Decision **PROPOSED DECISION OF COMMISSIONER PEEVEY**
(Mailed 6/11/2013)

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

In the Matter of the Application of San Diego Gas & Electric Company (U 902 E) for Adoption of its Smart Grid Deployment Plan	Application 11-06-006 (Filed June 6, 2011)
And Related Matters.	Application 11-06-029 Application 11-07-001

DECISION ADOPTING THE SMART GRID DEPLOYMENT PLANS OF SAN DIEGO GAS & ELECTRIC COMPANY, PACIFIC GAS AND ELECTRIC COMPANY AND SOUTHERN CALIFORNIA EDISON COMPANY

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DECISION ADOPTING THE SMART GRID DEPLOYMENT OF PLANS OF SAN DIEGO GAS & ELECTRIC COMPANY, PACIFIC GAS AND ELECTRIC COMPANY AND SOUTHERN CALIFORNIA EDISON COMPANY

1. Summary

This decision adopts the Smart Grid Deployment Plans filed by Pacific Gas and Electric Company, Southern California Electric Company, and San Diego Gas & Electric Company because the review conducted in this proceeding finds these plans consistent with the provisions of Senate Bill (SB) 17[1] and the requirements that the Commission adopted in Decision (D.) 10-06-047. To reach these conclusions, the decision analyzes each plan to determine whether it contains the elements required by SB 17 and developed in detail in D.0-06-047.

The decision also discusses the Workshop Report of the Commission's Energy Division, which analyzes the adequacy of each Smart Grid Deployment Plan. The Workshop Report also proposes guidance criteria, adopted by this decision, to ensure that annual reports filed by each utility permit the utility to demonstrate that it is making progress in advancing the smart grid.

This decision declines to establish a "demarcation point" beyond which the incumbent electric utility cannot make investments. The decision reaches the conclusion that it is not prudent to set a demarcation point at this time because so much concerning the smart grid is uncertain and undergoing rapid technological change.

The decision declines to adopt additional requirements, as suggested by parties, that the Smart Grid Deployment Plans must meet.

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[1] Chapter 327, Statutes of 2009.

This proceeding is closed.

2. Background of Proceeding

Decision (D.) 10-06-047 directed that Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E) each file an application with a Smart Grid Deployment Plan (SGDP) for the Commission to review for consistency with Senate Bill (SB) 17 and the requirements that the Commission adopted in D.10-06-047 for SGDPs.

On June 6, 2011, SDG&E filed Application (A.) 11-06-006 containing its SGDP.[2] On June 23, 2011, Resolution ALJ 176-3276 reached a preliminary determination that A.11-06-006 was a quasi-legislative proceeding and that no hearings would be necessary.

On June 30, 2011, PG&E filed A.11-06-029 containing its SGDP.[3]

On July 1, 2011, SCE filed A.11-07-001 containing its SGDP.[4]

On July 6, 2011, the Division of Ratepayer Advocates (DRA) filed motions for party status in each of the three proceedings. The Administrative Law Judge (ALJ) granted these motions on July 7, 2011.

On July 6, 2011, Southern Californians for Wired Solutions to Smart Meters (SCWSSM) filed a motion for an extension of time for filing protests as well as a separate motion for party status in A.11-06-006.

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[2] With this filing, SDG&E met the filing deadline specified in SB 17 and reiterated in Ordering Paragraph 1 of D.10-06-047.

[3] With this filing, PG&E met the filing deadline specified in SB 17 and reiterated in Ordering Paragraph 1 of D.10-06-047.

On July 7, 2011, DRA filed motions in each proceeding to consolidate all three applications into a single proceeding and to set a single date for the filing of protests. DRA also filed a separate motion in each proceeding requesting an immediate ruling on its motion for consolidation. On July 7, 2011, via an e-mail ruling, the ALJ granted DRA's requests.[5]

On July 7, 2011, the Black Economic Council, Latino Business Chamber of Greater Los Angeles, and the National Asian American Coalition (Joint Parties) filed a motion for party status in A.11-06-006.[6]

On July 14, 2011, Resolution ALJ 176-3277 reached a preliminary determination that A.11-06-029 and A.11-07-001 were quasi-legislative proceedings and that no hearings would be necessary.

On July 25, 2011, the ALJ issued a Ruling memorializing the consolidation of the applications, setting a deadline for protests and responses, granting parties the right to reply to the protests and responses, and scheduling a Prehearing Conference (PHC).

By August 4, 2011, the Commission received protests from the Center for Electrosmog Prevention (CEP), DRA, the Utility Consumers' Action Network (UCAN), the Direct Access Customer Coalition and the Alliance for Retail Energy Markets (DACC/AReM), Californians for Renewable Energy (CARE),

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[4] With this filing, SCE met the filing deadline specified in SB 17 and reiterated in Ordering Paragraph 1 of D.10-06-047.

[5] This action rendered moot the matters in SCWSSM's motion for an extension of time for filing protests. No formal action was therefore taken on SCWSSM's motion for extension of time.

[6] The Joint Parties became a party to this proceeding through an appearance at the PHC.

the Peoples Initiative Foundation (PIF), The Utility Reform Network (TURN), SCWSSM, the Greenlining Institute (Greenlining), Marin Energy Authority (MEA), and (filing jointly) the County of Marin, Town of Fairfax, City of Marina, City of Seaside, Consumers Power Alliance, Public Citizen, Marin Association of Realtors, Alliance for Human and Environmental Health, Coalition of Energy Users, Eagle Forum of California, Santa Barbara Tea Party, Concerned Citizens of La Quinta, Palm Springs Patriots Coalition Desert Valley Tea Party, Menifee Tea Party - Hemet Tea Party – Temecula Tea Party, Rove Enterprises, Inc., Schooner Enterprises, Inc., and Eagle Forum of San Diego (Joint Protestants). In addition, the Commission received responses from the Environmental Defense Fund (EDF) and Joint Parties.

On August 8, 2011, CARE amended its protest.

On August 11, 2011, PG&E, SCE, and SDG&E each filed a Reply to the protests.

On August 31, 2011, SCWSSM filed a motion requesting the California Department of Public Health to review the electric and magnetic fields produced by the smart grid.

On September 1, 2011, EDF served a PHC Statement on the service list.

On September 6, 2011, EnerNOC, Inc. (EnerNOC) filed a motion for party status.[7]

On September 7, 2011, a PHC took place at the Commission offices in San Francisco to take appearances in the proceeding, to refine the scope of the

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[7] Consistent with Commission Rules, EnerNOC became a party to this proceeding through an appearance at the PHC (TR PHC-2) and no further action is needed on EnerNOC's Motion for Party Status.

proceeding, and to develop a procedural timetable for the management of this proceeding. As of that date, all outstanding motions for party status where granted and a list of parties was established.

On September 15, 2011, SDG&E filed a response to the August 21, 2011, motion of SCWSSM. SDG&E opposed the motion of SCWSSM.

On September 26, 2011, SCWSSM replied to SDG&E's September 15, 2011 response.

On October 3, 2011, assigned Commissioner Peevey issued Scoping Memo and Ruling of the Assigned Commissioner (Scoping Memo), which set the initial scope and schedule in this proceeding. Among other things, the Scoping Memo ruled that alleged health issues raised by certain parties were under consideration in other active proceedings before the Commission, and inclusion in this proceeding would "duplicate that work."[8]

On October 6, 2011, CARE filed an appeal of the proceeding's categorization as quasi-legislative.

On October 13, 2011, SCE filed a response to CARE, opposing CARE's appeal of the proceeding's categorization.

By October 24, 2011, pursuant to the timetable set forth in the Scoping Memo, Joint Parties, MEA, DACC/AReM, PG&E, TURN, Greenlining, UCAN, SDG&E, Wilner & Associates, EnerNOC, EDF, and DRA filed comments assessing deployment plans and recommending the number and structure of workshops.

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[8] Scoping Memo at 8.

On October 28, 2011, SDG&E argued that the comments of the Joint Parties constituted a motion and filed a response opposing the request of the Joint Parties.

On December 1, 2011, D.11-12-012 denied CARE's appeal of the categorization of the proceeding.

On December 27, 2011, an ALJ Ruling set the topics and schedule for workshops. On January 5, 2012, a subsequent ALJ Ruling revised the schedule.

A Motion for Party Status was filed by the Clean Coalition on January 11, 2012 and granted by the ALJ on the same day via an e-mail to the service list.

On January 31, 2012 to February 2, 2012, workshops were held addressing the SGDPs filed by PG&E, SCE and SDG&E and the topics set forth in the ALJ Ruling of December 27, 2011.

On March 2, 2012, an ALJ Ruling added the March 1, 2012, Workshop Report of Commission Staff (Workshop Report) to the record in the proceeding.

Later in March, additional Motions for Party Status were filed by the California Energy Storage Alliance (CESA)[9] and the California Large Energy Consumers Association (CLECA)[10] and granted by the ALJ.

Comments on the Workshop Report were filed by March 15, 2012 by Joint Parties, CEP, SCE, UCAN, DRA, EnerNOC, TURN, Greenlining, the Clean Coalition, CESA, EDF, DACC/AReM, PG&E, and SDG&E.

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[9] CESA filed a motion for party status on March 20, 2012. On March 20, 2012, via an e-mail communication to the service list, the ALJ granted the motion.

[10] CLECA filed a motion for party status on March 21, 2012. On March 22, 2012, via an e-mail communication to the service list, the ALJ granted the motion.

Reply Comments on the Workshop Report were filed by March 22, 2012 by Joint Parties, CEP, MEA, DRA, SCE, TURN, SDG&E, DACC/AReM, PG&E, EnerNOC, SCWSSM, and CLECA.

On April 20, 2012, Pacific Bell Telephone Company d/b/a AT&T California (AT&T) filed a Motion for Party Status. On April 24, 2012, via an e-mail communication to the service list, the ALJ granted the motion.

On May 16, 2012, Verizon California, Inc. (Verizon) filed a Motion for Party Status. On May 17, 2012, CARE filed in opposition to Verizon's Motion for Party Status.

On May 17, 2012, AT&T and Verizon jointly filed a Motion to File Late Reply Comments and AT&T and Verizon jointly filed Reply Comments. On May 17, 2012, via e-mail, PG&E filed in opposition to the late filed comments, but asked that if the comments were accepted, that all parties be permitted to reply. On May 17, 2012, via e-mail, SDG&E endorsed PG&E's position.

On May 18, 2012, via e-mail, SCE endorsed PG&E's position. On May 18, 2012, via e-mail, DRA endorsed PG&E's position. On May 18, 2012, via e-mail, AT&T and Verizon jointly stated that they had no objection to permitting parties to reply to the late-filed comments of AT&T and Verizon.

On May 18, 2012, via e-mail, ALJ Sullivan gave Verizon permission to reply to CARE's opposition to Verizon's Motion for Party Status.

On May 21, 2012, via e-mail, Verizon replied to CARE's opposition.

On May 23, 2012, via e-mail, the ALJ Ruled that Verizon had made a compelling case that its interests are affected by this proceeding and the Motion for Party Status of May 16, 2012, was granted. In addition, the May 17, 2012, AT&T and Verizon Joint Motion to File Late Reply Comments was granted in the

same e-mail ruling. Furthermore, the e-mail ruling gave all parties an opportunity to respond to the Late-filed Reply Comments of AT&T and Verizon.

On May 30, 2012, SCE and SDG&E filed responses to the Late-filed Reply Comments of AT&E and Verizon.

3. Jurisdiction

The jurisdiction to review the SGDP arises from both statutes assigning this specific task to the Commission and from statutes granting the Commission broad authority to oversee infrastructure investments by electric utilities.

SB 17, which added §§ 8360-8369[11] to the Pub. Util. Code, granted authority to the Commission and set requirements that an SDGDP must meet. Specifically, § 8362 required:

> 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 deployment plan consistent with Section 8360 and federal law, including the provisions of Title XIII (commencing with Section 1301) of the Energy Independence and Security Act of 2007 (Public Law 110-140). 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

[11] All statutory references, unless stated otherwise, are to the Pub. Util. Code.

