view storage as not just a simple substitute for fossil generation, but a technology that fulfills a complex role. As these parties point out, storage benefits can include reduced emissions, a reduced need for transmission, and a technology that both shaves peaks and increases the reliability of the grid. These benefits should be part of the assessment of the storage component of any Smart Grid project.

Those filing deployment plans should make every effort to assess all the benefits associated with the implementation of this new technology.

3.10. What Metrics Should Be Included in the Deployment Plans?

The Ruling Amending Scope proposed a series of metrics that could be used to measure progress towards the implementation of a Smart Grid. The metrics were structured according to the characteristics as stated in SB 17. The Ruling Amending Scope's preliminary proposal was to adopt metrics, require

the utilities' deployment plans to measure their performance against the adopted metrics, and submit updates to the metrics as part of their annual report to the Commission.[193]

3.10.1. Positions of Parties

PG&E cautions that it may be a challenge to choose the right metrics that will provide useful and objective information on achieving Smart Grid goals, "because the Smart Grid itself is still a 'concept,'" and that choosing the wrong metrics may negatively impact incentives for development of new Smart Grid technologies and projects.[194] PG&E comments that until there are specific programs and projects, it may be difficult for parties to settle on the right types of metrics "that would apply for purposes of regulating or monitoring various Smart Grid activities and projects."[195] PG&E further comments that the lack of national consensus on standards also makes it difficult to create a set of useful metrics. However, PG&E does provide an initial list of ten metrics based on the proposed list of metrics in the Ruling Amending Scope. The ten proposed metrics (quoting directly from the PG&E filing) are:

- Reliability Metrics – System Average Interruption Duration Index (SAIDI);
- Reliability Metrics – System Average Interruption Frequency Index (SAIFI);
- Renewable Resources Integrated – MWh of delivered renewables (prior year);

[193] Ruling Amending Scope at 24-25.

[194] PG&E Opening Comments at 12.

[195] *Id.*

- AMI Meters Installed – Total Number and as a % of Total Customers;
- Home Area Network Coverage – Number and % of Customers registered to use 1 or more HAN devices;
- Demand Response – Total MW of Dispatchable Demand Response;
- Energy Efficiency – GWh of EE Savings;
- Dynamic Pricing – Number and % of Customers enrolled in time differentiated rate programs; and
- Customer Information Access – Number and % of Customers enrolled with utility to access customer usage and pricing data.[196]

PG&E argues that there is a need for a workshop on metrics "so that all parties and Commission staff can arrive at a final precise set of metrics that meet the needs of the Commission while at the same time not overburdening or stifling the development of Smart Grid technologies in the marketplace."[197]

SCE endorses similar metrics as PG&E. SCE also cautions against creating "costly, potentially ambiguous or onerous metrics that may not be correlated with the achievement" of the Smart Grid.[198] SCE submits that more metrics may be needed in the future, and SCE may propose additional metrics as part of their initial deployment plan filing in 2011.[199] SCE argues that the utilities' proposed list of metrics should be adopted by the Commission for the "near term" so as not to "impose substantial incremental costs on IOU ratepayers for the IOU to

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[196] *Id.* at 12-13.

[197] PG&E Reply Comments at 4.

[198] SCE Opening Comments at 21.

[199] *Id.* at 21-22.

collect and store the information."[200] SCE cautions that the adoption of metrics for today's technologies or future technologies that have not been evaluated "risks creating incorrect incentives for IOUs' Smart Grid investments."[201] SCE opposes the inclusion of cost-effectiveness metrics commenting that development of such metrics is more appropriate for a GRC or other application instead of in the deployment plans. Finally, SCE does not support a separate workshop on metrics at this time.[202]

SDG&E also endorses the same metrics as SCE. SDG&E cautions that a "fixed set of metrics may be counter-productive as a means to achieve the ten characteristics of a smart grid as defined" by SB 17.[203]

Tendril supports the use of qualitative metrics as "important and valuable tools to inform smart grid deployment strategies." Tendril also proposes eight additional metrics related to distributed generation, carbon emissions, demand response and energy efficiency.[204]

EDF supports the initial list of metrics as found in the Ruling Amending Scope, as metrics will allow the Commission and the public "to monitor the implementation of the smart grid, without being overly burdensome to utilities."[205] EDF proposes that new metrics be added that address greenhouse gas reduction and energy efficiency and that such metrics should better reflect

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200 SCE Reply Comments at 8.

201 *Id.*

202 *Id.* at 9.

203 SDG&E Opening Comments at 19-20.

204 Tendril Opening Comments at 9-10.

205 EDF Opening Comments at 17.

SB 17. EDF suggests that these new metrics should set environmental targets for Smart Grid and measure that performance. EDF also provides comments on the proposed metrics and how to make the metrics more in line with current state energy policy goals.[206] EDF, on the other hand, does not support the short list of metrics proposed by the utilities. EDF states that those proposed metrics do not "reflect the nuances required to determine if the investments are working towards California's policies." Rather, EDF argues that the metrics proposed by EDF will allow parties "to have the level of detail … to monitor the progress of the system on the mandated environmental policies listed in SB 17."[207]

DRA supports the adoption of metrics "to measure progress in implementing a Smart Grid in California," and supports requiring the IOUs to file them annually.[208] DRA argues that the Commission's Energy Division should be required to "evaluate and report on the metrics after their submission." DRA comments that the proposed metrics "are a good starting point," but a workshop is necessary to develop the metrics even further.[209] Additionally, DRA states that new metrics may be necessary in the future as new technology is developed. DRA provides comments on several of the proposed metrics including those addressing cost-effectiveness and grid asset management, and questions the need for metrics on specific technologies on which the Commission has yet to take a position.[210] DRA does not support the

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206 *Id.* at 17-20.

207 EDF Reply Comments at 23.

208 DRA Opening Comments at 18.

209 *Id.*

210 *Id.* at 18-19.

ten metrics proposed by the utilities as they do not "go far enough to assure consumer protections, nor do they include any measurements of cost-effectiveness."[211] DRA supports a workshop on metrics with the Commission's Energy Division proposing a new list of metrics based on comments received in this phase.[212]

CFC comments that using metrics to measure progress "means achieving predicted efficiencies and lowering the cost of electricity," and suggests that cost-effectiveness is a necessity "to measure the success of smart grid installations."[213] CFC argues that any adopted metrics should not simply encourage the installation of Smart Grid technologies where new technology may not be needed as new technology may be installed prematurely.[214]

UCAN supports the use of metrics as an important way to measure "the achievement of deployment plan objectives."[215] UCAN states that the Commission "should focus on results and net benefits more than build metrics."[216] UCAN is concerned that the proposed metrics may not yield valuable information regarding Smart Grid investments and Commission review of those investments.[217] UCAN argues that if the metrics are too specific, the utility may attempt to build out to those metrics and miss potentially other, more cost-effective technologies that when combined with other technologies may

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[211] DRA Reply Comments at 15.

[212] *Id.*

[213] CFC Opening Comments at 8.

[214] *Id.* at 9.

[215] UCAN Opening Comments at 12.

[216] *Id.*

[217] *Id.* at 15-16.

provide more benefits to ratepayers.[218] Additionally, UCAN cautions that any metrics adopted up front "may be premature until more is known about technology change and commercial viability."[219] UCAN also provides specific edits to the proposed metrics.

CLECA is concerned that the proposed metrics presume that more is better, which may not be true. CLECA also states that the metrics do not address cost-effectiveness and should include "an assessment of the costs and benefits of deployment." CLECA also provides specific comments on the proposed metrics.[220]

CEERT states that the proposed metrics are a good starting point, but should also address how existing infrastructure is being used more efficiently, how toxic and greenhouse gas emissions are reduced or avoided, and how the deployment plan helps meet renewable portfolio standard goals for distributed and non-distributed resources.[221] Additionally, CEERT comments that the proposed metrics do not address § 8366(g) of SB 17 that relates to worker safety, protection and productivity, nor do the metrics address utility employment and contributions to clean technology.[222] CEERT also states that any adopted metrics should be uniform and apply uniformly to all utilities.[223] CEERT does not support the proposed ten metrics offered by the utilities as the proposed metrics

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[218] *Id.* at 16.

[219] *Id.*

[220] CLECA Opening Comments at 8-11.

[221] CEERT Opening Comments at 18-19.

[222] *Id.* at 19.

[223] *Id.*

are not in keeping with SB 17 and do not acknowledge how the Smart Grid is helping the State's ability to meet its policy goals.[224]

Greenlining supports the use of the proposed metrics as a practicable way of measuring the deployment of Smart Grid against the goals of EISA and SB 17. Greenlining supports a yearly update by utilities to show how their Smart Grid deployment is measuring up against the adopted metrics. Additionally, Greenlining proposes several additional metrics that "would measure whether certain regions and/or communities" are able to "achieve the individual customer benefits of the Smart Grid."[225] Greenlining also agrees that metrics on cost-effectiveness should be included in the final list of adopted metrics.[226]

IREC states that metrics will "provide an important means of measuring progress toward desired Smart Grid outcomes."[227] However, IREC comments that progress toward achieving "outcome-related" metrics "will not only be a function of whether utilities have installed necessary infrastructure, but will also depend on the extent to which the Commission has adopted necessary policies to facilitate the outcomes identified in the metrics"[228]; as such, "progress toward achieving identified metrics will not solely be the sole responsibility of the utilities."[229] IREC states that the best use of adopted metrics "will be to identify

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224 CEERT Reply Comments at 15.

225 Greenlining Opening Comments at 15-17.

226 Greenlining Reply Comments at 10.

227 IREC Opening Comments at 8.

228 *Id.*

229 *Id.* at 9.

the need for new policies or changes to existing policies" that will allow the Commission to measure progress towards a Smart Grid.[230]

CDT-EFF supports the use of metrics "as a measure of Smart Grid deployment" and argues for the addition of several additional metrics focused on cyber security and privacy.[231] CDT-EFF argues that the metrics should be "required components of all Smart Grid deployment plans and should be updated" regularly in subsequent proceedings on Smart Grid.[232] Additionally, CDT-EFF opposes a proposed metric that would provide specific information about appliances within a consumer's home. CDT-EFF argues that any metrics associated with in-home deployment of Smart Grid technology may not be visible to the utility, and the Commission "should respect customers' desire for privacy."[233]

CESA supports the use of metrics as a useful way to track Smart Grid deployment success, and to provide "feedback on an ongoing basis so that program/policy adjustments may be made over time."[234] CESA suggests several metrics that address the integration of storage resources, and that these storage related metrics "need to measure both the energy storage systems themselves and their grid-wide impacts."[235]

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230 *Id.*

231 CDT-EFF Opening Comments at 35.

232 *Id.*

233 *Id.* at 37.

234 CESA Opening Comments at 7.

235 *Id.*

Wal-Mart supports adopted quantitative metrics as a way to "assure accuracy and transparency in measurement of utility smart grid deployment."[236]

3.10.2. Discussion: Quantitative Metrics Should be Part of Deployment Plan, but Workshops Are Needed to Develop Metrics

The Commission agrees with parties that metrics should be adopted for inclusion in the Smart Grid Deployment Plans and subsequent utility reports because they will provide the Commission with a means to assess the state of the electric grid.

As the review of the comments of parties makes clear, the Commission received many comments from parties that recommended revisions to the proposed metrics, made arguments for numerous additions to that list, and called for workshops addressing these issues.