> 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.[12]

D.10-06-047, pursuant to § 8362, adopted the requirements for the SGDPs.

Furthermore, Section 8364(a) required that:

> (a) By July 1, 2011, each electrical corporation shall develop and submit a smart grid deployment plan to the commission for approval.[13]

Pursuant to § 8364(a), PG&E filed A.11-06-029, SCE filed A.11-07-001 and SDG&E filed A.11-06-006. Each application contained a proposed SGDP, and each application sought Commission approval of the submitted plan.

This consolidated proceeding will therefore determine whether the SGDPs submitted by PG&E, SCE and SDG&E warrant Commission approval.

In addition to the authority given to review the SGDPs, under broad provisions of the Public Utilities Code, the Commission seeks to insure the reliability of service and the affordability of service.[14] A review of the SGDP is also consistent with these oversight responsibilities.

4. Issues Before the Commission

The central issue before the Commission is whether to authorize, amend, or reject the SGDPs submitted by PG&E, SCE, and SDG&E. In making this

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[12] Section 8362.

[13] Section 8364(a).

[14] See, for example, § 399.

determination, the Commission is guided by SB 17, and D.10-06-047, which, pursuant to SB 17, adopted criteria for SGDPs.

D.10-06-047 concluded that "the best uses of the deployment plans are to set a baseline indicating the current deployment of Smart Grid technologies and as a document for guiding future Smart Grid investments."[15] As a consequence, the SGDPs need not contain the level of detail that the Commission would require to determine the reasonableness of a specific investment; the plans need only provide information at a level necessary to guide and coordinate regulatory and investment policy in ways that promote the smart grid as envisioned by SB 17.

D.10-06-047 required that each SGDP contain 8 elements:

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.[16]

D.10-06-047 also established criteria that each of the eight elements in a SGDP should meet. The issue before the Commission in this proceeding is whether the SGDPs filed by PG&E, SCE and SDG&E meet the criteria set forth in D.10-06-047.

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[15] D.10-06-047 at 21.

[16] D.10-06-047 at 29.

The Commission's Workshop Report, in addition to analyzing the adequacy of the SGDPs, provided recommendations on how Annual Reports could supplement and update the SGDPs in ways that permit PG&E, SCE, and SDG&E to demonstrate that they are making progress and advancing the smart grid.

The Commission invited parties to comment not only on the SGDPs, but also on the Workshop Report and other relevant issues. Therefore, this decision will also address the Workshop Report and the comments of parties. In particular, the decision will discuss what information the Annual Reports should contain and how it should be reported.

In addition to resolving outstanding issues pertaining to the SGDPs, this proceeding will consider whether the Commission should establish a demarcation point on the grid beyond which the incumbent electric company cannot make investments.

5. Does the Smart Grid Vision Statement in Each Utility Plan Meet the Statutory Requirements of §§ 8360-8369 and the Regulatory Requirements Adopted in D.10-06-047?

D.10-06-047 required that each utility's Smart Grid Vision Statement present a vision that describes how the utility's deployment of a smart grid will support a smart energy market, smart consumers and a smart utility.[17] The decision stated further that the vision statement "should address how [the] vision of the Smart Grid will perform in each of … eight areas … with particular reference to the relevant sections of § 8360 and § 8366."[18] In addition, D.10-06-

[17] D.10-06-047 at 33.

[18] *Id*. at 34.

047 required that the vision statements address how the smart grid will facilitate energy technologies, energy management services, energy efficiency (EE), demand response (DR) and how it can "reduce the environmental footprint of the electric generation and delivery system in California."[19]

In developing a SGDP, each utility's plan contains a separate section that provides its smart grid vision. PG&E's Smart Grid vision is contained in Chapter 2 of its Deployment Plan.[20] SCE's Smart Grid Vision Statement is contained in Chapter 3 of its Deployment Plan.[21] SDG&E's Smart Grid Vision Statement is contained in Chapter 2 of its Deployment Plan.[22]

Our review below examines the vision statement of each utility. The review demonstrates that each utility clearly followed the directions and met the requirements pertaining to a Smart Grid Vision Statement contained in D.10-06-047.

5.1. Discussion of PG&E Plan's Vision Statement

The PG&E Plan contains a succinct statement of PG&E's smart grid vision:

> PG&E's vision for the Smart Grid is to provide customers safe, reliable, secure, cost-effective, sustainable and flexible energy services through the integration of advanced communications and control technologies to transform the operations of our electric network, from generation to the customer's premise.[23]

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[19] *Id*.

[20] Application 11-06-029 Appendix A: PG&E's Smart Grid Deployment Plan (PG&E Plan) at 17-28.

[21] A.11-07-001 Exhibit 1: SCE Smart Grid Deployment Plan (SCE Plan) at 16-38.

[22] A.11-06-006 Attachment A: SDG&E Smart Grid Deployment Plan: 2011-2012 (SDG&E Plan).

[23] PG&E Plan at 18.

Throughout the rest of the chapter pertaining to the vision, PG&E explains how this vision is driven by its business concerns for safety, reliability, and security,[24] and also by policy drivers.[25] The PG&E Plan then explains the relationship between its vision and the concepts of smart customers,[26] smart energy markets,[27] and the concept of a smart utility.[28] The PG&E Plan closely follows the criteria set out on pages 30-33 of D.10-06-047. The PG&E Plan also ties its vision to its current energy infrastructure, programs, and emerging services,[29] including providing access to third parties, enabling demand response, energy efficiency and related programs, and reducing the environmental footprint of electric generation.[30]

The PG&E vision for the smart grid presents a vision of smart energy markets, smart consumers and a smart utility as required by D.10-06-047. In addition, the PG&E Plan addresses how its vision of the smart grid will perform in each of the required eight areas and provides references to the relevant sections of § 8360 and § 8366. The PG&E Plan also addresses how the smart grid will facilitate energy technologies, energy management services, energy efficiency, demand response and how it can reduce the environmental footprint of electric generation and delivery. Since PG&E's Plan fulfills these

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[24] *Id*. at 22.

[25] *Id*. at 22-24.

[26] *Id.* at 25-26.

[27] *Id*. at 26-27.

[28] *Id*. at 27-28.

[29] *Id*. at 30.

[30] *Id*. at 34.

requirements, we conclude that PG&E's vision for the smart grid meets the requirements set forth in D.10-06-047 and SB 17.

5.2. Discussion of SCE Plan's Vision Statement

The SCE Plan contains a succinct Smart Grid Vision Statement:

> SCE's vision of a smart grid is to develop and deploy a more reliable, secure, economic, efficient, safe and environmentally-friendly electric system. This vision covers all facets of energy from its production to transmission, distribution, and finally its efficient use in homes, businesses and vehicles. This smart grid will incorporate high-tech digital devices throughout the transmission, substation and distribution systems and integrate advanced intelligence to provide the information necessary to both optimize electric service and empower customers to make informed energy decisions.[31]

Throughout the remainder of the chapter, SCE demonstrates how this vision statement is informed by the D.10-06-047 smart grid characteristics and SB 17;[32] other policies adopted by the Commission and the legislature including the increasing use of plug-in electric vehicles (PEV);[33] and the smart market, smart customer and smart utility concepts.[34] The SCE Plan demonstrates graphically how these disparate perspectives come together to inform its vision statement.[35]

In summary, SCE Plan's Vision Statement meets the requirements set out in D.10-06-047 and the requirements of SB 17. In addition, the SCE Plan

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[31] SCE Plan at 16.

[32] *Id*. at 17-18.

[33] *Id*. at 19-28.

[34] *Id*. at 29-37.

[35] *Id*. at 38.

addresses how its vision of the smart grid will perform in each of the required eight areas and provides references to the relevant sections of § 8360 and § 8366. The SCE Plan also addresses how the smart grid will facilitate energy technologies, energy management services, energy efficiency, demand response and how it can reduce the environmental footprint of electric generation and delivery. Since SCE's Plan fulfills these requirements, this decision concludes that SCE's vision for the smart grid meets the requirements set forth in D.0-06-047 and SB 17.

5.3. Discussion of SDG&E Plan's Vision Statement

The SDG&E Plan's vision statement takes an approach different from that provided by the PG&E Plan or the SCE Plan. The SDG&E Plan provides a vision of a smart energy future[36] that cannot be summarized into a single paragraph. Instead, the vision contains multiple aspects, with a vision that varies with time and is described over 44 pages of the SDG&E Plan.

SDG&E provides a vision for the smart grid,[37] and then describes how this vision promotes a smart customer,[38] smart market,[39] and smart utility.[40] After this discussion, the SDG&E Plan describes a vision that meets the policy requirements of SB 17, including the requirements to promote the uses of new energy technologies and promotion of a reduced environmental footprint.[41]

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[36] SDG&E Plan at 11-16.

[37] *Id*. at 17-21.

[38] *Id*. at 21-26.

[39] *Id*. at 27-28.

[40] *Id*. at 29-32.

[41] *Id*. at 33-54.

Our review of SDG&E's section pertaining to a smart grid vision demonstrates that the SDG&E Plan's report meets the requirements set out in D.10-06-047 for a vision statement as well as the relevant statutory requirements. In addition, the SDG&E Plan addresses how its vision of the smart grid will perform in each of the required eight areas and provides references to the relevant sections of § 8360 and § 8366.

The SDG&E Plan also addresses how the smart grid will facilitate energy technologies, energy management services, energy efficiency, demand response and how it can reduce the environmental footprint of electric generation and delivery.

Since SDG&E's Plan fulfills these requirements, this decision concludes that SDG&E's vision for the smart grid meets the requirements set forth in D.10-06-047 and SB 17.

6. Is the Deployment Baseline Contained in the SGDPs Adequate?

D.10-06-047 required that the Deployment Baseline section of each utility's Plan include information on the current state of the utility's grid, the smart technologies that have been deployed, the scope of the deployments and investments,[42] and an assessment of privacy and grid security issues.[43]

Specifically, D.10-06-047 sums up the requirements pertaining to the smart grid deployment baseline as follows:

> 4. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company each shall

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[42] D.10-06-047 at 40.

[43] *Id*. at 41.

> include in its SGDP an inventory of current Smart Grid infrastructure investments and a baseline assessment of privacy and security issues affecting the Smart Grid.[44]

Concerning privacy and security issues, Ordering Paragraph 4 of D.10-06-047 also set out specific questions pertaining to current privacy practices that the baseline should address,[45] including a description of the data currently collected and its purpose, as well as who has access to the data, how long the utility will keep the data and other matters relating to the security of, access to, and accuracy of the data. Furthermore, Ordering Paragraph 6 of D.10-06-047 required that each plan "describe and discuss its plans for adopting and developing interoperable architecture designed to protect the privacy of customer data."[46]

6.1. Discussion of PG&E Plan's Deployment Baseline

The PG&E Plan provides a 30-page chapter to detail PG&E's deployment baseline. PG&E notes that:

> The Deployment Baseline chapter describes the key generation, transmission, and distribution characteristics of PG&E's system as of December 31, 2010. The focus on this chapter is to highlight PG&E's baseline portfolio of completed and in-flight Smart Grid investments (also referred to as "Smart Grid Baseline Projects") that are either: (1) in-service as of December 31, 2010; or (2) approved by a regulatory decision and currently in-flight, with a planned in-service date before 2020.[47]

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[44] *Id.*, Ordering Paragraph 4 at 139.

[45] *Id.* at 42; see also *Id.*, Ordering Paragraph 4 at 139-140.

[46] D.10-06-047 at 141.

[47] PG&E Plan at 51.

PG&E states that the smart grid baseline investments "are a subset of the company's entire portfolio of projects."[48] PG&E provides a list of its current generation facilities[49] and identifies certain generation investments that it is making to meet Greenhouse Gas (GHG) emission standards.[50] Similarly, PG&E describes its current transmission and distribution system[51] and a multi-year transmission and distribution modernization plan that it has been pursuing since 2010.[52] PG&E also provides a list of "Smart Grid baseline projects"[53] and how they will produce engaged customers, smart energy markets, a smart utility and provide foundational and cross-cutting infrastructure.[54] PG&E provides a detailed list of all its "in-flight" smart grid projects and discusses each.[55] Thus, for both current programs and programs in the planning stages PG&E provides detailed "information on the current state of the grid for each utility"[56] and describes "smart technologies that have been deployed and the scope of those deployments and investments"[57] -- the standard set forth in D.10-06-047.

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[48] *Id*. at 53.

[49] *Id.* at 56.

[50] *Id*. at 56.

[51] *Id*. at 59.

[52] *Id*. at 60-61.

[53] *Id*. at 63.

[54] *Id*. at 64.

[55] *Id*. at 69-88.

[56] D.10-06-047 at 40.

[57] *Id*.

Concerning the security questions posed by D.10-06-047, PG&E refers the reader to its chapter on cybersecurity, where these issues are discussed in detail.

In light of this review, we find that the PG&E Plan's Deployment Baseline meets the requirements set out in D.10-06-047. Specifically, PG&E's Plan includes information on the current state of the utility's grid, the smart technologies that have been deployed, the scope of the deployments and investments.

This decision, however, defers judgment on PG&E's compliance with the privacy practices listed in Ordering Paragraph 4 of D.10-06-047 and PG&E's compliance with the requirements pertaining to an interoperable smart grid architecture designed to protect the privacy of customer data, as required by Ordering Paragraph 6 of D.10-06-047, until its review of the chapter on cybersecurity in section 9 below.

6.2. Discussion of SCE Plan's Deployment Baseline

SCE provides a detailed description of its deployment baseline on pages 50-124 of the SCE Plan. SCE organizes its presentation of its baseline "around the eleven smart grid capabilities that SCE has selected as focus areas."[58] The first half of the chapter focuses on the smart grid platform infrastructure needed to deliver the capabilities that the SCE Plan deems directly linked to SB 17 grid characteristics and goals, with Part E summarizing "SCE's baseline and roadmap for these platform investments."[59] Finally, "Parts F through I present qualitative

[58] SCE Plan at 50.

[59] *Id*. at 50.

and quantitative data to describe a baseline of SCE's current progress"[60] and "SCE's plans to deploy additional infrastructure for each capability."[61]

SCE's presentation is highly graphical, showing approved, proposed, forecast and conceptual infrastructure deployments.[62] The detailed SCE Plan addresses demand response,[63] PEV integration,[64] and "enhanced customer engagement."[65] Concerning the utility, the plan provides conceptual information on distribution and substation automation,[66] including the integration of distributed energy resources (DER),[67] advanced outage management,[68] and advanced Voltage and Volt-Amp Reactive (VAR) control.[69] Part F provides baseline information and a roadmap to promote customer empowerment, providing information on current demand response (DR) and PEV programs.[70] Part G provides baseline and roadmap information on distribution and substation automation.[71] Part H provides baseline and roadmap information on

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[60] *Id*. at 50.

[61] *Id*.

[62] *Id*. at 52.

[63] *Id*. at 53-54.

[64] *Id*. at 54-55

[65] *Id*. at 56.

[66] *Id*. at 60.

[67] *Id*. at 60.

[68] *Id*. at 61-62.

[69] *Id*. at 62-63.

[70] *Id*. at 97-107.

[71] *Id*. at 108-115.

transmission automation,[72] and Part I provides information on current plans for "advanced equipment monitoring."[73] Concerning the baseline for cybersecurity, SCE defers discussion to its chapter on cybersecurity.[74]

In light of this review of these chapters, this decision finds that SCE Plan's Deployment Baseline meets the requirements set out in D.10-06-047. For both current programs and programs in the planning stages, SCE provides detailed "information on the current state of the grid" [75] and describes "smart technologies that have been deployed and the scope of those deployments and investments."[76] This discussion fulfills the requirements of Ordering Paragraph 4 (except for the discussion of baseline security, which we take up in section 8). Since the SCE Plan defers discussion of baseline security to the chapter on cybersecurity, and this decision will defer consideration of SCE's compliance with the privacy rules until its review of SCE's chapter on cybersecurity.

6.3. Discussion of SDG&E Plan's Deployment Baseline

The SDG&E Plan develops its deployment baseline on pages 55-87 of its SGDP. SDG&E states that it "sees Smart Grid as an evolution, not a revolution; however, the pace of evolution is accelerating."[77] Chapter 3, Deployment Baseline, provides an overview of SDG&E's current grid – addressing the topic

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[72] *Id*. at 116-121.

[73] *Id*. at 122-124.

[74] *Id*. at 93.

[75] D.10-06-047 at 40.

[76] *Id*.

[77] SG&E Plan at 55.

of generation,[78] transmission,[79] distribution,[80] substations,[81] and data transport[82] in great detail. As part of the presentation, the SDG&E Plan describes a Smart Grid Report that SDG&E, in partnership with UCAN, prepared for the "Energy Policy Initiatives Center at University of California San Diego School of Law and produced by the SAIC [Science Applications International Corporation] Smart Grid Team."[83] SDG&E states that this plan helped SDG&E assess the feasibility of deploying a smart grid and started SDG&E on its path to implement a smart grid infrastructure.

Concerning its current deployments, SDG&E describes its current automation and control capabilities,[84] AMI deployment,[85] the "My Account" web portal[86] and its "Sustainable Communities Program."[87] In addition, SDG&E details its "OPEX 20/20" initiative to focus on "technology upgrades and process improvements"[88] and its current microgrid projects that have Department of Energy (DOE) and California Energy Commission (CEC) funding.[89] SDG&E

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[78] *Id*. at 57-58.

[79] *Id*. at 59.

[80] *Id*. at 60-64.

[81] *Id*. at 64.

[82] *Id*. at 65.

[83] *Id*. at 66.

[84] *Id*. at 68.

[85] *Id*. at 69 .

[86] *Id*. at 70.

[87] *Id*. at 71.

[88] *Id*. at 73.

[89] *Id*. at 74.

provides a detailed list of projects that it pursues under the smart grid umbrella.[90] Thus, SDG&E's baseline analysis includes "information on the current state of the grid" and describes "smart technologies that have been deployed and the scope of those deployments and investments"[91] – the requirements set forth in D.10-06-047.

Finally, SDG&E assesses the customer data privacy and security questions posed in D.10-06-047 as part of its baseline analysis.

In light of this review, this decision finds that the SDG&E Plan's Deployment Baseline meets the requirements set out in D.10-06-047, including the requirements associated with reporting on data privacy and security set out in the second part of Ordering Paragraph 4 in D.10-06-047.[92]

7. Is the Smart Grid Strategy Contained in each SGDP Adequate?

D.10-06-047 requires that the Smart Grid Strategy section of the SGDP "include a discussion of an IOU's Smart Grid strategy"[93] and that "the strategy should offer a sense of direction and guidance, rather than setting rigid requirements."[94] More specifically, the Smart Grid Strategy should articulate an overall direction for grid development and explain how the utility will prioritize its technology and development efforts against the goals of SB 17,[95] how it will

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[90] *Id.* at 74-78.

[91] D.10-06-047 at 40.

[92] *Id.* at 139-140.

[93] *Id.* at 47.

[94] *Id.*

[95] *Id.*

consider the use of third-party communications networks,[96] how it will promote the interoperability of the infrastructure[97] and how the SGDP will advance General Order (GO) 156 goals.[98] D.10-06-047 sums up the requirements pertaining to the Smart Grid Strategy section as follows:

> 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.[99]

In addition, Ordering Paragraph 6 of D.10-06-047 requires each plan to "describe and discuss its plans for adopting and developing interoperable architecture designed to protect the privacy of customer data."[100] As discussed below, some plans include this issue as part of the Smart Grid Strategy, and some include this issue as part of cybersecurity.

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[96] *Id.*

[97] *Id.*

[98] *Id.* at 49.

[99] *Id.* at 140-141.

[100] *Id.*

7.1. Discussion of PG&E's Smart Grid Strategy in its SGDP

PG&E presents its Smart Grid Strategy in chapter 3 of its SGDP.[101] PG&E identifies ten "high priority strategic objectives organized in four program areas"[102] – "engaged customers," "smart energy markets," "smart utility," and "foundational and cross cutting."[103] For each of these program areas, PG&E identifies specific projects that it is pursuing and the benefits the projects should provide to customers in each of the four program areas that it identifies.[104] For each project, PG&E links the proposed or ongoing project to one of the provisions of SB 17.

Concerning compliance with GO 156, PG&E states that:

> PG&E's supplier diversity program is an important element to PG&E's SGDP because it represents a natural and logical extension of PG&E's core electricity business... PG&E will leverage its current supplier diversity programs to effectively address Smart Grid supplier diversity in new opportunity areas.[105]

Thus, PG&E plans to integrate the smart grid deployment into its ongoing GO 156 efforts.

Concerning the use of third party communications systems, the PG&E Plan states that it "will evaluate the cost-effectiveness, security, and performance of third-party communications network providers both formally through

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[101] PG&E Plan at 31-46.

[102] *Id*. at 34.

[103] *Id*.

[104] *Id*. at 35-44.

[105] *Id*. at 45.

competitive Requests for Proposals and Requests for Bids and informally through normal business contacts and industry information."[106]

Concerning open architecture and the interoperability of smart grid technologies, PG&E describes its current work with standard setting agencies and its efforts to promote open protocols, such as "the OpenADR protocol."[107] PG&E describes its work with Lawrence Berkeley Lab[108] and its efforts "in the standards development and testing products using SEP [Smart Energy Profile] standards."[109] PG&E states that these protocols will ensure the protection of the privacy of customer data.

Our review of the PG&E Plan shows that it meets the requirements set forth in Ordering Paragraph 5 of D.10-06-047 for the strategy section. Specifically, the PG&E Plan 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 SB 17 and promote the goals of General Order 156. In addition, PG&E explains how the utility will evaluate whether using existing communications infrastructure can reduce the costs of deploying the smart grid. PG&E also considers how interoperability standards will be used and how the utility will minimize the risk of stranded costs in cases where consensus standards are evolving.

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[106] *Id*. at 47.

[107] *Id*. at 48.

[108] *Id*.

[109] *Id*.

Finally, PG&E's reliance on key protocols should both ensure an interoperable architecture and protect the privacy of customer data, and thereby meets the requirements of Ordering Paragraph 6 of D.10-06-047.

7.2. Discussion of SCE's Smart Grid Strategy in its SGDP

SCE presents its Smart Grid Strategy in Chapter 4 of the SCE Plan.[110]

SCE develops its strategy from the SB 17 characteristics, the smart grid policy drivers adopted in D.10-06-047, and "value opportunities" that SCE identifies.[111] SCE then determines "what infrastructure it needs to enable the smart grid capabilities…"[112] Next, the SCE strategy assesses "the deployment-readiness of this required smart grid infrastructure."[113]

The SCE Plan identifies key capabilities and "each [capability] specifically addresses at least one of the eleven areas listed in Section 3.3 of D.10-06-047" and states that "taken together, collectively address all of the eleven areas…"[114] A review of the SCE SGDP shows that this is the case.

SCE also states that since these capabilities are either linked to the policy goals in its Vision chapter or can be deemed a "value driver," then these capabilities "will help ensure that SCE's smart grid efforts deliver customer

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[110] SCE Plan at 39-49.

[111] *Id*. at 39.

[112] *Id*.

[113] *Id*. at 40.

[114] *Id*. at 41.

benefits in the form of either compliance with relevant policies or more direct customer benefits."[115]

Our review of the SCE Plan indicates that this is the case. SCE's Smart Grid Strategy seeks to focus on "capability-based requirements" and "platform infrastructure" to "leverage existing infrastructure where possible and design platforms to support all smart grid and non-smart grid capabilities" and thereby "avoid costs associated with redundancy and system integration…"[116] Our review of the SCE Plan indicates that this approach should avoid redundancy or stranded investments.

Concerning compliance with GO 156, SCE states that "in making procurement decisions about smart grid technologies, SCE consistently looks to further the goals of General Order 156…"[117] SCE plans to integrate the smart grid deployment into its ongoing GO 156 efforts.