However, we find that the ten metrics proposed by the utilities are inadequate to meet the goals of SB 17 and do not address other important Commission goals. Therefore, the Commission declines to adopt the limited set of metrics proposed by the utilities.

We conclude that the limited record developed on this point is insufficient to adopt a full set of useful and informative metrics that are not unduly burdensome. Therefore, we decline to adopt an initial set of metrics at this time. Instead, we find merit in DRA's suggestion that a workshop is needed in order to create successful metrics that allow the Commission and stakeholders to measure the state of the grid. The Commission staff should review the revisions and additions proposed by parties so far in this proceeding, create a new list of

[236] Wal-Mart Opening Comments at 2.

proposed metrics, serve that new list to parties on the service list, and convene a workshop for the purposes of creating a final list of metrics to present to the Commission for adoption. To the extent practicable, this new list of metrics should make use of existing metrics, including those related to energy efficiency and demand response, in an effort to reduce the burden upon staff and participants.[237] We are aware of the time-sensitive nature of this process in order to be useful for the utilities' July 1, 2011 deployment plan filing. Therefore, we direct Commission staff to issue a list of proposed metrics within 60 days of this decision, and to hold a workshop within 30 days of that issuance. Upon the completion of the workshops, the Commission will invite further comments and subsequently issue a decision on this new set of metrics.

In conclusion, Smart Grid Deployment Plans will include metrics, but the specific metrics require further development.

4. Other Issues Pertaining to Deployment Plan and SB 17 that Require Resolution at this Time

4.1. How Should the Commission Consider/Approve Deployment Plans?

SB 17 requires IOUs to file Smart Grid Deployment Plans with the Commission by July 1, 2011 for Commission approval. The Ruling Amending Scope proposed that the IOUs file and the Commission review Smart Grid Deployment Plans in a single regulatory proceeding. The ruling directed parties

[237] For example, D.09-09-047 lists Market Assessments as a primary objective of the Commission's energy efficiency evaluation efforts and D.10-04-029 orders ED staff to develop metrics to measure the impact of the Commission's energy efficiency efforts on electric appliance and energy service markets. Once developed these metrics may also benefit the Commission's evaluation of Smart Grid impact and should be considered through the Smart Grid metrics workshop.

to provide comments on whether this is the appropriate process for consideration and approval of deployment plans, or whether the Commission should review deployment plans via separate utility applications.

4.1.1. Positions of Parties

Of the parties that expressed an opinion on this issue, most agree with the Ruling Amending Scope's proposed single-proceeding process for initial deployment plan approval.[238] Greenlining supports the proposed process, arguing that:

> … a single proceeding will allow parties interested in Smart Grid matters to participate more easily. In addition, the single proceeding can lead to more effective collaboration and a central clearinghouse with information about best practices and other beneficial information. A single proceeding would also better allow parties and the Commission to compare each utility's deployment plan to ensure parity between service territories.[239]

CLECA similarly argues that a single proceeding would allow utilities to learn from the experiences of other utilities, "as opposed to having [them] all pursue numerous similar initiatives at once."[240] TURN agrees, stating that it is "more efficient and sensible to evaluate all utility deployment plans in a single proceeding, so as to best compare the technologies, baselines and plans."[241] EDF explains similarly that "having plans considered in the same proceeding

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[238] SCE Opening Comments at 8; Greenlining Opening Comments at 14; Tendril Opening Comments at 5-6; CLECA Opening Comments at 5; TURN Opening Comments at 3 and Reply Comments at 1; DRA Opening Comments at 7; EDF Opening Comments at 13 and Reply Comments at 17; CFC Opening Comments at 2; PG&E Opening Comments at 8-10 and Reply Comments at 2; CEERT Reply Comments at 2.

[239] Greenlining Opening Comments at 14.

[240] CLECA Opening Comments at 5.

[241] TURN Opening Comments at 3.

ensures[s] that they are based on the same standards and principles across utilities."[242]

While PG&E supports the review of initial deployment plans in a single proceeding, it also urges the Commission to "allow a good deal of flexibility and leeway in what the plans must contain and demonstrate."[243]

UCAN does not directly support the single-proceeding review process. Instead, it recommends deferring that issue to the IOUs, two of which have expressly supported it.[244] UCAN further states that it "envisions an annual or biannual submission of deployment plans by each utility, akin to the utility Long-Term Resource plans that are currently submitted to the Commission."[245] It also urges the Commission to require the IOUs to submit these plans to an organized set of stakeholders similar to the Technical Advisory Panel established for SDG&E's smart meter deployment prior to submission to the Commission.[246]

SCE agrees that the deployment plans should be evaluated and approved in a single proceeding and further recommends the Commission approve or deny the initial deployment plans within 120 days of submission.[247]

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[242] EDF Reply Comments at 17.

[243] PG&E Opening Comments at 10.

[244] SCE Opening Comments at 8; PG&E Opening Comments at 8-10; Reply Comments at 2.

[245] UCAN Opening Comments at 4.

[246] *Id.*

[247] SCE Opening Comments at 8-9; Reply Comments at 5.

4.1.2. Discussion: Combined Proceeding with SCE, SDG&E and PG&E

In providing input on how the Commission should consider and approve Smart Grid Deployment Plans, most parties support the single-proceeding process. Some parties, however, confound this issue with how the Commission should consider and approve Smart Grid investments.[248] For example, CESA identifies problems with considering Smart Grid investments in GRCs and then recommends against considering deployment plans using that process.[249] Review of investments and review of the deployment plans are two different things. CESA, however, seems to reason that because the GRC process may be inappropriate for consideration of Smart Grid investments, it is also inappropriate for consideration of deployment plans.[250]

Upon our review of the comments, we conclude that a single proceeding involving SCE, PG&E and SDG&E will ensure the most efficient and thorough review of the initial Smart Grid Deployment Plans. Not only will a single proceeding process "help ensure some congruity"[251] in the Commission's consideration of baselines, plans, and technologies, but it will also allow

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[248] TURN Opening Comments at 3; CESA Opening Comments at 6; Tendril Opening Comments at 5-6 (Tendril recognizes that GRCs may be the most appropriate venue for cost recovery issues but may also be too burdensome. It then concludes that a single proceeding should be used to address as many issues as possible. We surmise the Tendril must be referring to approval of the deployment plans); CLECA Opening Comments at 5. (CLECA raises concerns with reviewing Smart Grid investments in GRCs and then concludes that the Commission should review deployment plans in a single proceeding.)

[249] CESA Opening Comments at 6.

[250] *Id*.

[251] DRA Opening Comments at 7.

interested parties to participate more easily. We therefore reject separate review of each utility's deployment plan. While each utility is required to file a separate application submitting its Smart Grid Deployment Plan, we expect to review the plans in a consolidated proceeding.

In response to parties that confounded the issue of how the Commission should review specific proposed Smart Grid investments with Smart Grid Deployment Plans, we also agree that the GRC process is not appropriate for consideration and approval of Smart Grid Deployment Plans. The GRC process is used by the Commission to determine the reasonableness of investments and is used by the utilities to seek recovery and approval of investment costs. Section 8364(a) requires the IOUs to submit a Smart Grid Deployment Plan for Commission approval by July 1, 2011. The purpose of § 8364(a) is not to approve or deny specific investments, but rather to approve or deny the IOUs' proposed deployment plans.

4.2. How Should the Commission Review Proposed Revisions to Deployment Plans?

The Ruling Amending Scope proposed that approved Smart Grid Deployment Plans be used to establish a baseline for measuring deployment of Smart Grid technologies and capabilities. It also proposed requiring the IOUs to file status reports that update the plan every year starting October 1, 2010 and continuing through October 1, 2020. The ruling proposed that the reports reflect information that is current as of June 30 of the year in which the report is filed.

4.2.1. Positions of Parties

While the parties agree that the Commission should review and approve initial deployment plans in a single proceeding, there is a wider variety of opinions regarding the Commission's review of annual status reports, including

updates to the deployment plans. Most parties agree that the Commission should provide a process for annual approval of deployment plan updates.[252] Parties differ, however, on whether this process should take place as part of a single proceeding or via separate advice letter filings or applications.[253] These updates are important as a reference point for Smart Grid investments and to inform the Commission's annual report to the Legislature, as required by SB 17.[254]

SCE argues that:

> …updates will…prove critical if Deployment Plans are referenced in reasonableness reviews of specific Smart Grid investment proposals. In order that Deployment Plans effectively serve this function, they must reflect a current description of the policy, operational, and business drivers of Smart Grid development.[255]

CEERT recommends the Commission review annual deployment plan progress reports and updates as part of a single proceeding.[256] PG&E disagrees, arguing that "updates and revisions to individual utility plans should be considered in individual utility proceedings, consistent with the different

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[252] SCE Opening Comments at 8 and Reply Comments at 5; DRA Opening Comments at 3; SDG&E Opening Comments at 4-5 and Reply Comments at 4; CEERT Opening Comments at 4-5 and Reply Comments at 2; SCE Opening Comments at 5.

[253] CEERT Reply Comments at 2 (recommends a single proceeding); EDF Reply Comments at 17 (recommends a single proceeding); PG&E Opening Comments at 8-9 (recommends separate proceedings); DRA Reply Comments at 6-8 (recommends the Commission review updates via advice letter and an application process after the initial five years); SDG&E Reply Comments at 4-5 (recommends the advice letter process).

[254] SCE Opening Comments at 4; DRA Opening Comments at 3; CEERT Opening Comments at 4-5.

[255] SCE Comments of 3/9/10 at 8.

[256] CEERT Opening Comments of 4/7/10 at 2.

procedural schedules for utility GRCs and individual applications in which Smart Grid Deployment Plans may be implemented or used."[257] EDF, in contrast, asserts that "considering updates in one proceeding allows utilities to learn from each other and the public to better monitor the progress," and "having plans considered in the same proceeding ensures that they are based on the same standards and principles across utilities."[258]

SDG&E and DRA propose that the IOUs should update deployment plans annually via the advice letter process.[259] "SDG&E believes an annual update process can provide for adequate flexibility and opportunity for utilities to refresh and update…their deployment plans" and "will present an opportunity for others to submit suggested revisions and refinements to [their plans]."[260] DRA suggests using a Tier 3 advice letter with an extended protest period of 30 days to allow parties the opportunity to comment on updates.[261] It further suggests requiring the IOUs to file updates through an application after five years.[262] While SDG&E agrees with annual updates, it cautions against "overly burdensome procedures" in response to DRA's proposal to allow thorough vetting of the updates through an extended advice letter process.[263] SDG&E is concerned that such a process will enable the re-litigation of earlier agreed-upon

[257] PG&E Opening Comments at 8-9.

[258] EDF Reply Comments at 17.

[259] SDG&E Opening Comments at 4-5; DRA Reply Comments at 6-8.

[260] SDG&E Reply Comments at 4-5.

[261] DRA Reply Comments at 6-8.

[262] *Id*.