Concerning the use of third-party communications systems, SCE states that:

> Consistent with SCE's broad approach to determining what infrastructure can serve its smart grid needs, the viability of commercial networks will depend on the specific requirements of the smart grid capability that network will serve.[118]

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[115] *Id*.

[116] *Id*. at 43.

[117] *Id*, at 49.

[118] *Id*. at 47.

SCE presents itself as open to the use of commercial communications networks, stating that SCE "does and will continue to use commercial networks."[119] As a rule, SCE concludes that "the specific communication requirements of a given smart grid application should drive the selection of the communications technology used to support the capability."[120] We find that the approach outlined in SCE's SGDP concerning telecommunications infrastructure fulfills the requirement in D.10-06-047.

Concerning open architecture and the interoperability of smart grid technologies, SCE maintains that it supports this process and "has been active … in several DOE-[Department of Energy] sponsored efforts"[121]… "to support the development and promulgation of interoperability standards for smart grid deployments."[122]

The SCE Plan 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 SB 17 and promote the goals of GO 156. In addition, SCE explains how the utility will evaluate whether using existing communications infrastructure can reduce the costs of deploying the smart grid. SCE also considers how interoperability standards will be used and how the utility will minimize the risk of stranded costs in cases where consensus standards are evolving. Since the SCE Plan

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[119] *Id* at 46.

[120] *Id*.

[121] *Id*. at 44.

[122] *Id*.

addresses all the above issues, the SCE Plan meets the requirements set forth in Ordering Paragraph 5 of D.10-06-047 for the strategy section.

Since the SCE Plan identifies "platform infrastructure elements"[123] and shows how they will provide a basis for an interoperable architecture that protects the privacy of customers, the SCE Plan complies with Ordering Paragraph 6.

7.3. Discussion of SDG&E's Smart Grid Strategy in its SGDP

SDG&E presents its Smart Grid Strategy in Chapter 4 of the SDG&E Plan.[124] SDG&E states that its "Smart Grid strategy rests on three pillars: policy, customer value, and pilots."[125]

Concerning policy, SDG&E states that it includes a discussion of:

- How the utility will ensure our Smart Grid investments deliver value-added services and benefits to customers;
- How the utility will prioritize its technology evaluation and deployment efforts to meet the goals defined in Senate Bill 17 and promote the goals of General Order 156;
- How the utility will evaluate whether using existing communications infrastructure can reduced the costs of deploying the Smart Grid;
- How interoperability standards will be used;
- How SDG&E will minimize the risk of stranded costs in cases where consensus standards are evolving; and

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[123] *Id*. at 75.

[124] SDG&E Plan at 87-133.

[125] *Id*. at 89.

- Our plans for adopting and developing interoperable architecture designed to protect the privacy of customer data.[126]

In developing the details of its plan, SDG&E maps its nine current smart grid programs to show how "each of the policy goals of SB 17 is supported by one or many of these nine programs."[127] SDG&E demonstrates in Figure 4.1 how the programs meet the policy requirements of SB 17 and supports its argument with a narrative discussion of how each of its programs operates and meets the SB 17 policy goals.[128] In addition, SDG&E includes a special section on technology selection "[b]ecause many drivers of a smarter grid are more pronounced in SDG&E's service territory than anywhere else in the nation…"[129] SDG&E uses a methodology called "IT Product Lifecycle" to define and assess "the total evolution of an IT product from conception to retirement."[130] SDG&E argues that its evaluative methodologies can "serve as a guide to prioritize the enhancements and replacements that will enable deployment of the Smart Grid."[131] We therefore find that SDG&E's prioritization practice, which evaluates the smart grid deployment against the goals of SB 17, fulfills the requirements of ordering paragraph 5 of D.10-06-047.

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[126] *Id*. at 91-92.

[127] *Id*. at 104. See Figure 4.1 at 106 for a detailed mapping of program initiatives against each of the SB 17 policy goals.

[128] *Id*. at 104-110.

[129] *Id*. at 111.

[130] *Id*. at 112.

[131] *Id*. at 112.

Concerning the alignment of SDG&E's smart grid with GO 156, SDG&E notes that "in 2010, SDG&E achieved greater than 36 percent Diverse Business Enterprise (DBE) spending/procurement from all SDG&E's goods & services, with $385 million of its procurement dollars going to DBE."[132] SDG&E states that it "will employ the same procurement strategies that have proven successful in meeting General Order 156 goals in the past in implementing this SGDP in the future."[133] We therefore find that the continuation of SDG&E's current GO 156 strategy fulfills the requirements of ordering paragraph 5 of D.10-06-047.

Concerning the use of third-party communications systems, SDG&E states that:

> SDG&E's communications capabilities have been enabled by a mix of private networks and third-party provider services for decades. In its continuous efforts to improve efficiency, functionality, capacity and security, SDG&E constantly monitors the market for available solutions and emerging trends and incorporates promising technologies into its evaluation and analysis process.[134]

SDG&E concludes that where "requirements are met, and the solution offered provides the most value, network services from a third-party provider may be selected over a private network solution."[135] We conclude that SDG&E's current practice is consistent with the requirement of ordering paragraph 5 of D.10-06-047.

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[132] *Id*. at 117.

[133] *Id*.

[134] *Id*. at 131.

[135] *Id*. at 132

Concerning open architecture and the interoperability of smart grid technologies, SDG&E cites the NIST [National Institute of Standards and Technology] interoperability standards and the work of the GridWise Architecture Council.[136] SDG&E states that it "seeks to design systems for modularity and implement standards at key interfaces."[137] SDG&E also states that it "prioritizes interoperability in its requirements by implementing a preference for suppliers that do not use proprietary technologies or implementations."[138] We find that this approach minimizes the risk of stranded costs, particularly in cases where consensus standards are evolving. In addition, we find that this approach will also ensure that the interoperable architecture will be able to protect the privacy of customer data, since that is a goal of the standard-setting bodies.

Based on this review, the SDG&E Plan meets the requirements set forth in Ordering Paragraph 5 of D.10-06-047 for the strategy section. Specifically, the SDG&E Plan 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 SB 17 and promote the goals of GO 156.

In addition, the SDG&E Plan explains how the utility will evaluate whether using existing communications infrastructure can reduce the costs of deploying the smart grid. The SDG&E Plan also considers how interoperability standards will be used and how the utility will minimize the risk of stranded

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[136] *Id*. at 123.

[137] *Id*. at 126.

costs in cases where consensus standards are evolving. For these reasons, the SDG&E Plan complies with Ordering Paragraph 6 of D.10-06-047.

8. Is the Smart Grid Security and Cybersecurity Strategy Contained in the SGDP Adequate?

D.10-06-047 found that it was "premature to adopt specific Smart Grid security standards"[139] and instead ordered that the Grid Security and Cybersecurity section of each SGDP demonstrate that it has used relevant guidance documents developed by the government[140] in developing a security strategy and that the SGDPs specifically address privacy issues involved in the collection and retention of information.[141] Specifically, D.10-06-047, in Ordering Paragraph 8, stated:

> 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 SGDP, 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;

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[138] *Id.*

[139] D.10-06-047 at 60.

[140] D.10-06-047 at 61.

[141] See D.10-06-047 at 61-61 for a listing of these issues.

> 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.[142]

In addition, Ordering Paragraph 9 of D.10-06-047 requires a specific discussion of the use of National Institute of Standards and Technology "guidance documents and best industry practices."[143]

Furthermore, Ordering Paragraph 10 of D.10-06-047 requires that each SGDP answer 9 specific questions "concerning the security of customer information."[144]

Finally, as noted previously, some Plans discuss the goal of a secure and interoperable architecture, as required by Ordering Paragraph 6 of D.10-06-047, at this point.

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[142] D.10-06-047 at 141-142.

[143] *Id.*, Ordering Paragraph 9 at 142.

[144] *Id.*, Ordering Paragraph 10 at 142-143.

8.1. Discussion of PG&E's Grid Security and Cybersecurity Strategy Contained in its SGDP

The PG&E Plan describes its grid security and cybersecurity strategy in Chapter 9.[145] Chapter 9 describes how PG&E uses NIST guidance documents and best industry practices in developing its cybersecurity plan. The inclusion of this section in the PG&E Plan meets the requirements of Ordering Paragraph 7 of D.10-06-047.

Concerning PG&E's grid security and cybersecurity strategy, the PG&E Plan states that "[w]hile PG&E cannot predict all of the changes, PG&E is following a best practices approach to build in security in anticipating of future requirements."[146] PG&E describes its security practices as part of a "governing process"[147] that "seeks to minimize operating risk, provide for a safe and reliable grid, and protect customer privacy."[148]

PG&E identifies specific security documents that it incorporates into its smart grid development process, including the three identified in Ordering Paragraph 8 of D.10-06-047.[149] PG&E describes how it uses these criteria to assess its "baseline vulnerability exposure and risk levels."[150]

PG&E's security strategy includes "a risk assessment program that continuously monitors and managers the cybersecurity risks posed to the

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[145] PG&E Plan at 217-246.

[146] *Id*. at 220.

[147] *Id*. at 221.

[148] *Id*.

[149] See discussion in PG&E Plan at 222-223.

[150] PG&E Plan at 226.

company."[151] Concerning the smart grid design and architecture, PG&E has developed a strategy based on design principles of "Defense in Depth," "Segmentation and Compartmentalization," "Open Standards-Based," "Weakest Link," "Resiliency," "Auditability and Accountability," "Secure Emergency Override," "Practicality," "Simplicity," "Least Privilege," and "Centralized Policy."[152] The PG&E Plan discusses each of these concepts and the implications for the design of a secure technology.

The inclusion of this section in the PG&E Plan and the discussion of PG&E's use of NIST and other guidance documents to develop a security strategy meet the requirements of Ordering Paragraph 8 of D.10-06-047.

The PG&E Plan also includes a baseline assessment of the customer data that PG&E currently collects, along with a description of how it gets the data.[153] PG&E describes its commitment to privacy, and how it provides customer access to the data[154] and how the data is maintained.[155] The PG&E Plan also answers all nine of the questions identified in Ordering Paragraph 10 of D.10-06-047 and thereby fulfills this requirement.

Based on our analysis, the PG&E Plan has met the grid security and cybersecurity criteria established in D.10-06-047 and summarized in the requirements of Ordering Paragraph 8 of D.10-06-047. Furthermore, the PG&E plan makes systematic use of the security guidance documents to assess the

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[151] *Id*. at 225.

[152] *Id*. at 228-229.

[153] *Id*. at 239-243.

[154] *Id*. at 244-245

[155] *Id*. at 245-246.

current status of its grid security and cybersecurity strategy as required in Ordering Paragraph 9 of D.10-06-047.

In addition, the PG&E Plan's application of these criteria, along with the criteria contained in Ordering Paragraph 4 of D.10-06-047[156] in the SGDP's security section fulfills the requirement of establishing a baseline for assessing the security and privacy of customer data.

Finally, PG&E's discussion of how it leverages standards for "individual component design"[157] demonstrate that it has fulfilled the requirements of a secure and interoperable architecture set forth in Ordering Paragraph 6 of D.10-06-047.

In summary, the PG&E Plan's Grid Security and Cybersecurity Strategy fulfills the requirements of Ordering Paragraphs 4, 6, 8, 9, and 10 of D.10-06-047.

8.2. Discussion of SCE's Grid Security and Cybersecurity Strategy Contained in its SGDP

The SCE Plan discusses grid security and a cybersecurity strategy in Chapter VII.[158] Including this section in the SCE Plan meets the requirements of Ordering Paragraph 7 of D.10-06-047.

The SCE Plan divides its chapter on security into two halves, the first focusing on security and the second half focusing on customer privacy and data issues.

Concerning SCE's grid security and cybersecurity program, the SCE Plan details a "multi-layered, defense-in-depth strategy that provides integrated

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[156] D.10-06-047 at 139-140.

[157] PG&E Plan at 233.

[158] SCE Plan at 143-153.

system-wide and asset-specific protection through multiple layers of technology procedures and controls."[159] Much of the SCE plan is presented in a schematic fashion that demonstrates this strategy.[160] Similarly, the schematic presentation of the SCE cybersecurity governance model[161] and its cybersecurity framework[162] demonstrate how it relies on government guidance documents as part of its overall security strategy.

The SCE Plan details how SCE has used external systematic risk assessment and security audits over the last several years to assess and mitigate security threats and to ensure that SCE follows best industry practices in developing its security plans.

This decision finds that because of these actions and this discussion of these topics, the SCE Plan provides the baseline assessment of privacy and security issues affecting the smart grid, as required in Ordering Paragraph 4 of D.10-06-047. Thus, through this discussion and the discussion in Chapter V, which was examined above, SCE has fulfilled all the requirements of Ordering Paragraph 4 of D.10-06-047.

In addition, the SCE Plan discusses the use of the specific guidance documents identified in Ordering Paragraph 8 of D.10-06-047[163] and describes

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[159] *Id*. at 143.

[160] See the graphical depiction of the defense-in-depth strategy in the SCE Plan at 144, for example.

[161] Figure 29, SCE Plan at 145.

[162] Figure 30, SCE Plan at 146.

[163] SCE Plan at 150-151.

the steps that it took to ensure the security of the AMI meters that it installed.[164] The SCE Plan also presents SCE's security strategy and its security audit actions. Since the SCE Plan does these things, it complies with Ordering Paragraphs 8 and 9 of D.10-06-047.

The second part of the SCE Plan's discussion of security concerns customer privacy and data security.[165] In particular, the SCE Plan details the work that SCE is conducting to ensure the interoperability of its smart grid.[166] SCE begins with a description of the key principles and requirements that "guide the development of its Data Protection and Privacy Program."[167] Specifically, SCE describes its participation in the development of "industry standards"[168] relating to data privacy and security. SCE states that its "[p]rivacy protection measures are designed into Smart Grid solutions and standards as part of the solutions delivery cycle."[169] These actions will enable it to adopt and develop "an interoperable architecture designed to protect the privacy of customer data,"[170] as required by Ordering Paragraph 6 of D.10-06-047.

Starting on page 154, SCE provides answers to eight of the nine questions posed in Ordering Paragraph 10 of D.10-06-047. These answers provide detailed

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[164] *Id*. at 151.

[165] *Id*. at 153-160.

[166] *Id*. at 152. This demonstrates compliance with Ordering Paragraph 6 of D.10-06-047 at 141.

[167] *Id*. at 153.

[168] *Id*. at 154.

[169] *Id*.

[170] D.10-06-047, Ordering Paragraph 6, at 141.

information on the data collected by SCE as part of its smart grid deployment. In addition, Appendix A of SCE's Plan answers the remaining question, stating currently SCE does not share this information with any third-party[171] and describes the policies in place. The discussions in Chapter VII and in Appendix A fulfill the requirements of Ordering Paragraph 10.

In summary, the SCE Plan's chapter titled "Grid Security and Cyber Security Strategy" causes the SCE Plan to fulfill the remaining requirements of Ordering Paragraph 4 and to fulfill the requirements of Ordering Paragraphs 6, 7, 8, 9, and 10 of D.10-06-047.

8.3. Discussion of SDG&E's Grid Security and Cybersecurity Strategy Contained in its SGDP

The SDG&E Plan discusses grid security and a cybersecurity strategy in Chapter 5.[172] The inclusion of this section in the SDG&E Plan meets the requirements of Ordering Paragraph 7 of D.10-06-047.

The SDG&E Plan is based on a security vision in which:

> SDG&E's Smart Grid will be resistant to physical and cyber security threats, as well as resilient to attack and natural disasters. It will align with industry standards and best practices.[173]

SDG&E sees three important aspects to a secure smart grid: physical security; cybersecurity; and customer privacy.[174] SDG&E's further argues that "it is

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[171] SCE Plan at 176.

[172] SDG&E Plan at 134-206.

[173] *Id*. at 135.

[174] *Id*. at 134-135,

crucial that Smart Grid [security strategy] is aligned with industry standards and best practices."[175]

SDG&E presents a plan for building on and evolving its current security program to develop a cybersecurity strategy for the smart grid. SDG&E states that its strategy is based on five components:

- Adhere to Security Principle
- Broaden Awareness (to Employees, Third Parties and Customers)
- Converge Security Governance
- Disaggregate Security Controls
- Comply with Federal Critical Infrastructure Protection and Requirements[176]

The SDG&E Plan discusses each component and translates each into a series of action steps for insuring cybersecurity.[177] The SDG&E Plan discusses the "Secure by Design" approach. The SDG&E Plan claims that "[s]ecurity is more effective and less expensive when it is considered from the beginning of a project, rather than added on after the project is complete."[178]

In developing its security strategy, SDG&E cites the three security documents[179] contained in Ordering Paragraph 8 of D.10-06-047 and refers to Table 4.3[180] to show how SDG&E integrates these public security standards into a

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[175] *Id*. at 141.

[176] *Id*. at 143.

[177] *Id*. at 143-158.

[178] *Id*. at 149.

[179] *Id*. at 141 and at 155.

[180] *Id*., Table 4.3 at 125.

security program that protects customers while using secure interoperability standards. This discussion and table demonstrate that the SDG&E Plan meets the requirements of Ordering Paragraph 8 of D.10-06-047.

Sections 4.11[181] and 5.4,[182] demonstrate that SDG&E is developing an interoperable architecture designed to protect customer privacy by using NIST guidance documents. As a result, the SDG&E Plan meets the requirements of Ordering Paragraph 6 of D.10-06-047 for "developing interoperable architecture designed to protect the privacy of customer data" and the requirements of Ordering Paragraph 9 of D.10-06-047 for using cybersecurity guidelines developed by NIST and DHS and best industry practices in the development of it cybersecurity plan.

Concerning customer privacy and the security of customer information, the SDG&E Plan provides a detailed description of its information security program and the leadership strategy that it uses to implement information security and protect customer privacy.[183] SDG&E's information security leadership plan, in particular, identifies a director of information security with responsibility for information security.[184] This is complemented by clear company information security roles and responsibilities.[185] To promote best

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[181] *Id*. at 123-128.

[182] *Id*. at 141-143.

[183] *Id*. at 158-187.

[184] *Id*. at 160.

[185] *Id*. at 161-162.

practices in information security, the strategy includes external partnerships with industry groups, government organizations, and industry centers of expertise.[186]

The SDG&E Plan presents an information management plan that sets policies for records management and information destruction.[187] In addition to establishing a management plan, SDG&E has created an "Information Security Compliance Program" to oversee "compliance with external requirements, internal policies and business processes."[188] The SDG&E Plan then discusses security awareness and training,[189] a strategy concerning enterprise risk architecture,[190] a strategy concerning the incorporation of security requirements into contracts,[191] and an engineering process for developing solutions to security needs and setting a "lifecycle" pertaining to their implementation.[192]

The SDG&E Plan provides details on SDG&E's operations security program (including incident response and recovery),[193] and on SDG&E's program for promoting physical security.[194]

The chapter on security concludes with detailed answers to each of the nine questions posed in Ordering Paragraph 10 of D.10-06-047.[195] Each question

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[186] *Id*. at 164-165.

[187] *Id*. at 167-172.

[188] *Id*. at 172. The compliance management plan is presented on pages 172-176.

[189] *Id*. 177-178.

[190] *Id*. at 178-179.

[191] *Id*. at 179-180.

[192] *Id*. at 179-183.

[193] *Id*. at 183-187.

[194] *Id*. at 187-189.

is addressed squarely and SDG&E provides baseline data on the security and on the privacy of consumer information.

The analysis contained in Section 5.8 of the SDG&E Plan demonstrates that it fulfills the requirement to answer the nine questions set forth in Ordering Paragraph 10.

In summary, the discussion of interoperability considerations and grid security and cybersecurity strategies set forth in SDG&E Plan fulfills the requirements of Ordering Paragraphs 6, 7, 8, 9 and 10 of D.10-06-047.

9. Does the SGDP Contain an Adequate Smart Grid Roadmap that Advances Adopted Policies?

The Smart Grid Roadmap must explicitly address how the technologies under consideration will advance statutory policies concerning global warming, energy efficiency, the achievement of renewable portfolio targets and the California Solar Initiative.[196] The Roadmap "should also include the essential infrastructure steps that must be taken to provide customers with the access to consumption and pricing data…."[197] Finally, Ordering Paragraph 11 of D.10-06-047 sums up these requirements stating that the deployment plans should include a roadmap "that projects the timing of the utility's smart grid investments and how they relate to the state policy requirements."[198]

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[195] The questions are addressed in section 5.8 of the SDG&E Plan at 190-204.

[196] D.10-06-047 at 64.

[197] *Id.*

[198] *Id.*, Ordering Paragraph 11 at 143.

9.1. Discussion of the Smart Grid Roadmap Contained in the PG&E Plan

PG&E's Smart Grid Roadmap is presented in Chapter 6 of the PG&E Plan.[199] PG&E's Roadmap consists of "21 projects and initiatives that will enable PG&E to advance the strategic objectives and vision of the Smart Grid."[200] PG&E discusses each project briefly, explaining how it meets certain policy goals, how the policy promotes a smart utility, a smart customer, a smart market, or how it plays a foundational and cross-cutting infrastructure role.

This decision discusses each of the proposed projects of PG&E briefly to show how, when considered as a portfolio of projects, the proposed portfolio performs against the requirements set forth in D.10-06-047 for a Smart Grid Roadmap.

"Engaged Consumer Project 1" is called "Integration of Enhanced DR [Demand Response] Forecasting."[201] This project seeks to "integrate improved, best-available sources of load data such as weather, consumer end uses, customer information and meter data to improve accuracy of DR forecasting and dynamically forecast based on more predictable customer response to DR events." If realized, this project would assist California in meeting Assembly Bill (AB) 32 (2006) goals for reducing its GHG emissions, is consistent with the California Long Term Energy Efficiency Strategic Plan, and will help achieve demand response goals.

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[199] PG&E Plan, Chapter 6 at 120-152.

[200] *Id*. at 121.

[201] *Id*. at 125.

"Engaged Consumer Project 2" is called "DR Optimization." This project seeks to "develop a DR optimization engine that combines demand side resource data and improved forecasts with generation cost and availability information to more intelligently and cost effectively dispatch DR resources tailored to electric needs while maximizing the value of available DR programs."[202] This project would assist California in meeting AB 32 goals for reducing GHG emissions, would promote the Long Term Energy Efficiency Strategic Plan, and will help achieve demand response goals.

"Engaged Consumer Project 3" is called "HAN [Home Area Network] Phase II – Pricing and Load Control Signals." This project seeks to:

> enable customers to more effectively participate in time-variant pricing, energy efficiency and DR programs and manage their consumption through automation and improved energy usage information. Create the ability for PG&E to provide price and load control signals to customers and directly to Electric Vehicle charging equipment and various smart appliances to support customer selected control options potentially reducing costs for consumers, improving system reliability and reducing the environmental imacts of unnecessary electricity generation.[203]

This program will take the "infrastructure steps that must be taken to provide customers with access to consumption and pricing data…"[204]

"Engaged Consumer Project 4" is called "Enable Access to SmartMeter data via Open Automated Data Exchange (OpenADE)."[205] This project seeks to:

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[202] *Id*.

[203] *Id*. at 125-126.

[204] D.10-06-047 at 64.

> enable customer controlled and authorized third party access to PG&E customer meter consumption data, including energy usage data through the use of OpenADE standards. PG&E will develop a gateway and set of standards-based interfaces that facilitate third party access to customer usage information to support the offering of new, third-party energy services, increase customer control over their energy usage and potentially reduce customer energy costs.[206]

Engaged Consumer Project 4 states that it plans to take the "essential infrastructure steps that must be taken to provide customers with access to consumption and pricing data."[207]

The PG&E Plan'sSmart Grid Roadmap shows the timing of each of these proposed projects for improving the engagement of consumers.[208] The Roadmap presents both those baseline projects that it describes as "in-flight" and proposed projects that it describes as "future."[209]

"Smart Energy Market Project 1" is called "Integrate Meter Data into Load Forecasting and Settlement." This project aims to "improve forecasting capabilities for bidding into the energy procurement markets of the CAISO."[210] The project should help promote the efficient use of energy and the efficient use of the grid.