[263] SDG&E Reply Comments at 3-4.

deployment plan components.[264] Therefore, it agrees with the "need to modify and adapt Smart Grid Deployment Plans to changes in technology and to accommodate consumer behavior" and supports annual updates, but it recommends that these annual submissions serve to "maintain an updated smart grid vision [rather than to] advise the Commission on a [utility's] progress in implementing smart grid activities that have already been addressed."[265] SDG&E asserts that thorough vetting can take place in the context of the Commission's review of Smart Grid investments—through GRCs or special applications.[266]

The Ruling Amending Scope proposes that status reports be filed every year starting on October 1, 2010. PG&E disagrees with this proposed update schedule.[267] Instead of "establish[ing] a particular frequency of updating or reporting on Smart Grid progress," the Commission should require an initial status report two years after approval of the initial plans and decide the frequency of subsequent reports based on that report.[268] SCE also opposes the Ruling Amending Scope's proposed start date of October 1, 2010 for status report filings. Instead, it recommends these filings begin July 1, 2011 since the IOUs will not have a deployment plan in place to update by October 1, 2010.[269] DRA similarly agrees that requiring an update filing on October 1, 2010 is illogical and

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[264] SDG&E Opening Comments at 4-5.

[265] *Id*.

[266] SDG&E Reply Comments at 4.

[267] PG&E Opening Comments at 7.

[268] *Id.*

[269] SCE Opening Comments at 10.

instead recommends annual updates commence one year from the date the deployment plans are adopted, in 2012.[270]

The Ruling Amending Scope proposes that annual reports "should also reflect information that is current as of June 30 of the year in which the report is filed." SCE supports annual reporting but recommends that status reports be current as of December 31 of the preceding year because the utility planning cycle and compilation of metrics occurs on a calendar-year basis.[271]

Finally, in terms of Commission action on annually submitted updates, SCE recommends the Commission decide whether to accept or reject the updates within 75 days of submission.[272]

4.2.2. Discussion: Commission Will Update Procedure Following Review of Initial Deployment Plans

Due to the importance of the Smart Grid, because this technology is rapidly changing and because the Commission will use deployment plans in assessing proposed investments, it is critical that these plans be up-to-date and "reflect a current description of the policy, operational, and business drivers of Smart Grid development."[273] The plans should "be flexible and considered as living documents, which can be updated and revised as necessary when new technologies and standards emerge."[274]

At this time, we conclude that the best way for the Commission to proceed is to review the first Smart Grid Deployment Plan for each utility, as discussed

[270] DRA Reply Comments at 7-8.

[271] SCE Opening Comments at 10.

[272] SCE Reply Comments at 5.

[273] SCE Opening Comments at 8.

[274] DRA Reply Comments at 6-7.

above, and as part of that proceeding, we will address when and how an update should be filed.

4.3. How Should the Commission Review/Consider Specific Smart Grid Investments?

The Ruling Amending Scope sought comments from parties to determine whether a GRC, special application or some other procedure offers the best venue for the review of Smart Grid investments. The Ruling Amending Scope noted that the parties addressing this issue had not voiced a clear preference on which venue would be best.[275] The Ruling Amending Scope invited parties to comment further.

4.3.1. Positions of Parties

DRA, in its comments argued that "[g]iven the evolving and vague nature of the Plans envisioned by SDG&E, there is no basis for compliance with Plans serving as strong evidence in reviewing specific investment requests.[276]

SCE argues in support of either GRC or special application reviews of infrastructure investments, stating:

> SCE also agrees with the position stated in the Ruling that "Smart Grid expenditures should be considered in GRCs, and in limited cases in special applications." While SCE supports the use of the GRC proceedings to consider many Smart Grid investment proposals, SCE reaffirms its comments made in Phase I of this rulemaking. Our earlier comments indicated that some Smart Grid projects may need to be considered in special proceedings. The Commission's flexibility with regard to regulatory approach is essential.[277]

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[275] Ruling Amending Scope at 17.

[276] DRA Reply Comments at 5.

[277] SCE Opening Comments at 9, footnotes omitted.

PG&E raises the practical issue of timing:

> Because utilities are on different GRC schedules, the level of detail available regarding specific Smart Grid projects, investments and programs may vary, depending on whether a utility is ready to propose specific investments and expenditures in their detailed, current GRC applications or other applications.[278]

4.3.2. Discussion: Application or GRC Offer Appropriate Procedures for Reviewing Smart Grid Investments

Only TURN expressed a preference that any Smart Grid investments should be considered in a GRC rather than in a special application, although PG&E has raised practical issues that arise from the timing of GRCs. Our own conclusion is consistent with these observations – either a review in a GRC or in an application can provide sufficient Commission oversight of an investment.

Furthermore, since SB 17 aims to promote the deployment of a Smart Grid in California, we conclude that a utility may seek approval for Smart Grid investments either in its GRC and/or through separate applications. We believe either review path – as part of a GRC review of investments or in a separate application – offers a practical way to review proposed investments in a manner consistent with the goals of SB 17.

4.4. What Reports Should the Commission Require Pertaining to Smart Grid Investments? When Should They be Filed?

4.4.1. Positions of Parties

SDG&E states that annual updates "should provide an opportunity for utilities to refresh and update … their deployment plans without re-litigating" the deployment plans that reflect technology developments and customer needs.

[278] PG&E Opening Comments at 10.

Additionally, SDG&E states that it is more important that annual reports maintain "an updated smart grid vision than to advise the Commission on a utilities progress in implementing smart grid activities" already addressed elsewhere.[279] SDG&E comments that the Scoping Ruling proposes a status report to be filed by October 1, 2010, but the deployment plan will not be filed until July 2011, so "it is unclear what form this first status report should take, given that each utility will not have yet filed or received approval of their plans."[280]

SCE supports an annual deployment plan report that will inform the Commission's annual report to the Governor and Legislature. SCE comments that this update will also be critical to the extent a deployment plan is referenced in any reasonableness review of specific Smart Grid investments. SCE disagrees with the Scoping Ruling's proposal that the annual report be "current as of June 30 of the year in which the report is filed."[281] SCE states that since the utility planning cycle and compilation of metrics will occur on a calendar-year basis, the annual report should be current as of December 31st of the preceding year.[282] Furthermore, SCE argues that since the first deployment plan will not be filed until July 1, 2011, the utilities should not be required to file a deployment plan report until 2012. In the alternative, SCE proposes that for 2010 and 2011, the IOUs file a report based on their adherence to metrics as approved by the

[279] SDG&E Opening Comments at 5, 7.

[280] *Id.* at 9.

[281] SCE Opening Comments at 8.

[282] *Id.*

Commission, as well as any new metrics that may be appropriate as the Smart Grid develops.[283]

PG&E argues that the Commission should not "establish a particular frequency of updating or reporting on Smart Grid progress;"[284] instead, PG&E proposes to provide an initial status report on the deployment plan two years after approval of its initial deployment plan, or 2013. Only after that report is reviewed should the Commission set a schedule for subsequent reports and updates.[285]

IREC encourages the Commission to keep this proceeding open as a means to continue identification of evolving infrastructure needs. In order to accommodate this evolving process, IREC recommends that the Commission require updated deployment plans to identify new and additional infrastructure needs and functionalities.[286]

EDF supports requiring annual reports on the deployment plan.[287] Cisco also states support for annual updates "since it is likely that plans will be modified over time."[288]

CEERT supports requiring an annual status report, including any updates to a deployment plan. CEERT argues that this annual status report would assist the Commission in preparing its annual report to the Governor and Legislature,

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[283] *Id.* at 22. *See* also, SCE Reply Comments at 6.

[284] PG&E Opening Comments at 7.

[285] *Id.*

[286] IREC Opening Comments at 7.

[287] EDF Opening Comments at 8.

[288] Cisco Opening Comments at 7.

as required by SB 17. Additionally, CEERT argues that SB 17 does not contain a sunset date and the Commission may want to consider extending utility reporting requirements beyond 2020. Furthermore, CEERT suggests that the Commission may choose to use the updates in a more programmatic fashion, analogous to an approved procurement plan. According to CEERT, this process "can accelerate the maturation of" the Smart Grid.[289]

DRA supports the submission of annual status reports "to measure progress relative to the baseline that reflects historical developments and includes an update of future plans."[290] DRA suggests that the Commission provide more specifics about how the Commission will treat an update of future plans in the case of less cost-effective technology or optimistic forecasts than originally included in the initial deployment plan.[291] DRA also recommends that the Commission use annual status reports "as a means to track and review all Smart Grid investments as a whole," that will allow the Commission to evaluate and potentially restructure Smart Grid policy where necessary.[292] DRA agrees with SCE and SDG&E that the initial status report should not be filed until 2012, and agrees with SCE that the initial reports should focus on metrics. Additionally, DRA does not oppose SCE's request that annual reports be filed on a calendar year basis.[293]

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[289] CEERT Opening Comments at 4-5.

[290] DRA Opening Comments at 3.

[291] *Id.*

[292] *Id.* at 8-9.

[293] DRA Reply Comments at 8-9.

TIA states that annual reports will be helpful to the Commission "as utilities continue to adopt and integrate new solutions as they become available." Additionally, TIA comments that the Commission should expect flexibility in the updates as they will change over time.[294]

4.4.2. Discussion: Annual Reports Are Needed to Prepare an Annual Report to the Legislature

There is general consensus for an annual report on the utilities' deployment actions. However, there is some disagreement about the content of the initial annual reports and when they should start. SCE, PG&E and DRA agree that the first deployment plan report should not occur until 2012. SCE proposes that the 2010 and 2011 annual reports should focus on meeting any adopted metrics, which DRA does not oppose. Additionally, DRA proposes that the 2010 report include the initial baseline assessment.

As discussed above,[295] we will reject DRA's request that the 2010 annual report have a baseline measurement; instead, the baseline is to be included in the utilities' initial deployment plan filing on July 1, 2011.

The Commission is sympathetic to the arguments of SCE that since the deployment plans are not scheduled to be filed until July 1, 2011, the 2010 and 2011 annual reports will not contain very much information on the deployment of a Smart Grid.

SB 17 is very clear. The Commission is to file a report with the Governor and the Legislature by January 1, 2011, and every year thereafter, with the Commission's "recommendations for a smart grid, the plans and deployment of

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[294] TIA Reply Comments at 3.

[295] *See,* 3.4.2., above.

smart grid technologies by the state's electrical corporations, and the costs and benefits to ratepayers."[296] We anticipate that the January 1, 2011 report will include a review of the steps taken by this Commission and the January 1, 2012 report will be based on the filings made in the utilities' first Smart Grid Deployment Plans that will describe the current state of the grid.

The Commission will require the IOUs to file an annual report that describes their current initiatives in regards to Smart Grid deployments and investments. The first report shall be due on October 1, 2012. Each annual report must include the following:

- A summary of the utility's deployment of Smart Grid technologies during the past year and its progress toward meeting its Smart Grid Deployment Plan;
- The costs and benefits of Smart Grid deployment to ratepayers during the past year; and
- Current initiatives for Smart Grid deployments and investments.

Additionally, as described above,[297] the annual reports shall also include updates to a utility's security risk assessment and privacy threat assessment. Furthermore, the Commission will require the annual reports starting on October 1, 2012 to address the utility's compliance with North American Electric Reliability Corporation security rules, as well as future security guidelines and standards as identified by NIST and adopted by FERC. This will allow the Commission to monitor and ensure that the utilities are being pro-active in protecting the grid from security risks or threats.

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[296] § 8367.

[297] *See,* 3.4.2. and 3.6.2.

The parties agree that October 1 of each year is satisfactory for the filing of annual reports. However, SCE requests that the reports be current as of December 31 of the previous year. DRA does not oppose this request. The Commission will reject this request. A nine month gap between the end of the calendar year and filing of the October report would not provide the Commission with timely information to report to the Governor and Legislature, as directed by SB 17. Therefore, the annual reports filed on October 1 of each year shall include information current as of July 1 of each year. This will provide the Commission with the most recently available information on the utilities' Smart Grid actions, and will allow the Commission to provide the Governor and Legislature the best available information. If we were to agree to SCE's request, the Governor and Legislature would be receiving a report using information that is over a year old, which would not be in keeping with the statute.

The Commission expects the annual report to inform the Commission, the public, interested parties and market participants of the utilities' Smart Grid actions. The Commission will use the annual reports as a way to measure utilities' adherence to the vision and roadmap, as well as allowing the Commission to track investments against any adopted metrics.

Finally, CEERT comments that the statute does not contain a sunset provision for an annual report. At this time, the Commission will require a report every year through 2020, beginning in 2012. The Commission may decide to extend this requirement at a future date depending on the progress toward a Smart Grid over the next 10 years. Additionally, depending on the progress made by the utilities and the state, the Commission may choose to seek a sunset provision in the statute.

4.5. Should the Commission Set a Demarcation Point for Utility Investments

The Joint Assigned Ruling sought comments from parties regarding the potential for a Commission determined demarcation point for utility investments. Specifically, the Ruling Amending Scope asked whether the Commission should prohibit utility ownership of devices installed on the customer-side of the meter.[298] The Ruling Amending Scope did not propose a solution, but sought comments about how best could the Commission create a "regulatory approach to spur the creation of Smart Grid services, devices, and functions that allow for" interoperability between devices and whether a demarcation point would be an appropriate regulatory response.[299]

4.5.1. Positions of Parties

Tendril supports the use of a demarcation point to help the market develop. Tendril comments that there may need to be multiple demarcation points because placing a demarcation point at a central facility or utility office may hinder "the ability of a third-party service provider to effectively participate," and therefore multiple demarcation points "may be advisable in order to anticipate multiple parties and business models."[300]

CCTA comments that it "may be premature to determine whether a clear demarcation point between utility and consumers is necessary or appropriate" for Smart Grid devices to foster a market.[301] Nevertheless, CCTA suggests that

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[298] Ruling Amending Scope at 26.

[299] *Id.* at 28.

[300] Tendril Opening Comments at 10-11.

[301] CCTA Opening Comments at 6.

the Commission should consider the issues surrounding a demarcation in a future proceeding.[302]

CLECA strongly believes "that a utility should not own equipment on the customer side of the meter" and that the "utility's ownership should stop at the meter."[303] CLECA warns that allowing the utility to provide technology to consumers would likely "stifle innovation and could lead to wasteful investment."[304] Additionally, CLECA argues that customers may be unwilling to allow utilities to "reach into their homes and businesses."[305]

Google supports a demarcation point at the meter, noting that "upstream of the meter has traditionally been viewed as exclusive utility domain while downstream of the meter has traditionally been viewed as an area of customer investment."[306] Google comments that no party has "presented a compelling need" to change this structure, and that "there does not appear to be any need for utilities" to own devices that communicate with the meter.[307]

PG&E does not support the use of a demarcation point, "other than in a legal, jurisdictional sense." PG&E comments that "the appropriate demarcation point between the utility and non-utility will depend on the systems integration

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302 *Id.* at 6-7.

303 CLECA Opening Comments at 11.

304 *Id.*

305 *Id.*

306 Google Opening Comments at 9.

307 *Id.*

function that the utility must perform," and that a demarcation point could discourage competition and investments in Smart Grid technologies.[308]

SCE also opposes using a demarcation point as it is "impractical and ignores the nature and complexities of the architecture for advanced metering and home area networks," and a demarcation point may be "irrelevant if consumer devices communicate with the electric grid over the internet."[309] SCE argues that a demarcation point can be constructed through functional roles, rather than physical interconnection. SCE provides a proposed definition for a "functional demarcation point of utility service."[310] Specifically, the utility would be responsible for functions essential to grid reliability, Smart Grid cyber security, and back office support to enable the HAN interface.[311] SCE proposes several functions that third parties could provide for a customer, including installation of devices, phone support, in-home support, and demand response.[312] SCE comments that any new services or technologies enabled by the Smart Grid "should not interfere with SCE's ability to provide safe and reliable electrical service."[313]

Wal-Mart supports the meter as the demarcation point.[314]

Greenlining supports the adoption of a demarcation point as it "would foster participation and innovation by third parties … to develop technologies

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308 PG&E Opening Comments at 17.

309 SCE Opening Comments at 23.

310 *Id.*

311 *Id.* at 24.

312 *Id.*

313 *Id.* at 25.

314 Wal-Mart Opening Comments at 2.

and consumer devices that will be compatible and interoperable" with the Smart Grid.[315] Greenlining supports the meter as the demarcation point, but it should not be a rigid demarcation point as it "may not be completely appropriate where innovative communications technology may break through the Smart Grid at a different point of interconnection."[316] Additionally, Greenlining would not support a prohibition against utility participation on the customer side of the meter, as a utility may be able to out-compete a competitor in services and innovations.[317]

EnergyHub "does not believe a demarcation point is prudent" due to the early stages of technology development for customers and "care must be taken to ensure maximum flexibility as the market evolves."[318]

DRA "continues to believe that customers should own all equipment on the customer side of the meter,"[319] and that a demarcation point should be set at the meter.[320] DRA "sees no need for the IOUs to provide customers" with in-home devices and argues that "the market for consumer-owned devices and energy management tools should be allowed to fully develop."[321]

TURN supports a demarcation point "for purposes of utility investments."[322]

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315 Greenlining Opening Comments at 18.

316 *Id.* at 19.

317 *Id.* at 20.

318 EnergyHub Opening Comments at 4.

319 DRA Opening Comments at 20.

320 DRA Reply Comments at 16.

321 *Id.* at 17.

322 TURN Opening Comments at 27.

CEERT supports the adoption of a demarcation point at the meter, asserting that the utility can provide applications "relevant to delivery services," and that applications "relative to after-the-meter services can be competitively provided by third parties."[323] CEERT comments that utilities could also provide these "after-the-meter services," but "should not have an exclusive right to do so."[324] Fundamentally, CEERT argues that utilities should "not extend beyond their core competencies at a significant ratepayer cost or inappropriately constrain the ability for third parties … to provide their services."[325]

SDG&E supports the adoption of a demarcation point at the meter.[326] SDG&E argues that "the demarcation point should be based upon the services that are being provided by the utility and should not create utility obligations with respect to equipment and services that are not provided by the utility."[327] However, the Commission "should not prohibit IOU's from participating in activities, or owning equipment, on the customer side of the meter that could potentially facilitate the development of smart grid interoperability."[328] The demarcation point should not be set at a place that discourages "development of new consumer interoperability technologies and/or the utility's efficient management of the electric grid."[329]

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[323] CEERT Opening Comments at 23-24.

[324] *Id.* at 24.

[325] CEERT Reply Comments at 17.

[326] SDG&E Opening Comments at 25.

[327] *Id.* at 25.

[328] SDG&E Reply Comments at 9.

[329] *Id.* at 2.

EDF does not take a position on a demarcation point, but supports a process for an open and competitive market for providing Smart Grid products and services to customers by a wide variety of providers, including the utility.[330] EDF states "that it is essential that third parties are able and encouraged to provide behind the meter services."[331]

GroundedPower cautions against the adoption of a demarcation point stating that utilities may own certain equipment inside the home such as rental water heaters or direct load control devices.[332] GroundedPower suggests that "[t]he question of ownership should be viewed with flexibility to ensure that deployment of smart technologies is encouraged and not impeded."[333]

AT&T encourages the Commission to set a demarcation point at the meter as "establishing such a demarcation point will promote investment and innovation in the sphere of home energy management."[334] AT&T also states that "the location of the demarcation point should confer no advantage to one market participant over another."[335]

Sigma encourages the adoption of a demarcation point where devices outside a home are the utility's responsibility, but devices inside the home are the customer's responsibility.[336] Sigma comments that setting a demarcation point at the home provides several benefits, including enabling innovation,

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330 EDF Opening Comments at 20.

331 EDF Reply Comments at 24.

332 GroundedPower Reply Comments at 12.

333 *Id.*

334 AT&T Reply Comments at 9.

335 *Id.*

336 Sigma Designs Reply Comments at 1.

improving price/performance, mitigating privacy issues, increases flexibility, simplifies the grid, clarifies responsibility, and improving security.[337]

4.5.2. Discussion: Commission Declines to Adopt a Demarcation Point at this Time

All parties support the ability of third parties to provide devices and technology that can be used by customers to become better informed, better manage their own consumption, and obtain new technologies as they become available to customers. Permitting non-utilities to provide devices and technology used by consumers beyond the meter facilitates the deployment of Smart Grid technologies.

In the Ruling Amending Scope, the assigned Commissioner and ALJ sought additional comments from parties regarding the efficacy of the Commission instituting a demarcation point that would effectively prohibit the utility from providing and owning devices located inside a customer's home or establishment. As the Ruling Amending Scope noted, the experience of a demarcation point in the telecommunications industry provides a useful example of how a demarcation point allowed for innovation of technology and overall reduced costs for customers. Many parties, notably PG&E and SCE, caution that the telecommunications industry may not be an accurate comparison, as there are many differences between the telecommunications industry and the electricity industry. Other parties, such as TURN, CLECA and DRA, warn the Commission that without a demarcation point, the utility could be allowed to ratebase investments that not all customers may want or need, thereby raising costs to ratepayers. Parties such as CEERT and Sigma suggest

[337] *Id.* at 1-3.

that a demarcation point allows for increased innovation and allows for products to be marketed to customers in a timely manner, without needing to wait for a utility or regulatory body to act.

The Commission declines to adopt a demarcation point at this time. The Commission is certainly aware of the concerns raised by parties advocating for a demarcation point, but this is not the proper vehicle to address those concerns. The Commission does not have a sufficient record to make a decision on this topic at this time. The Commission will re-consider this determination during its review of the Smart Grid Deployment Plans. Nevertheless, the Commission is fully supportive of a competitive and innovative market for customer-owned technology and devices. Should a utility request ratepayer funds for a device or technology that it anticipates owning and operating and that is placed inside a customer's home or establishment, we will expect the utility to fully explain and justify why such an investment is needed, and explain why such devices or technologies have failed to be adopted widely. The Commission has generally supported the contention that costs should be borne by those who will benefit from the product rather than by the ratepayers, and we will expect the utility to justify why the Commission should veer from this preference.[338]

5. Comments on Proposed Decision

The proposed decision (PD) of Commissioner Ryan in this matter was mailed to the parties in accordance with Section 311 of the Pub. Util. Code and comments were allowed under Rule 14.3 of the Commission's Rules of Practice and Procedure.

[338] *See*, D.10-02-032 at 107 (2010).

Comments were filed by June 10, 2010 by AT&T, CDT/EFF, CESA, CFC, DRA, EDF, EPIC, GPI, GraniteKey, Greenlining, ISO, PG&E, Researchers, SCE, SDG&E, To the Point, TURN, UCAN, and Wal-Mart. Reply comments were filed on June 16, 2010 by PG&E, Researchers SCE, SDG&E, and TURN.