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[205] PG&E Plan at 126.

[206] *Id*.

[207] D.10-06-047 at 64.

[208] PG&E Plan at 126.

[209] *Id*.

[210] *Id*. at 131.

"Smart Energy Market Project 2" is called "Integrate DR into Energy Procurement Operating Environment." This project aims to "integrate DR programs with PG&E's energy procurement operations and bidding in the CAISO energy and A/S [Ancillary Services] markets."[211] This project will provide support for DR, increase California's ability to achieve Energy Efficiency [EE] and DR goals, as well as providing customers with access to consumption and pricing data.

"Smart Utility Project 1" is called "Integrate DR with T&D [Transmission and Distribution] Operations and Planning." This project aims to provide an "analysis of available DR resources and integration into T&D operations and planning."[212] This project seeks to incorporate DR resources, to operate the grid more efficiently, and to integrate distributed resources, including solar, into the grid and thereby help meet the renewable portfolio standards (RPS).

"Smart Utility Project 2" is called "Substation Automation and Interoperability Upgrade." This project aims to provide an "upgrade of substation automation equipment and systems."[213] This project seeks to integrate distributed and renewable resources into the grid and help operate the grid more efficiently.

"Smart Utility Project 3" is called "Install Wireless Sensor Technology." This project aims to "deploy wireless sensors for fault locating and loading data

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[211] *Id*. at 132.

[212] *Id*. at 134.

[213] *Id.*

using the Smart Meter telecommunications network."[214] This project seeks to improve the operation of the grid and to reduce customer outage time.

"Smart Utility Project 4" is called "Fault Location, Isolation and Service Restoration (FLISR)." This project aims to "deploy additional automated FLISR capabilities."[215] This project seeks to improve the efficiency and reliability of the grid and help to integrate energy production from solar and other renewables into the electric grid.

"Smart Utility Project 5" is called "Install Volt [voltage] Var [volt-ampere reactive unit] Optimization System." This project aims to "deploy a Volt Var Optimization system to reduce losses and reliably integrate distributed renewables."[216] This project seeks to "increase the amount of solar PV [photovoltaic] that can be safely and reliably interconnected"[217] and will thus help California meet its RPS and solar goals.

"Smart Utility Project 6" is called "Detect and Manage Distribution Faults." This project proposes to "[i]nstall analytical software that uses available data to pinpoint the faulted location on distribution feeders."[218] This project seeks to improve worker safety and improve customer service.

"Smart Utility Project 7" is called "Manage Transmission Substation and Transformer Asset Condition." This project proposes to "[i]nstall dissolved gas

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[214] *Id*.

[215] *Id*.

[216] *Id*. at 134.

[217] *Id*. at 139.

[218] *Id.* at 134.

monitoring equipment on transmission substation transformers."[219] PG&E believes that this project will "improve reliability" of the substations.[220]

"Smart Utility Project 8" is called "Manage Distribution Substation Transformer Asset Condition." This project proposes to "[i]nstall dissolved gas monitoring equipment on distribution substation transformer load tap chargers."[221] PG&E believes that this project will enable it to "run the grid more efficiently" and "improve reliability, security and efficiency of the electric grid."[222]

The PG&E Smart Grid Roadmap shows the timing of each of these proposed projects for its smart utility initiatives.[223] The Roadmap presents both those baseline projects that it describes as "in-flight" and proposed projects that it describes as "future."[224] The projects cover the years from 2010-2020.

The PG&E Plan also includes seven projects that it describes as "foundational and cross-cutting infrastructure initiatives.[225] The PG&E Plan argues that "certain foundational investments must be made to safely, reliably and securely deliver the Engaged Consumers, Smart Energy Markets and Smart Utility projects that drive PG&E's Smart Grid vision."[226]

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[219] *Id*.

[220] *Id*. at 141.

[221] *Id*. at 134.

[222] *Id*. at 141.

[223] *Id*. at 135.

[224] *Id*.

[225] *Id.* at 142.

[226] *Id.*

"Infrastructure Project 1" is called "Cyber Security Architecture." This project seeks to "implement an improved common security architecture which implements, controls and ensures the protection and security of information communicated across multiple systems and interfaces[227]: Thus, this proposed project, if successful, will help meet the statutory goal of protecting a customer's privacy.

"Infrastructure Project 2" is called "Telecommunications Architecture." This project seeks "to communicate in a common format with integrated, embedded security as part of the overall network architecture and design."[228] This proposed project, if successful, will upgrade an aging infrastructure and enable it to better support the use of renewable technologies and better serve all customers.

"Infrastructure Project 3"is called "Information Management Architecture." This project seeks to "[d]evelop and implement a common information management architecture across key PG&E systems to ensure data accuracy, consistency and interoperability across systems and business processes …to meet … needs associated with the portfolio of Smart Grid projects."[229] This project, if successful, will upgrade an aging information infrastructure and better enable it to support other projects.

"Infrastructure Project 4" is called "Technology Innovation, Testing and Standards Development." This project seeks "to verify performance of Smart Grid technologies" and "to inform and develop common standards that

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[227] *Id*. at 143.

[228] *Id*.

accelerate and mature new Smart Grid related technologies, products, and processes."[230] This proposed project, if successful, will help PG&E achieve smart grid goals.

"Infrastructure Project 5" is called "Workforce Development." This project seeks to "enable its workers and contractors to be able to understand, plan, operate and maintain an increasingly complex utility infrastructure as the technological complexity of the grid increases."[231] These projects, if successful, should improve PG&E's human infrastructure and help it to meet smart grid goals.

"Infrastructure Project 6" is called "Supplier Diversity." This project seeks to "expand and improve [PG&E's] Supplier Diversity Program to ensure the continued achievement of supplier diversity goals applicable to Smart Grid projects and initiatives."[232] This project, if successful, will advance the GO 156 program of the Commission.

"Infrastructure Project 7" is called "Customer Outreach." This project seeks to "support customers" so that they can "make energy choices, participate in energy markets, and more efficiently manage their energy use."[233] These projects, if successful, will help achieve the goals of the smart grid.

Concerning these infrastructure projects, the PG&E Smart Grid Roadmap shows the timing of each of these proposed projects for its smart utility

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[229] *Id*.

[230] *Id*.

[231] *Id*.

[232] *Id*.

[233] *Id*. at 144.

initiatives.[234] The roadmap presents both those baseline projects that it describes as "in-flight" and proposed projects that it describes as "future."[235] The projects cover the years from 2010-2020.

This discussion makes clear that the PG&E Roadmap fulfills the requirements of Ordering Paragraph 11 of D.10-06-047 because it include a roadmap "that projects the timing of the utility's Smart Grid investments and how they relate to the state policy requirements."[236] In addition, the PG&E roadmap conforms to the dicta in D.10-06-047, because it lays "out how the proposed deployment of infrastructure would help to achieve important statutory and other policy requirements."[237] Further, the Deployment Plan explains how it facilitates achievement of AB 32, the California Long Term Energy Efficiency Strategic Plan, energy efficiency and demand response goals, the renewable portfolio standards, and the California Solar Initiative.[238] Thus, the PG&E Roadmap fulfills the requirements of D.11-06-047 and SB 17.

9.2. Discussion of the Smart Grid Roadmap Contained in the SCE Plan

The SCE Plan presents its Smart Grid Roadmap in Chapter V.[239] The approach of this chapter differs dramatically from the approach taken by PG&E. Instead of presenting a portfolio of projects and then showing how each meets

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[234] *Id.*

[235] *Id*.

[236] D.10-06-047, Ordering Paragraph 11 at 143.

[237] *Id*. at 64.

[238] These topics are discussed in D.10-06-047 at 64.

[239] SCE Plan at 50-124.

the requirements of SB 17 and D.10-06-047, SCE starts with the requirements of SB 17 and D.10-06-047, as well as other policy drivers and value opportunities, and then develops a set of needed capabilities. Subsequently, SCE develops a roadmap to build an infrastructure that provides these capabilities.[240]

The SCE Plan, in the domain of customer empowerment, identifies three major capabilities that its smart grid requires. These include the capability to support demand response programs,[241] to promote the integration of plug-in electric vehicles into the smart grid,[242] and to promote enhanced customer engagement through providing customers with usage and pricing data "to help them understand and manage their energy consumption."[243]

Concerning SCE's Customer Empowerment programs, the SCE Plan argues that these programs meet the SB 17 andD.10-06-047 goals of empowering customers, creating a technological platform to support DR, helping the grid operate efficiently, promoting DR, EE, Distributed Generation (DG) and Storage, and reducing the environmental footprint of the grid.[244] SCE claims that these programs meet AB 32 goals, Energy Action Plan, Section 454.5 goals, D.09-12-046 goals, and DR policies, while proving the value opportunities of reducing peak demand, promoting conservation, and improving company capital planning.[245]

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[240] See SCE Plan, Figure 12 at 51.

[241] *Id*. at 53.

[242] *Id*. at 54.

[243] *Id*. at 55.

[244] *Id*. at 52.

[245] *Id*.

More specifically, SCE shows that the DR programs supported by its smart grid infrastructure empower consumers, help to lower costs and run the grid efficiently, help to promote DR, help to meet AB 32 GHG goals, help to promote the Long Term Energy Efficiency Strategic Plan and Energy Action Plans, and also comply with § 454.5 goals.

SCE states that the PEV integration capabilities will help reduce GHG from transportation and will provide distributed storage capabilities throughout the grid. By linking PEV demand with energy supplied by renewables, the smart grid will also help utilities move toward RPS goals.[246]

SCE claims that the enhanced customer engagement capabilities will enable the customer "reduce their electric usage by providing them with sufficient information about their own power usage, the rates or true prices associated with that power usage, and the motivation and technological means to make rational economic decisions about how much power they will use and when."[247]

To provide these capabilities and services, the SCE Plan describes the needed infrastructure. In the customer empowerment domain, SCE lists field devices, communications networks and management and control systems needed.[248] These infrastructure systems include an energy service provider interface, geographical information system, the SCE.com website, advanced load control systems, customer information systems, field area communications

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[246] See discussion in SCE Plan at 54-55.

[247] SCE Plan at 55.

[248] *Id*. at 57-59.

networks, the AMI network, premise area networks, energy storage devices, smart meters, and other customer premise devices.[249]

Turning now to the domain of distribution and substation automation,[250] the SCE Plan identifies three major capabilities that its smart grid requires. These include the capability to integrate DER into the grid,[251] an advanced capability to manage outages,[252] and an advanced capability to control VAR,[253] thereby "enhancing power quality and decreasing energy consumption."[254]

Concerning SCE's Distribution Automation programs, the SCE Plan summarizes that these programs meet the SB 17 and D.10-06-047 goals of promoting generation and storage, enabling markets to function, reducing the environmental footprint of the electric system, promoting a self-healing and resilient grid, running the electric system and the grid efficiently, promoting the use of DR, EE, DG and Storage in electricity markets, enabling the use of intermittent technologies, and improving power quality and reducing outages.[255] SCE claims that these programs help meet AB 32 goals and the RPS goals, support DG programs, and support the EE strategic plan. SCE identifies value

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[249] *Id*. at 59.

[250] *Id*. at 60-66.

[251] *Id*. at 60.

[252] *Id*. at 61.

[253] *Id*. at 62

[254] *Id*.

[255] *Id*. at 60.

opportunities in this area pertaining to power and asset utilization, outage response, and energy conservation.[256]

Our review of SCE's Distribution Automation programs indicates that this program is tied closely to the SB 17 policy goals and the requirements of D.10-06-047.