We have reviewed the comments and replies of all parties and have modified the decision as we deem appropriate. We discuss certain comments, however, in greater detail in the sections that follow to make our reasoning transparent.

5.1. Comments on Deployment Plan Requirements and Procedures

SCE "seeks confirmation that Smart Grid Deployment Plans will in fact be used as a source of *guidance* about future Smart Grid investments"[339] and seeks clarifying changes. In addition, SCE seeks clarification that the cost-benefit analysis that the deployment plans will contain are "conceptual" in nature.[340] SCE also seeks clarification that the proceeding to review the Smart Grid Deployment Plans "will not be considered a ratemaking proceeding."[341]

The Smart Grid Deployment Plans will be used as a source of guidance, and we have made clarifying changes to the proposed decision. Similarly, the cost-benefit analysis will be conceptual in nature, and we have made other clarifying changes to the PD. Furthermore, we clarify that the proceeding to review the Smart Grid Deployment Plans will not set any rates. The

339 SCE Comments on PD at 2.

340 *Id.* at 7.

341 *Id.* at 9.

categorization of that proceeding, however, will be made at the time of utility filing of the Smart Grid Deployment Plans.

SDG&E asks for "guidance on the type of prices desired…"[342] that it will eventually disclose to customers and provides details on the complexities that bedevil electric pricing. Concerning cost estimates, SDG&E, like SCE, asks for clarification that "probable cost estimates and ranges available" or "an approximation of the probable total cost of a product, program, or project, computed on the basis of currently available information" will be acceptable.[343] Concerning SDG&E's request for details on what it should disclose as an electricity price, we intend to make that clarification in a decision issued prior to the implementation of the price disclosure program and therefore we do not address this issue at this time. Concerning SDG&E's request for clarification of "cost estimates," we have revised the decision's language to clarify that the Commission is cognizant of the uncertainties that currently surround the costs of Smart Grid technologies.

ISO argues that the "Smart Market" discussion should include "the need to create pricing structures and market products that help integrate renewable resources into the grid."[344] The ISO also seeks clarification on a number of points, including whether the Smart Grid includes the transmission infrastructure and a "discussion of how the IOUs intend to work with other entities."[345]

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[342] SDG&E Comments on PD at 4.

[343] *Id.* at 9.

[344] ISO Comments on PD at 4.

[345] *Id.* at 7.

In response, we reiterate that we do not expect deployment plans to propose pricing structures and market products to help integrate renewable resources into the grid, but we agree that the deployment plans should address the integration of renewable resources. In addition, we agree that the deployment plans should discuss Smart Grid investments on transmission infrastructure. In addition, the utilities should use a collaborative process prior to filing the deployment plans. We anticipate that a workshop to facilitate this collaborative process will be part of the process leading to the filing of Smart Grid Deployment Plans, but plan to address this issue through a later ruling.

EDF argues that "[t]o meet SB 17, the 'Smart Utility' section should discuss how the smart grid will help meet the state's environmental laws and policies …"[346] In addition, EDF argues for the use of stronger language in the decision, replacing words such as "would be helpful" with "require."[347] EDF also asks that the Commission require a more explicit discussion of environmental benefits in deployment plans.

We agree with EDF's points and have modified the decision in numerous places to reflect the importance that both the Commission and SB 17 place on the environmental benefits of the Smart Grid.

Greenlining argues that GO 156 requirements "must not be an afterthought to deployment plans."[348]

Greenlining also highlights challenges the utilities may face with regard to GO 156 requirements as utilities increase their business with new suppliers in the

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[346] EDF Comments on PD in Section III 2.

[347] *Id.* in Section III 4.

[348] Greenlining Comments on PD at 2.

technology area.[349] We agree and the decision has been modified to emphasize that utilities should pay special attention to GO 156 as utility investment grows in new areas.

UCAN argues that the "Smart Grid vision statement is insufficient to ensure that the requirements of Code Section 8360(j)."[350] We find UCAN's argument unpersuasive. It is not just the Smart Grid vision statement that permits the Commission to ensure the requirements of § 8360(j). The Commission will review the entire Smart Grid Deployment Plan and the specific Smart Grid investments proposed in subsequent Commission proceedings, and these comprehensive reviews will enable the Commission to assure that the Smart Grid meets the requirements of § 8360(j). AT&T asks, among other things, that the Commission clarify "that in addition to following the national guidelines utilities and communications providers must engaged in their own detailed cyber security risk assessment."[351] AT&T also asks that the Commission clarify that "IOUs consider not only third party wireline communications providers' services, but wireless communications services and managed services, such as hosting, security and cloud computing services, as well."[352] We agree that IOUs and utilities should pursue risk assessment beyond what is required. We also expect that IOUs will consider all third-party communications alternatives, not just those provided by wireline companies. We have made changes in the decision to clarify these matters.

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[349] *Id.* at 3-5.

[350] UCAN Comments on PD at 2.

[351] AT&T Comments on PD at 3.

[352] *Id.* at 4.

TURN asks that "any potential new 'pricing structures' included in the vision statements must be considered in a ratemaking proceeding."[353] TURN also asks that the "smart vision requirement of education and marketing should include a specific blueprint to ensure 'education' not public relations."[354] TURN also clarifies that its position is Smart Grid investments "would be best addressed in rate cases"[355] and not through special applications.

In response to TURN, we reiterate that we do not anticipate reviewing pricing structures in this proceeding. We also agree that education should not be public relations, but we need not address this issue until we review specific public education proposals. Finally, we agree that Smart Grid investments may be best considered in rate cases and prefer that IOUs propose Smart Grid investments as part of their GRCs. However, for the reasons cited above, it is impractical to adopt this as a procedural requirement because of the timing of GRCs and because of the likely need to make investments to facilitate the timely disclosure of information on usage and prices to customers.

CESA asks that the Commission clarify that its vision of a Smart Grid includes "energy storage."[356] This is indeed the case and we have made changes to clarify this matter.

GPI argues that the Commission should examine pricing structures in this proceeding. In addition, GPI asks that "vision statements … reflect how the Smart Grid will enable a utility to operate its transmission and distribution

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[353] TURN Comments on PD at 1.

[354] *Id.*

[355] *Id.* at 4.

[356] CESA Comments on PD at 3.

system in ways that facilitate the deployment of increasing levels of renewables …, anticipate events, enable responsiveness, and permit automatic or "self-healing" responses by the grid."[357] As noted above, at this time we do not plan to consider pricing structures in this proceeding. GPI's views concerning the scope of the vision statement are consistent with the Commission's views. To the Point stresses the importance of education programs that listen to consumers and respond to diverse interests. These points are well taken, and we will keep these recommendations in mind as we review Smart Grid Deployment Plans and specific investments.

5.2. Demarcation Point

Wal-Mart comments that the Commission "must expressly designate a physical demarcation point now to provide guidance" to the utilities and market participants in order to meet the goal of interoperability.[358] Wal-Mart seeks clarification that a demarcation point not be defined "on a case by case basis in the context of individual utility applications or general rate cases."[359]

AT&T seeks clarification that the Commission will ensure that a utility "gains no competitive advantage over any other energy management service from its access to the customer's home."[360]

Greenlining comments that the Commission should "revisit their decision when deployment plans are reviewed. … A comprehensive review at a

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[357] GPI Comments on PD at 2.

[358] Wal-Mart Comments on PD at 2.

[359] *Id.* at 3.

[360] AT&T Comments on PD at 5.

designated point in time is preferable…"[361] Greenlining notes the possibility of stranded investments made by consumers should the utility eventually be allowed to invest and distribute consumer-side devices, and seeks clarification that the demarcation point be the same for all utilities.[362]

The Commission sees no need to define a demarcation point at this time. The Commission does clarify that we will revisit this issue during the review of the utilities' deployment plan. At that time, the Commission will have additional information on utilities' Smart Grid plans, and will benefit from the participation of interested parties and market participants. Should the Commission decide to create a demarcation point at that time, it may act accordingly. It will, however, be the policy of this Commission to ensure that no utility gets an unfair competitive advantage from a regulatory decision and that the Smart Grid implementation proceed in ways that do not discourage the participation of third parties in Smart Grid deployment, investment, and marketing. The Commission's review of deployment plans will seek to promote both these policies.

5.3. Comments Concerning Security, Privacy and Interoperability Issues

SCE argues that "there can be no such thing as an absolute assurance of security"[363] and requests the use of "more nuanced language" throughout the decision.[364] Concerning security audits, SCE asks for a workshop that discusses

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[361] Greenlining Comments on PD at 9.

[362] *Id.* at 9-10.

[363] SCE Comments on PD at 3.

[364] *Id.* at 4.

"security audits" and the submission of security audits to the Commission.[365] [366]SCE also points out that to meet the deadlines adopted for providing access to information, SCE may need to make investments in the near future. SCE therefore seeks the inclusion of language that could permit such investment with Commission authorization.[367]

Concerning SCE's arguments, the Commission understands that despite the importance of security, there can be no *assurance* of security. Concerning security audits, although it is important that IOUs conduct security audits, it is not necessary to have these audits filed at the Commission as long as the Commission is assured that the audits are being done, is able to discuss the structure of the audits in workshops, and can have access to the audits and the audit data as needed. For this reason, we will not require the submission of security audits at this time, but will consider the issue of access to this information in the future proceedings, including the review of the initial Smart Grid Deployment Plans. To use a metaphor, at this time, the Commission seeks to assure itself that the security "cake" has been baked appropriately, but we do not see the need to require submission of the "recipe" or to see a "videotape" of the cooking, particularly if the Commission can obtain ready access to this information as needed. Finally, concerning SCE's request to seek Commission reviews of investments to facilitate disclosure of usage and pricing information to customers, we agree that there is no reason to restrict the timing of these reviews in any way and we have changed the decision to reflect this.

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365 *Id.* at 5.

366 PG&E makes a similar request – PG&E Comments on PD at 3.

367 SCE Comments on PD at 8.

SDG&E asks that the decision clarify "that utilities are allowed to consider other industry accepted best practices"[368] in security matters. PG&E asks for a similar clarification.[369] This is indeed the case – we expect companies to consider industry best practices.

PG&E asks for clarification on the "procedural schedule for adopting policies on customer privacy and third party access."[370] DRA argues strongly that "privacy rules need to be adopted prior to providing third party access to customer usage information" and asks that the Commission "adopt an appropriate schedule for resolution of all privacy matters before the end of 2010."[371] TURN also asks for a clarification that the Commission may need to amend the requirements of D.09-12-046 to extend deadlines concerning access to data.

We intend to ensure that the implementation of our policy objectives is done in an orderly fashion, without unnecessary costs due to timing and in compliance with possible legislative action. The policy objectives adopted in Ordering Paragraphs 3 and 4 of D.09-12-046 envision the adoption of privacy rules pursuant to Ordering Paragraph 5 of D.09-12-046. Therefore, D.09-12-046 contemplates that the implementation of Ordering Paragraphs 3 and 4 requires a decision in this phase of the proceeding adopting privacy rules. The policy of this Commission embodied in D.09-12-046 is to adopt privacy rules prior to ordering third party access to customer data. Commission-ordered access to

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[368] SDG&E Comments on PD at 9.

[369] PG&E Comments on PD at 4.