More specifically, SCE demonstrates that the DER integration program is "driven by the need to meet AB 32 and RPS requirements."[257] SCE also points out that DR, PEV, ZNE [Zero Net Energy] homes, "contemplated by California's Long Term Energy Efficiency Strategic Plan will lead to additional DER installations as home and business owners begin to produce their own power to achieve zero net energy."[258] SCE further notes that DER integration "directly supports many SB 17/D.10-06-047 smart grid characteristics, specifically requirements that a smart grid 'accommodate all generation and storage options' and 'enable penetration of intermittent power generation sources.'"[259]

Our review of SCE's discussion of DER capabilities makes it clear that the SGDP's roadmap is closely tied to the policy requirements of SB 17 and D.10-06-047.

SCE argues that the Advanced Outage management "will allow SCE to develop circuits that are 'self-healing' to reduce the number of customers affected"[260] by outages. SCE notes that the "self-heal capabilities … are a key

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[256] *Id*.

[257] *Id*. at 61.

[258] *Id*.

[259] *Id*.

[260] *Id*.

goal of federal and state smart grid policy" and "is directly aligned with SB 17."[261]

Our review of SCE's discussion of its Advanced Outage management convinces us that SGDP's roadmap relates to the policy requirements of SB 17 and D.10-06-047.

Advanced Volt/VAR control will "enhance power quality and decrease energy consumption."[262] SCE notes that Advanced Volt/VAR could deliver a more efficient grid, "reducing overall electricity consumption and therefore power production"[263] and significantly reduce the environmental footprint of the current electric generation and delivery system in California.

To provide these capabilities and services, the SCE Plan describes the infrastructure that it believes is needed. In the Advanced Volt/VAR control domain, SCE identified the need for "communicating field devices," including "controls for capacitor banks."[264] SCE also sees a need for communications networks, both a "Field Are Network" and a "Substation Local Area Network."[265] In addition, SCE sees the need for a "Distribution Management System" to "configure and coordinate operation of the field equipment,"[266] including a "GIS" that is connected to "SCE's AMI network and systems."[267]

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[261] *Id*. at 62.

[262] *Id*.

[263] *Id*.

[264] *Id*. at 63.

[265] *Id*.

[266] *Id*. at 64.

[267] *Id*.

Our review of SCE's discussion of its Advanced Volt/VAR control convinces us that this capability will improve grid efficiency. Therefore, the SGDP roadmap meets the requirements of SB 17 and D.10-06-047.

Turning now to the domain of Transmission Automation,[268] SCE identifies the capability of wide-area monitoring, protection and control as essential. The SCE Plan argues that these programs meet the SB 17 and D.10-06-047 goals of promoting a self-healing and resilient grid, improving power quality and reducing outages, promoting all forms of generation and storage, enabling markets, enabling the use of intermittent power sources, and helping the grid run efficiently.[269] SCE claims that these programs help meet AB 32 goals, RPS mandates, and the goal of eliminating once-through-cooling. SCE sees this capability as providing value opportunities for improving power and asset utilization and improving capital planning.[270]

More specifically, SCE shows that Wide-Area Monitoring will enable "preventative action to avoid wide-scale black outs."[271] Wide-Area Protection "will allow SCE to detect events or conditions like transmission line over-loading and initiate planned protection actions."[272] Wide-Area Control will "enable automated responses to the threats detected."[273] SCE sees these capabilities as helping to provide more stable and reliable power, supporting intermittent

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[268] *Id*. at 66-71.

[269] *Id*. at 66.

[270] *Id*.

[271] *Id*. at 67.

[272] *Id*.

[273] *Id*.

generation, accommodating diverse generation and storage options, and supporting electric markets – all goals of SB 17 and D.10-06-047.[274]

Our analysis confirms that that the Wide-Area Monitoring program is indeed tied closely to the goals of SB 17 ad D.10-06-047.

We also find persuasive SCE's argument that these capabilities will require infrastructure investments in field devices (Phasor measurement units and advanced relays), communications networks (high-speed telecommunications networks and Substation LANs), and management and control systems (Wide-Area Situational Awareness System and centralized remedial action schemes).[275]

Turning now to the domain of asset management,[276] the SCE Plan identifies two major capabilities that its smart grid requires. These include the capability to perform Advanced Equipment Monitoring and increasing Workforce Automation.

Concerning SCE's asset management programs, the SCE Plan states that these programs meet the SB 17 and D.10-06-047 goals of making the grid self-healing and resilient, improving power quality and outage management, and helping the grid run efficiently.[277] The SCE Plan states that these programs will improve capital planning.[278] These arguments are unopposed and we find them persuasive.

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[274] *Id*. at 68.

[275] *Id*. at 69.

[276] *Id*. at 71-75.

[277] *Id*. at 71.

[278] *Id*.

Our analysis also indicates that the asset management programs will advance the goals of SB 17 and D.10-06-047.

More specifically, SCE states that the Advanced Equipment Monitoring and Workforce Automation will provide SCE with "the ability to manage the maintenance and replacement of energy infrastructure based on real-time information about the health of that equipment."[279]

To provide the capabilities and services that the Advanced Equipment Monitoring and Workforce Automation requires, the SCE Plan identifies the needed infrastructure. In the domain of asset management, the SCE Plan calls for field devices (such as Dissolved Gas Analysis Technology and bushing monitoring devices),[280] communications networks (including a high speed backbone and Substation LANs),[281] and management and control systems.[282]

Next, for each of the infrastructure investments listed above, the SCE Plan presents a tentative timeline for the platform infrastructure, including a baseline and roadmap.[283] The SCE Plan's Roadmap summary indicates projects approved, proposed, forecast, or conceptual and describes these projects through 2020.[284] The SCE Plan also includes a timeline for consumer empowerment baseline and roadmap,[285] a distribution and substation automation baseline and

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[279] *Id*.

[280] *Id*.

[281] *Id*. at 73.

[282] *Id*. at 74.

[283] *Id*. at 75-96.

[284] *Id*.

[285] *Id*. at 107.

roadmap strategy,[286] a transmission automation baseline and roadmap,[287] and an asset management baseline and roadmap.[288]

In summary, because of this detailed presentation, which no party contests, the SCE Plan fulfills the requirements of Ordering Paragraph 11 of D.10-06-047. Specifically, the SCE Plan includes a roadmap "that projects the timing of the utility's Smart Grid investments and how they relate to the state policy requirements."[289] In addition, the SCE Roadmap is consisten with D.10-06-047, because it lays "out how the proposed deployment of infrastructure would help to achieve important statutory and other policy requirements."[290] Further, the SCE Plan shows how certain programs and infrastructure facilitates achievement of AB 32, the California Long Term Energy Efficiency Strategic Plan, energy efficiency and demand response goals, the renewable portfolio standards, and the California Solar Initiative.[291] Thus, the SCE Smart Grid Roadmap contained in the SCE Plan meets the requirements in law and Commission decisions.

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[286] *Id*. at 115.

[287] *Id*. at 121.

[288] *Id*. at 124.

[289] D.10-06-047, Ordering Paragraph 11 at 143.

[290] *Id*. at 64.

[291] These topics are discussed in D.10-06-047 at 64.

9.3. Discussion of the Smart Grid Roadmap Contained in the SDG&E Plan

The SDG&E Plan provides its Smart Grid Roadmap in Section 6.[292] The SDG&E Plan states that the Roadmap "lays out SDG&E's Smart Grid projects on a forward-looking 10-year timeline"[293] but cautions that "SDG&E expects a combination of technology breakthroughs, policy changes, and unanticipated events" will "impact both the project list and the timeline."[294]

The SDG&E Plan identifies general statutory and policy goals, specific state energy policy goals, and specific goals of SB 17, the statute pertaining to the smart grid. Concerning general statutory and policy goals,[295] the SDG&E Plan identifies the policy of GHG emissions reduction (required by AB 32 and Executive Order S-3-05 (2005),[296] the policy setting RPS for the generation of power (required by SB x1 2 and Executive Order S-06-06 (2006)),[297] the policy of supporting DER (SB1 (2006) (Million Solar Roofs)[298] and feed-in tariffs (AB 1969 (2006) and SB 380 (2008) and SB 32 (2009)),[299] the policies of supporting energy efficiency programs (AB 1470, AB 2021, D.08-07-047, and D.07-10-032),[300] of

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[292] SDG&E Plan at 208-263.

[293] *Id*. at 209

[294] *Id*.

[295] *Id*. at 212-219.

[296] *Id*. at 213.

[297] *Id*. at 214.

[298] *Id*.

[299] *Id*.

[300] *Id*. at 215.

promoting grid reliability (D.96-09-045),[301] of promoting electric use in transportation (AB 1007),[302] and the policy of eliminating once-through cooling of power generators (State Water Resource Board's *Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling*).[303]

Other policy concerns are formulated as requirements to mitigate global warming,[304] as requirements of the California Long Term Energy Efficiency Strategic Plan,[305] as necessary to meet EE and DR goals (as set in §§ 454.5 and 454.55),[306] and as needed to provide access to consumption and pricing data (D.09-12-046).[307]

In addition, the SDG&E Plan identifies 11 policy goals set in SB 17 for the smart grid to meet.[308]

Based on a review of policies and statutes, the SDG&E Plan identifies nine program areas needed "to deliver the capabilities required to meet the demands of customers and California's policy goals."[309] These include customer empowerment, operational efficiency, reliability and safety, security, renewable growth, electric vehicle growth, integrated/cross-cutting systems, workforce

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[301] *Id*. at 216.

[302] *Id*. at 217.

[303] *Id*. at 218.

[304] *Id*. at 219.

[305] *Id*. at 220.

[306] *Id*. at 221.

[307] *Id*. at 222.

[308] *Id*. at 224.

[309] *Id*. at 224.

development, and smart grid RD&D. For each of these program areas, the SDG&E Plan shows how it meets the SB 17 policy goals and demonstrates that all of the SB 17 policy goals are met by the portfolio of programs.[310]

The SDG&E Plan, for each proposed program area, presents a list of proposed projects and explains how they fit together to form a particular program area. For each project, the SDG&E Plan tells what it does and how it works. Finally, for each set of projects, SDG&E provides a Roadmap showing the project in a graphical timeline that illustrates when a project commences and ends.[311]

Our review of this detailed presentation indicates that the SDG&E Plan fulfills the requirements of Ordering Paragraph 11 of D.10-06-047 because it includes a roadmap "that projects the timing of the utility's Smart Grid investments and how they relate to the state policy requirements."[312] In addition, the SDG&E Roadmap is consistent with D.10-06-047, because it lays "out how the proposed deployment of infrastructure would help to achieve important statutory and other policy requirements."[313] Further, the SDG&E Plan

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[310] Figure 6.3, *Id*. at 224.

[311] The Customer Empowerment program chart with projects is Figure 6-6, *Id*. at 232. The Renewable Growth program chart with projects is Figure 6.5, *Id*. at 235. The Electric Vehicle Growth program chart with projects is Figure 6.6, *Id*. at 238. The Reliability and Safety program chart with projects is Figure 6.7, *Id*. at 242. The Security program chart with projects is Figure 6.8, *Id*. at 246. The Operational Efficiency program chart with projects is Figure 6.9, *Id*. at 251. The Smart Grid RD&D program chart with projects is Figure 6.10, *Id.* at 255. The Integrated and Cross-Cutting Systems program chart with projects is Figure 6.11, I*d*. at 259. The Workforce Development program chart with projects is Figure 6.12 at 262.

[312] D.10-06-047, Ordering Paragraph 11 at 143.

[313] *Id*. at 64.

shows how certain programs and infrastructure facilitates achievement of AB 32 goals, the California Long Term Energy Efficiency Strategic Plan, energy efficiency and demand response goals, RPS, and the goals of the California Solar Initiative.[314] Thus, the SDG&E Smart Grid Roadmap contained in the SDG&E Plan meets the requirements in law and Commission decisions.

10. Are the Cost Estimates Contained in the SGDP Adequate? Are the Benefit Estimates Contained in the SGDP Adequate?

Concerning the section of the SGDP pertaining to costs, D.10-06-047 requires:

> 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.[315]

D.10-06-047 also states that the Commission "understands that costs estimates provided as part of a deployment plan will be preliminary and conceptual."[316]

In addition, the discussion in D.10-06-047 explains that:

> 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

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[314] These topics are discussed in D.10-06-047 at 64.