[370] *Id.* at 2.

[371] DRA Comments on PD at 1.

information will follow the adoption and implementation of policies to protect privacy. On the issue of scheduling, we plan a ruling following the adoption of this decision.

Researchers recommend that "deployment plans should show enough work to inform the Commission, and members of the public, *how* the utilities have (or have not) taken the relevant requirements into account."[372] In addition, Researchers recommend that the decision explicitly "balance the need for public disclosure of cyber security-related information with the need to protect sensitive information."[373]

Concerning Researchers' request for more security information in deployment plans, we find that an approach that allows the Commission to review security matters without disclosing the details of the audit's findings to the public. Each utility should, as part of its Smart Grid Deployment Plan, specify for each applicable requirement in the guidance documents that NIST and DHS are developing, (1) what testing or analysis a utility has done (or relies on, if the testing or analysis was performed by another entity) to gauge their systems against the guidelines; (2) what results were obtained from this testing or analysis; and (3) what criteria were used to determine whether specific requirements are inapplicable. The utility may submit any portion of its deployment plan under seal, but it shall both designate those portions with specificity and state the reasons for its request to file the information under seal. Consistent with our earlier discussion, we anticipate that a "security strategy"

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[372] Researchers Comments on PD at 3.

[373] *Id.* at 5.

would be filed, perhaps under seal, as part of a deployment plan, but a "security audit" would not be filed at the Commission.

At this time, we do not see a conflict between Researchers' desire for information concerning security plans with the concern to not provide a roadmap to those seeking to disrupt the security of the network. In particular, we do not see Researchers' request for specificity concerning what a utility has done or plans to do in order to test its security to be in conflict with our decision to not require the submission of the detailed security audits to the Commission. The Commission seeks information as indicative of a utility's approach to security, not a report on specific system vulnerabilities.

In our analysis, we find three distinctions useful: 1) Security Strategy, which describes a utility's approach to protecting the grid and customer information; 2) Security Assessment, which provides an overview of strengths and weaknesses of the current grid; and 3) Security Audits, which provide details on specific security failures and vulnerabilities. Concerning the issues raised by parties concerning security audits, we agree that a workshop offers the best approach to analyzing this important matter. We will therefore schedule a workshop later this year concerning security matters. The Commission will return to the issue of the appropriate balance between information disclosure and the protection of sensitive information, particularly as concerns security audits, as we consider the deployment plans. The Commission decision that reviews each of the Smart Grid Deployment Plans will also decide the Commission's policies towards the Security Audits. CDT/EFF expresses broad support for the decision's efforts to include cyber security and privacy issues in the deployment plans. CDT/EFF asks the Commission to add certain language to ensure transparency concerning "information sharing with third parties" and

"additional language on interoperability."[374] CDT/EFF suggests the addition of the following language:

> With whom does the utility share customer information and energy data currently? With whom does the utility reasonable foresee sharing data in the future? What does the utility anticipate is or will be the purpose for which the third party will use the data? What measures are or will be employed by the utility to protect the security and privacy of information shared with other entities? What limitations and restrictions will the utility place on third-part use and retention of data and on downstream sharing? How will the utility enforce those limitations and restrictions?

In addition, CDT/EFF argues that the "Commission should address privacy in future workshops and proceedings associated with smart grid rollout" and "delay third party sharing if a privacy framework is not in place."

Concerning these requests, we have modified the decision to incorporate language to improve transparency concerning practices involving information sharing with third parties. In addition, as noted above, we will embark on a phase of this proceeding to develop security and privacy procedures in more detail, and we will not order third-party access to information until such measures are in place.

DRA, in addition to its concerns over privacy issues, seeks clarification on "interoperability standards."[375] We clarify that it is our policy to require deployment plans to review NIST interoperability recommendations, and our review of deployment plans will resolve interoperability issues in the process of reviewing the plans.

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[374] CDT/EFF Comments at PD at 6-7.

[375] *Id.* at 6.

Granite Key argues that the proposed decision "needs to be amended when the appropriate Federal initiatives/documents are provided"[376] and that there is a "need for a CPUC committee or the public to review, comment on, and/or approve a Utilities deployment plans by augmenting the process of "Systematic Risk Assessment" recommended in the Proposed Decision."[377] In response, we find that the flexibility built into the review process for Smart Grid Deployment Plans will enable the Commission to accomplish both these tasks.

6. Assignment of Proceeding

Nancy E. Ryan is the assigned Commissioner and Timothy J. Sullivan is the assigned ALJ in this proceeding.

Findings of Fact

1. The Commission has consulted with the CEC in developing standards and guidance concerning Smart Grid Deployment Plans.

2. The ISO is a party to this proceeding and has provided the Commission with input on issues that affect it.

3. The Commission has permitted all stakeholders who desire to participate in this proceeding.

4. Participation by the CEC and the ISO in planning a workshop to be held by this Commission prior to the filing of Smart Grid deployment plans can permit substantive input into the Commission's review process by the CEC and the ISO.

5. A workshop held by the Commission prior to the filing of Smart Grid Deployment Plans can permit substantive input into the Commission's review process by the CEC and the ISO.

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[376] Granite Key Comments on PD at 2.

[377] *Id.*

6. National standard setting bodies and other public and private entities, including the NIST, Gridwise Architecture Council, the International Electrical and Electronics Engineers, and the National Electric Reliability Organization recognized by FERC are in the process of developing standards and protocols for the Smart Grid.

7. One way to lower unnecessary barriers is for California's Smart Grid deployment to follow national standards and guidelines for interoperability and incorporate national communication protocols.

8. The Smart Grid can decrease the need for other infrastructure investments and these benefits should be taken into account when planning infrastructure.

9. Deployment plans can create a "baseline" describing Smart Grid investments that can permit the Commission to determine progress by a utility in implementing a Smart Grid.

10. An approved Smart Grid Deployment Plan can provide a utility with guidance concerning Smart Grid investments and a rationale that can support a proposed investment during review of the project and help in the determination that the project is reasonable and consistent with the Commission's overall Smart Grid vision. Alternatively, evidence that an investment does not comport with a utility's Smart Grid Deployment Plan or the goals of SB 17 should be considered a rationale supporting a determination that it is unreasonable.

11. The technologies that are used in the Smart Grid are undergoing rapid changes in capabilities and costs.

12. The best estimates of rapidly changing technologies, capabilities and costs can be obtained close to the point of the implementation of a project that uses these technologies.

13. Because of the rapidly changing capabilities and costs of Smart Grid technologies, an assessment of the reasonableness of a project cannot be made accurately at the time that deployment plans are constructed.

14. The Smart Grid can promote environmental benefits from renewables, energy efficiency programs, demand side management, demand response programs, and other innovative technologies and programs envisioned in SB 17.

15. A Smart Grid Deployment Plan that includes the following 8 topic areas offers a practical way of presenting a deployment plan that can demonstrate compliance with the policy initiatives of SB 17:

a. Smart Grid Vision Statement;
b. Deployment Baseline;
c. Smart Grid Strategy;
d. Grid Security and Cyber Security Strategy;
e. Smart Grid Roadmap;
f. Cost Estimates;
g. Benefits Estimates; and
h. Metrics.

16. The systematic presentation of a Smart Grid Deployment Plan can enable the Commission to understand and assess the baseline condition of today's grid even as it keeps its eyes trained on the grid of the future.

17. A common format for the Smart Grid Deployment Plan can facilitate Commission review and participation by interested parties in Commission proceedings.

18. A vision statement is needed for the Smart Grid Deployment Plan.

19. A vision statement will help orient a utility's efforts to upgrade its electrical system to meet today's electric system and policy requirements and tomorrow's electric system and policy needs using the latest technologies.

20. A presentation of a Smart Grid Vision Statement that shows that the proposed deployment plan advances a "Smart Market" that is transparent and demand responsive, provides pricing information, promotes distributed power, incorporates cost-effective energy storage, and promotes the environmental goals of California would be consistent with SB 17 policies and initiatives.

21. A presentation of a Smart Grid Vision Statement that shows that the proposed deployment plan promotes a "Smart Customer" who is informed, empowered and able to use electricity efficiently and in ways the promote environmental goals would be consistent with SB 17 policies and initiatives.

22. A presentation of a Smart Grid Vision Statement that shows that the proposed deployment plan promotes a "Smart Utility" whose grid is predictive and enabling, self-healing, able to resist physical and cyber attacks while protecting customer privacy, and promotes compliance with California's environmental laws and policies would be consistent with SB 17 policies and initiatives.

23. A baseline of current Smart Grid infrastructure investments is necessary to enable the Commission to understand where utilities are today.

24. DRA requests that the Commission set an October 1, 2010 deadline for the submission of a Smart Grid inventory of technologies.

25. A thorough inventory of Smart Grid investments can ensure that ratepayers do not pay twice for the same Smart Grid investment.

26. A Smart Grid strategy section of the Smart Grid Deployment Plan can offer a sense of direction and guidance for the development of the Smart Grid.

27. Setting rigid requirements as part of a Smart Grid strategy is not in the public interest.

28. It is important that Smart Grid investments demonstrate how they meet the requirements of SB 17 and other applicable statutes and policies.

29. A Smart Grid strategy that demonstrates how a utility can achieve the goals set out in SB 17 is useful for planning purposes.

30. There exist several communications networks (both wireline and wireless) in California's current infrastructure that may offer cost-effective means for providing the data communication that a Smart Grid requires.

31. A Smart Grid strategy that considers how to support the goals of GO 156 as utilities purchase and build the Smart Grid is useful for Commission planning.

32. Grid security and cyber security are key components of a Smart Grid and important elements in any deployment plan.

33. Because of the current and planned deployment of Smart Grid technologies, there is also an urgent need for appropriate security programs that address physical and cyber threats/attacks.

34. Smart Grid technologies will introduce millions of new intelligent components to the electric grid that communicate in much more advanced ways than in the past.

35. The goal of a security program for the Smart Grid is to provide security while not impeding the functioning of the grid.

36. Physical security and cyber security of the Smart Grid are needed to promote the reliability of the grid, protect the privacy, reliability and confidentiality of the information that is transmitted, and to contain and mitigate any cyber-security threats.

37. The Smart Grid Deployment Plans can provide the Commission and the public with insight into the security of the Smart Grid.

38. A robust Smart Grid security strategy should address physical, cyber and human threats to the Smart Grid's operations.

39. The developing NIST framework will address many of the security issues that are arising from the Smart Grid technology deployment.

40. NIST and DHS have identified and prepared key documents concerning cyber security 'standards' that provide guidance on cyber security issues that are applicable to Smart Grid Deployment Plans. These include:

a. Security Profile for Advanced Metering Infrastructure, v 1.0, Advanced Security Acceleration Project – Smart Grid, December 10, 2009 provides guidance and security controls to organizations developing or implementing AMI solutions, including the meter data management system up to and including the HAN interface of the smart meter;[378]

b. Catalog of Control Systems Security: Recommendations for Standards Developers, U.S. Department of Homeland Security, National Cyber Security Division, September 2009 presents a compilation of practices that various industry bodies have recommended to increase the security of control systems from both physical and cyber attacks; and

c. Department of Homeland Security developed the Cyber Security Procurement Language for Control Systems to provide guidance to procuring cyber security technologies for control systems products and services.

41. An effective security strategy should be based on a systematic risk assessment by both IOUs and their communications providers that addresses the prevention of, preparation for, protection against, mitigation of, response to, and recovery from security threats for the utilities' advanced metering infrastructure,

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[378] Available at: http://osgug.ucaiug.org/utilisec/amisec/Shared%20Documents/AMI%20Security%20Profile%20(ASAP-SG)/AMI%20Security%20Profile%20-%20v1_0.pdf.

distribution grid management, the communications providers' communications networks, and Smart Grid operations, but it is not necessary to file the details of security audits with the Commission at this time.

42. Designing cyber security into the Smart Grid will reduce the vulnerability of the electric grid and reduce the likelihood of later needing to modify Smart Grid components to address vulnerabilities.

43. Threat assessments and modeling – identifying an attackers goals and specifying how those goals might be accomplished in a given system – provides a valuable and systematic way of identifying vulnerabilities in systems such as the electric grid.

44. Subjecting Smart Grid cyber security assessments to a broad review will improve their quality and allow utilities and the Commission to take advantage of industry, academic and public interest expertise.

45. Answering certain questions in a Smart Grid Deployment Plan will help the Commission ensure that the information pertaining to customers and their usage of electricity and power is secure. These questions include:

a. What types of information about customers are or will be collected via the smart meters, and what are the purposes of the information collection? Could the information collection be minimized without failing to meet the specified purposes?
b. Does the utility have or expect to have other types of devices, such as programmable communicating thermostats, which can collect information about customers? If so, what types of information is collected, and what are the purposes of the information collection? Could the information collection be minimized without interfering with the specified purposes?
c. What types of information, if any, does the utility plan to collect from the smart meter and HAN gateway?

d. How frequently will the utility take readings from the smart meter? Is this frequency subject to change? Will customers control this frequency?

e. For each type of information identified above, for what purposes will the information be used? The purposes should be articulated with specificity, e.g., "targeted marketing" instead of "promoting energy efficiency."

f. For each type of information collected, for how long will the information retained, and what is the purpose of the retention? Could the retention period be shortened without failing to meet the specified purpose?

g. With whom does the utility share customer information and energy data currently? With whom does the utility reasonable foresee sharing data in the future? What does the utility anticipate is or will be the purpose for which the third party will use the data? What measures are o4r will be employed by the utility to protect the security and privacy of information shared with other entities? What limitations and restrictions will the utility place on third-part use and retention of data and on downstream sharing? How will the utility enforce those limitations and restrictions?

h. What measures are or will be employed by the utility to protect the security of customer information?

i. Has the utility audited or will it audit its security and privacy practices, both internally and by independent outside entities? If so, how often will there be audits? What are the audit results to date, if any?

46. A Smart Grid Roadmap can provide useful information concerning technologies and their deployment, even though a roadmap remains subject to change.

47. A Smart Grid Roadmap can assist the Commission in conducting timely reviews and in the Commission's own budgeting and planning.

48. A Smart Grid Roadmap can show how a proposed deployment of infrastructure can aid California in meeting the deadlines adopted in legislation

for renewable energy projects and other energy-related environmental policies, such as those pertaining to green house gases, energy efficiency, demand-side management, and demand response.

49. A Smart Grid Roadmap can facilitate the identification of essential infrastructure steps needed to provide customers with access to consumption and pricing data.

50. A section on Cost Estimates in Smart Grid Deployment Plans can include preliminary and conceptual costs.

51. Cost estimates for technologies associated with the Smart Grid are undergoing dramatic changes.

52. The technologies used in the Smart Grid are undergoing dramatic changes.

53. Preliminary information on costs will help the Commission in its planning and make Smart Grid Deployment Plans more useful.

54. Estimates of costs over a 5-year planning horizon are useful.

55. The Benefits Estimates section should discuss the range of benefits that a proposed Smart Grid project will produce.

56. The benefits of the Smart Grid can be efficiently organized into three broad categories: 1) benefits of compliance with legal and regulatory goals and requirements; 2) other benefits that are difficult to quantify or price, such as safety benefits; and 3) benefits that are simple to quantify and are sometimes called "business-case" benefits.

57. An estimation of the incremental benefits that arise from incremental expenditures will be useful in deployment plans.

58. An estimation of the environmental benefits that may arise from Smart Grid will be useful in deployment plans.

59. An estimation of the benefit of infrastructure investments that the Smart Grid makes unnecessary will be useful in deployment plans.

60. The benefits of storage extend beyond substituting for fossil generation.

61. The inclusion of a section on metrics in the Smart Grid Deployment Plan will provide the Commission with a means to assess the state of the electric grid.

62. The choice of metrics raises questions that are not resolved at this time.

63. The consideration of all utility Smart Grid Deployment Plans in a single proceeding offers administrative efficiencies.

64. Because of the importance of the Smart Grid, because this technology is rapidly changing and because the Commission will use deployment plans in assessing proposed investments, it is critical that these plans be up-to-date.

65. Smart Grid technologies and investments are most similar to the technologies and investments considered under the AMI, which the Commission reviewed through applications.

66. A GRC encompasses a utility's entire portfolio of investments as well as operating and maintenance costs and occurs at intervals of 3 to 5 years.

67. SB 17 requires that Smart Grid Deployment Plans be filed by July 1, 2011.

68. The Smart Grid Deployment Plans filed by July 1, 2011 will contain a report on the current state of the Smart Gird.

69. SB 17 requires an annual report to the Governor and Legislature by the Commission on the status of the Smart Grid.

70. An annual report filed by utilities on Smart Grid developments will facilitate the Commission's preparation of the report required annually by SB 17.

Conclusions of Law

1. The Commission has complied with the terms of § 8362 (a) of the Pub. Util. Code which requires that the Commission consult with the CEC, the ISO and

other key stakeholders in determining the requirements for Smart Grid Deployment Plans.

2. The participation by the CEC and ISO in the planning of a workshop to be held by this Commission prior to the filing of Smart Grid Deployment Plans is consistent with 8362 (a) of the Pub. Util. Code.

3. The participation by the CEC and ISO in a workshop to be held by this Commission prior to the filing of Smart Grid Deployment Plans is consistent with 8362 (a) of the Pub. Util. Code.

4. It is reasonable and consistent with SB 17 to defer consideration of standards and protocols for the Smart Grid until further action by NIST, Gridwise Architecture Council, the International Electrical and Electronics Engineers, and the National Electric Reliability Organization recognized by the Federal Energy Regulatory Commission.

5. It is reasonable for the Commission to defer the adoption of Smart Grid standards and protocols until NIST achieves consensus on specific standards.

6. It is reasonable and consistent with SB 17 to use Smart Grid Deployment Plans to develop a baseline against which to measure a utility's progress towards deploying a Smart Grid.

7. It is reasonable and consistent with SB 17 to use the Smart Grid Deployment Plans to guide utility investments in the Smart Grid to ensure that they promote the policy goals adopted by the Commission pursuant to SB 17 and EISA.

8. It is reasonable and consistent with SB 17 to use the Smart Grid Deployment Plans as a rationale that supports a proposed investment during the determination of whether a specific project is reasonable and consistent with the Commission's overall Smart Gird vision.

9. It is not reasonable to use a Smart Grid Deployment Plan to confer a presumption of reasonableness on a specific investment project.

10. It is reasonable to require Smart Grid Deployment Plans to follow the eight-element format as follows:

a. Smart Grid Vision Statement;
b. Deployment Baseline;
c. Smart Grid Strategy;
d. Grid Security and Cyber Security Strategy;
e. Smart Grid Roadmap;
f. Cost Estimates;
g. Benefits Estimates; and
h. Metrics.

11. Smart Grid policy goals consistent with the initiatives and policies of SB 17 include that the Smart Grid:

a. Be self-healing and resilient;
b. Empower consumers to actively participate in the operations of the grid;
c. Resist attack;
d. Provide higher quality of power and avoid outages;
e. Accommodate all generation and energy storage options,
f. Enable electricity markets to flourish;
g. Run the grid more efficiently; and
h. Enable penetration of intermittent power generation sources;
i. Create a platform for deployment of a wide range of energy technologies and management services;
j. Enable and support the sale of demand response, energy efficiency, distributed generation, and storage into wholesale energy markets as a resource, on equal footing with traditional generation resources; and,

k. Significantly reduce the total environmental footprint of the current electric generation and delivery system in California.

12. It is reasonable to require that each Smart Grid Deployment Plan has a Smart Grid Vision Statement that includes three areas: "Smart Market," "Smart Customer," and "Smart Utility."

13. It is reasonable to require a baseline inventory of Smart Grid investments in the Deployment Baseline section of the Smart Grid Deployment Plan.

14. Requiring a Smart Grid inventory by October 1, 2010 is inconsistent with the intent of SB 17, which does not require the filing of Smart Grid Deployment Plans until July 1, 2011.

15. It is reasonable to determine the current state of privacy actions by asking utilities, as part of their Smart Grid Deployment Plan, to answer the following questions concerning the data of customers:

a. What data is the utility now collecting?
b. For what purpose is the data being collected?
c. With whom will the utility currently share the data?
d. How long will the utility currently keep the data?
e. What confidence does the utility have that the data will is accurate and reliable enough for the purposes for which the data will be used?
f. How does the utility protect the data against loss or misuse?
g. With whom does the utility share customer information and energy data currently? With whom does the utility reasonable foresee sharing data in the future? What does the utility anticipate is or will be the purpose for which the third party will use the data? What measures are or will be employed by the utility to protect the security and privacy of information shared with other entities? What limitations and restrictions will the utility place on third-part use and retention of data and on downstream sharing? How will the utility enforce those limitations and restrictions?

h. How do individuals have access to the data about themselves? and

i. What audit, oversight and enforcement mechanisms does the utility have in place to ensure that the utility is following their own rules?

16. It is reasonable to require the Smart Grid strategy component of the Smart Grid Deployment Plan to guide future investments and to show how a utility can achieve the goals set out in SB 17 and other statutes and policies, including those that promote increases in energy efficiency, the use of demand-side management and demand response, and those that seek to reduce greenhouse gas emissions.

17. It is reasonable to require the strategy section of the Smart Grid Deployment Plan to include an assessment as to whether current wireline and/or wireless communications infrastructure can plan a role in providing cost-effective data communications that the Smart Grid requires.

18. It is reasonable to require the strategy section of a Smart Grid Deployment Plan to consider how interoperability standards will be used and how the utility will minimize the risk of stranded costs in cases where consensus standards do not yet exist.

19. It is reasonable to require the strategy section of a Smart Grid Deployment Plan to assess how Smart Grid acquisitions can promote the goals of GO 156.

20. It is reasonable to require that the Grid Security and Cyber Security Strategy section of the Smart Grid Deployment Plans specify, for each applicable requirement in the guidance documents that NIST and DHS are developing, (1) what testing or analysis a utility has done (or relies on, if the testing or analysis was performed by another entity) to gauge their systems against the guidelines; (2) what results were obtained from this testing or analysis; and (3) what criteria were used to determine whether specific requirements are inapplicable.

21. It is reasonable to permit each utility to retain the detailed results of cyber security audits as long as the Commission has access to such detailed results as necessary.

22. It is reasonable to permit utilities to request that specific portions of deployment plan be filed under seal. Such requests must state the reason(s) for the request.

23. It is reasonable to require that the Grid Security and Cyber Security Strategy section of the Smart Grid Deployment Plan include a systematic risk assessment by both IOUs and their communications providers that addresses the prevention of, preparation for, protection against, mitigation of, response to, and recovery from security threats for the utilities' advanced metering infrastructure, distribution grid management, the communications networks used, and Smart Grid operations.

24. SB 17 places a special emphasis on security issues relating to customers.

25. It is reasonable to require that the Grid Security and Cyber Security Strategy section of the Smart Grid Deployment Plan address questions relating to the security of information pertaining to customers.

26. It is reasonable to require that the Smart Grid Roadmap section of the Smart Grid Deployment Plan provide the timetable for Smart Grid infrastructure investments.

27. It is reasonable to require that the Cost Estimates section of the Smart Grid Deployment Plan include cost estimates, even though these estimates are necessarily preliminary due to the rapidly changing technologies and costs involved with the Smart Grid.

28. It is reasonable to require that the Cost Estimates section of the Smart Grid Deployment Plan include 5-year estimates of costs.

29. It is reasonable to require that the Benefits Estimate section of the Smart Grid Deployment Plan be organized into three broad categories: (a) benefits of compliance with legal and regulatory goals and requirements; (b) other benefits that are difficulty to quantify or price, such as safety and environmental benefits; and (c) benefits that are simple to quantify and are sometimes called "business-case" benefits and environmental benefits that can be quantified and monetized.

30. It is reasonable to require Smart Grid Deployment Plans to include a section on Metrics that go beyond simple "build" measurements to assess how all SB 17 goals are met.

31. It is reasonable to order further workshops and to seek additional comments on the choice of Smart Grid metrics for inclusion in deployment plans.

32. It is reasonable to consider all utility Smart Grid Deployment Plans in a single proceeding.

33. There is insufficient record to permit a determination as to whether prohibiting utility investment beyond the meter is in the public interest. The Commission will re-examine this determination during the review of the Smart Grid Deployment Plans. A guiding policy principle that the Commission will use in making its decision will be to ensure that no utility is unfairly advantaged over any other company.

34. It is reasonable to determine the next steps in updating Smart Grid Deployment Plans during the proceeding to review the initial deployment plans.

35. It is reasonable to review proposed Smart Grid investments in either a General Rate Case or in an application, provided that the application is not filed before the filing of the utility's first Smart Grid Deployment Plan.

36. It is reasonable to require annual reports on the status of the Smart Grid commencing on October 1, 2012 that will provide the status of Smart Grid investments as of July 1 of the year in which the report is filed.

O R D E R

IT IS ORDERED that:

1. Pacific Gas and Electric Company, Southern California Edison Company and San Diego Gas & Electric Company each shall file an application no later than July 1, 2011 submitting its Smart Grid Deployment Plan, consistent with Senate Bill 17 (Padilla), Chapter 327, Statutes of 2009, and the requirements in this decision. If a utility requests to submit any portion of its deployment plan under seal, it shall designate those portions with specificity and state the reason(s) for its request to file under seal. Each utility shall serve its application on the service lists for Rulemaking 08-12-009 and any open Long Term Procurement Plan proceedings. If the utility has a pending general rate case proceeding, it shall also serve its application on that proceeding's service list.

2. Pacific Gas and Electric Company, Southern California Edison Company and San Diego Gas & Electric Company each shall follow an eight-element format in its Smart Grid Deployment Plan as follows:

   a. Smart Grid Vision Statement;
   b. Deployment Baseline;
   c. Smart Grid Strategy;
   d. Grid Security and Cyber Security Strategy;
   e. Smart Grid Roadmap;
   f. Cost Estimates;
   g. Benefits Estimates; and

h. Metrics.

3. In the Smart Grid Vision Statement section of its Smart Grid Deployment Plan, Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company each shall address how the grid can achieve the policies contained in Senate Bill 17, including:

a. Be self-healing and resilient;
b. Empower consumers to actively participate in the operations of the grid;
c. Resist attack;
d. Provide higher quality of power and avoid outages;
e. Accommodate all generation and energy storage options;
f. Enable electricity markets to flourish;
g. Run the grid more efficiently;
h. Enable penetration of intermittent power generation sources;
i. Create a platform for deployment of a wide range of energy technologies and management services;
j. Enable and support the sale of demand response, energy efficiency, distributed generation, and storage into wholesale energy markets as a resource, on equal footing with traditional generation resources; and
k. Significantly reduce the total environmental footprint of the current electric generation and delivery system in California.

Each Smart Grid Vision Statement must also include three sections addressing: (a) Smart Market; (b) Smart Customer; and (c) Smart Utility. Each section should also discuss how the Smart Grid will benefit customers and help meet environmental laws and policies contained in the Public Utilities Code.

4. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company each shall include in its Smart Grid Deployment Plan an inventory of current Smart Grid infrastructure investments

and a baseline assessment of privacy and security issues affecting the Smart Grid. Each plan must answer the following questions concerning the data of customers:

a. What data is the utility now collecting?
b. For what purpose is the data being collected?
c. With whom will the utility currently share the data?
d. How long will the utility currently keep the data?
e. What confidence does the utility have that the data will is accurate and reliable enough for the purposes for which the data will be used?
f. How does the utility protect the data against loss or misuse?
g. With whom does the utility share customer information and energy data currently? With whom does the utility reasonable foresee sharing data in the future? What does the utility anticipate is or will be the purpose for which the third party will use the data? What measures are or will be employed by the utility to protect the security and privacy of information shared with other entities? What limitations and restrictions will the utility place on third-part use and retention of data and on downstream sharing? How will the utility enforce those limitations and restrictions?
h. How do individuals have access to the data about themselves? and
i. What audit, oversight and enforcement mechanisms does the utility have in place to ensure that the utility is following its own rules?

5. Pacific Gas and Electric Company, Southern California Edison Company and San Diego Gas & Electric Company each shall include in its Smart Grid Deployment Plan a Smart Grid Strategy section that explains how the utility will ensure that its Smart Grid investments deliver benefits to its customers and how the utility will prioritize its technology evaluation and deployment efforts

against the goals in Senate Bill 17 and promote the goals of General Order 156. In addition, the Smart Grid Strategy section must explain how the utility will evaluate whether using existing communications infrastructure can reduce the costs of deploying the Smart Grid. The Smart Grid Strategy section must also consider how interoperability standards will be used and how the utility will minimize the risk of stranded costs in cases where consensus standards are evolving.

6. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company each shall describe and discuss its plans for adopting and developing interoperable architecture designed to protect the privacy of customer data.

7. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company each shall include in its Smart Grid Deployment Plan a section on Grid Security and Cyber Security Strategy.

8. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company each shall use, in the section on Grid Security and Cyber Security Strategy in its Smart Grid Deployment Plan, the guidance documents that the National Institute of Standards and Technology and the United States Department of Homeland Security have developed or are developing to promote cyber security. Specifically, cyber security sections must use the latest versions of the following three documents to guide their preparations:

a. Security Profile for Advanced Metering Infrastructure, v 1.0, Advanced Security Acceleration Project – Smart Grid, December 10, 2009;

b. Catalog of Control Systems Security: Recommendations for Standards Developers, United States Department of

Homeland Security, National Cyber Security Division, September; and

c. United States Department of Homeland Security Cyber Security Procurement Language for Control Systems.

For each applicable requirement in the documents listed above, cyber security sections shall state (1) what testing or analysis has been performed (or will be performed or relied on if testing was performed by another entity) to gauge a system against the guidelines; (2) what results were obtained from this testing or analysis; and (3) what criteria were used to determine whether specific requirements are inapplicable.

9. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company each shall include in the section on Grid Security and Cyber Security Strategy in its Smart Grid Deployment Plan a discussion of its security strategy and how it used National Institute of Standards and Technology guidance documents and best industry practices in developing its plan.

10. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company each shall answer in the section on Grid Security and Cyber Security Strategy in its Smart Grid Deployment Plan the following questions concerning the security of customer information:

a. What types of information about customers are or will be collected via the smart meters, and what are the purposes of the information collection? Could the information collection be minimized without failing to meet the specified purposes?

b. Does the utility have or expect to have other types of devices, such as programmable communicating thermostats, which can collect information about customers? If so, what types of information are collected, and what are the purposes of the information collection? Could the information collection be minimized without interfering with the specified purposes?

c. What types of information, if any, does the utility plan to collect from the smart meter and Home Area Network gateway?

d. How frequently will the utility take readings from the smart meter? Is this frequency subject to change? Will customers control this frequency?

e. For each type of information identified above, for what purposes will the information be used? The purposes must be articulated with specificity, e.g., "targeted marketing" instead of "promoting energy efficiency."

f. For each type of information collected, for how long will the information be retained, and what is the purpose of the retention? Could the retention period be shortened without failing to meet the specified purpose?

g. With whom does the utility share customer information and energy data currently? With whom does the utility reasonable foresee sharing data in the future? What does the utility anticipate is or will be the purpose for which the third party will use the data? What measures are or will be employed by the utility to protect the security and privacy of information shared with other entities? What limitations and restrictions will the utility place on third-part use and retention of data and on downstream sharing? How will the utility enforce those limitations and restrictions?

h. What measures are or will be employed by the utility to protect the security of customer information?

i. Has the utility audited or will it audit its security and privacy practices, both internally and by independent outside entities? If so, how often will there be audits? What are the audit results to date, if any?

11. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company each shall include in its Smart Grid Deployment Plan a Smart Grid Roadmap that projects the timing of the utility's Smart Grid investments and how they relate to state policy requirements.

12. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company each shall include in the Cost Estimate section of its Smart Grid Deployment Plan estimated costs for the Smart Grid for the next five years.

13. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company each shall include in the Benefit Estimate section an evaluation of Smart Grid benefits and a discussion of the extent to which the Smart Grid avoids the need for other investments.

14. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company each shall seek approval of Smart Grid investments either through an application and/or through General Rate Cases.

15. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company each shall file an annual report in Rulemaking 08-12-009 on the status of Smart Grid investments commencing October 1, 2012 and annually thereafter through October 1, 2020. The filing of the annual reports will not reopen this proceeding after it is closed. Each annual report must cover Smart Grid investments up to July 1 of the year in which the report is filed, and must include the following:

a. A summary of the utility's deployment of Smart Grid technologies during the past year (July through June) and its progress toward meeting its Smart Grid Deployment Plan;
b. The costs and benefits of Smart Grid deployment to ratepayers during the past year, including a monetary estimate, to the extent possible, of the health and environmental benefits that may arise from the Smart Grid;
c. Current initiatives for Smart Grid deployments and investments;
d. Updates to the utility's security risk assessment and privacy threat assessment; and

e. The utility's compliance with North American Electric Reliability Corporation security rules and other security guidelines and standards as identified by the National Institute of Standards and Technology and adopted by the Federal Energy Regulatory Commission.

16. Rulemaking 08-12-009 remains open for further consideration of metrics to be used to assess progress toward the implementation of a Smart Grid, of matters pertaining to privacy and security, and other matters within the scope of this proceeding.

This order is effective today.

Dated June 24, 2010, at San Francisco, California

MICHAEL R. PEEVEY
President
DIAN M. GRUENEICH
JOHN A. BOHN
TIMOTHY ALAN SIMON
NANCY E. RYAN
Commissioners