[315] D.10-06-047, Ordering Paragraph 12 at 144.

[316] D.10-06-047 at 69.

> an IOU cannot provide this information, it should explain why this information cannot be provided.[317]

Concerning benefits, D.10-06-047 requires:

> 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.[318]

D.10-06-047 also stated that the section on Benefit Estimates should include all benefits. D.10-06-047 grouped the benefits into three types: 1) achievement of compliance with policy requirements; 2) benefits that are difficult to quantify; and 3) benefits that are readily quantified in dollar amounts, whether environmental or economic.[319] D.10-06-047 also provides guidance on the steps that a utility should take in estimating benefits:

> 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. … The benefit section of the Smart Grid Deployment Plan should attempt to quantify these benefits.[320]

In response to these requirements, each of the SGDPs included a discussion of costs and benefits.

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[317] *Id*.

[318] *Id*., Ordering Paragraph 13 at 144.

[319] D.10-06-047 at 74-75.

[320] *Id*. at 75.

This decision will address both costs and benefits in this section.

10.1. Discussion of the PG&E Plan's Presentation of the Costs and Benefits in its Deployment Plan

The PG&E Plan presents a discussion of the estimated costs and projected benefits of its Deployment Plan in Chapter 7.[321] The PG&E Plan states:

> PG&E followed CPUC guidance in estimating costs by providing conceptual and provisional level numbers for the periods of 2011-2015 and 2016-2020.[322]

The PG&E Plan cautions that "[u]ncertainty around costs stems from the fact that many of the projects involve nascent technologies for which accepted market prices have not yet emerged."[323]

The PG&E Plan states that it follows "standard costing practices"[324] and then describes these practices in detail. The PG&E Plan describes the methodology used to develop costs and benefits and summarizes the costs:

> PG&E estimates that the incremental capital investment needed to deploy the proposed projects could range between $800 million and $1.25 billion over the average expected project life of 20 years. The company estimates that the annual Smart Grid program expenses could range from $25 million to $40 million. As previously noted, these costs are preliminary and conceptual.[325]

The PG&E Plan also calculates a cost per customer. Although the PG&E Plan cautions that costs will likely be tied to the users of services and not borne

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[321] PG&E Plan at 153-196.

[322] *Id*. at 153.

[323] *Id*. at 155.

[324] *Id*.

[325] *Id*.

on a per customer basis, D.10-06-047 requested a per customer "ball park" figure. The PG&E plan indicates that the nominal costs of the proposed smart grid projects may be "$12-$20/year for each customer account, or $4-$7/year for each customer."[326] The PG&E Plan goes on to present the cost for each of the projects proposed in its plan.

Based on our review of the PG&E Plan, we find that the PG&E Plan meets the requirements of D.10-06-047. Specifically, the PG&E Plan complies with Ordering Paragraph 12 by presenting the estimated costs of its Plan for the next 5 years. In addition, the PG&E Plan complies with the guidance contained in D.10-06-047 because it provides cost estimates for the proposed projects and estimates a per customer cost of the deployment plan.

Concerning benefits, the PG&E Plan states:

> PG&E has included in the latter parts of this chapter a discussion of the benefits already being accrued or expected to result from the significant Smart Grid related investments, programs and operations underway at PG&E. Further, PG&E in cooperation with the Silicon Valley Leadership Group, an organization representing a broad array of business and local government agencies in the Silicon Valley, is conducting a study of the economic benefits of the Smart Grid industry on that critical region in PG&E's service area. PG&E has included a summary of the preliminary findings from that study is this chapter as well.[327]

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[326] *Id*. at 159.

[327] *Id*. at 167-168.

The PG&E Plan notes the estimate of benefits is both "conceptual and provisional."[328] The PG&E Plan states that the benefits are "best efforts at this time,"[329] PG&E states that the benefits follow the "protocol outlines in standard benefit analysis tools, such as the Electric Power Research Institute benefits framework entitled "*Methodological Approach for Estimating the Benefits and costs of Smart Grid Demonstration Projects*."[330]

Using these tools to evaluate the Plan, PG&E states:

> In general, the quantifiable benefits from the proposed Smart Grid projects fell into the following categories: avoided energy procurement costs, avoided T&D capital investment, avoided O&M costs, reliability improvements and environmental improvements. The nominal value of PG&E's conceptual estimate of accumulated financial benefits from the proposed project portfolio include customer energy costs savings of between $600 million and $1.4 billion, avoided or deferred future capital costs of between $240 million and $360 million, and avoided O&M costs of between $140 million and $195 million. Additional benefits associated with the proposed Smart Grid plan include reduced greenhouse gas emissions of 1.4 million to 2.1 million tons of CO_2e, and improved system reliability of 10 to 20 percent as measured by traditional outage frequency and duration metrics. Finally, the Smart Grid projects contribute to PG&E's ability to attain a broad range of benefits in support of energy and policy objectives.[331]

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[328] *Id*. at 168.

[329] *Id*. at 169.

[330] *Id*. at 168.

[331] *Id*. at 169.

In addition, the PG&E plan provides an itemization of other benefits, such as the worker safety benefits that arise from knowing the status of the grid at any point.[332]

Concerning the PG&E Plan, it is reasonable that the estimates of the benefits that it provides at this time are "conceptual and provisional." There is much uncertainty concerning the rapidly evolving smart grid technologies and the services that the smart grid will provide.

Our review of the PG&E Plan indicates that it meets the requirements set in Ordering Paragraph 13 D.10-06-047 because it provides an estimate of benefits provided by the smart grid, it evaluates these benefits, and it discusses how the smart grid avoids the need for other investments. In addition, the PG&E plan conforms to D.10-06-047 because it discusses how the smart grid will improve the reliability of the grid. Finally, the PG&E Plan includes a discussion of the safety benefits that arise from the deployment of the smart grid. Thus, the PG&E Plan fulfills the requirements of Ordering Paragraph 13 of D.10-06-047.

10.2. Discussion of the SCE Plan's Presentation of the Costs and Benefits in its Deployment Plan

The SCE Plan presents a discussion of the estimated costs associated with its SGDP in Chapter VI, "Cost Estimates."[333] The SCE Plan presents a discussion of the projected benefits of its SGDP in Chapter VII, "Benefits Estimates."[334]

The SCE Plan states that for 2011-2014, its estimates of costs are based on either:

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[332] See safety and reliability discussion, *Id*. at 186-196.

[333] SCE Plan at 125-129.

[334] *Id*. at 130-142.

- Approved funding for projects already authorized by the commission; or
- Proposed funding in applications pending before the commission.[335]

The SCE Plan also states that for 2015-2020, the SCE Plan provides "forecasts in the form of provisional cost ranges where available."[336] The SCE Plan notes that there are still other projects, which it deems conceptual, and it does not provide costs estimates for these projects. The SCE Plan states that "SCE may provide provisional cost ranges in future deployment plan updates as future technology solutions, time-frames, and costs become clearer."[337]

The SCE Plan provides its estimates of costs in Table 3 on page 127.[338] Table 3 provides a projection of costs for projects over the years 2011-2014. The table estimates that current approved projects related to the smart grid will cost $803 million. The table also shows that "Platform Investments," which are capable of supporting other systems, will cost $532 million. In addition, Table 3 identifies "Incremental Smart Grid Investments" and estimates that these will cost $534 million over the next 5 years.

SCE does not estimate a "cost per customer," stating that "[s]ince some projects are conceptual and do not have cost estimates, an overall cost per customer would be incomplete."[339]

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[335] *Id*. at 125.

[336] *Id*.

[337] *Id*.

[338] *Id*. at 127

[339] *Id*. at 125.

Based on this review, this decision finds that the SCE Plan meets the requirements of D.10-06-047. Specifically, the SCE Plan complies with Ordering Paragraph 12 of D.10-06-047 because it presents the estimated costs of its plan for the next 5 years. In addition, the SCE Plan complies with the guidance contained in D.10-06-047 because it provides cost estimates for the proposed projects and explains why it is does not calculate a per customer cost of the deployment plan. Although providing such an estimate would be preferable, D.10-06-047 permits a utility, with justification, to take this approach. Moreover, since the Commission knows the number of customers in SCE's territory, the Commission can estimate the per customer cost to the extent needed for Commission planning purposes.

Concerning benefits, the SCE Plan states that its "organization and presentation of benefits is consistent with guidance provided in D.10-06-047 which identifies three smart grid benefit categories: (1) achievement of policy requirements, (2) benefits beyond simple compliance with a regulatory requirement, here called economic benefits, and (3) other benefits like reliability and safety that are difficult to quantify."[340]

Concerning policies, the SCE Plan notes that the smart grid helps engage customers in "active energy management," and sees this as key to meeting the policy goals of the Energy Action Plan, EAP II and § 454.5, which SCE states "require that the state's utilities pursue some combination of DR, dynamic pricing and TOU rate programs as a way to encourage DR and support GHG

[340] *Id*. at 130.

reduction goals."[341] The SCE Plan also notes that infrastructure will enable SCE to meet the requirements of D.09-12-046, including "secure provision of customers' electric usage information to an authorized third-party and customer access to smart meter usage data."[342] The SCE plan also notes that AB 32 calls for improved load management and PEV and renewables integration, which are facilitated by smart grid investments.

Concerning economic benefits, SCE does not provide a monetized estimate of the economic benefits. Among the economic benefits, SCE lists peak demand reduction, avoiding costs through DR, energy savings from conservation, improved utilization of distribution system, reduction of transmission congestion, transmission system stability, and avoidance of catastrophic equipment failures.

Concerning benefits that are difficult to quantify, SCE includes increased system reliability, enhanced consumer satisfaction, improved safety and reliability, and improved power quality.

Concerning the SCE Plan, this decision finds that it is reasonable that the estimates of the benefits provided at this time are qualitative and conceptual. There is much uncertainty concerning the rapidly evolving smart grid technologies and the services that the smart grid will provide.

Although the Commission prefers quantitative and monetized estimates of projected benefits, the SCE Plan meets the requirements set in Ordering Paragraph 13 because it provides an "evaluation" of benefits provided by the

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[341] *Id*. at 131.

[342] *Id*.

smart grid and discusses how the smart grid avoids the need for other investments. In addition, the SCE plan conforms to D.10-06-047, which asks for a quantitative discussion of reliability, because the SCE Plan discusses how the smart grid will improve the reliability of the grid and estimates that the automation of a circuit results in "an average of 33 minutes of reduction in Part Load Up Time."[343] Finally, the SCE Plan includes a discussion of the safety benefits that arise from the deployment of the smart grid, noting that "self-healing circuits would de-energize that portion of the circuit [the downed portion] which would otherwise pose serious risks to customers and employees."[344] SCE concludes that "[e]nabling this capability is therefore critical to SCE's efforts to provide safe electric service."[345] Therefore, this decision finds that the SCE Plan's discussion of benefits conforms to the requirements and guidance in D.10-06-047.

10.3. Discussion of SDG&E Plan's Presentation of the Costs and Benefits in its Deployment Plan

The SG&E Plan presents a discussion of the estimated costs associated with its smart grid deployment in Chapter 7, "Cost Estimates."[346] The SDG&E Plan presents a discussion of the projected benefits of its smart grid deployment in Chapter 8, "Benefits Estimates."[347]

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[343] *Id*. at 137. "Part Load Up Time" is a measure of how long it takes to restore power to customers on the section of the circuit that is separated from a fault.

[344] *Id*.

[345] *Id*.

[346] SDG&E Plan at 265-285.

[347] *Id*. at 286-313.

SDG&E, like PG&E and SCE, urges caution regarding its cost estimates:

> Due to the nascent state of much of Smart Grid technology and the fact that actual deployment will be based on future lessons and pilots, these estimates will certainly change over time as SDG&E learns more.[348]

Still, SDG&E estimates that "total estimated costs of smart grid deployments for the years 2006-2020 described in this plan are approximately $3.5 billion to $3.6 billion…."[349] SDG&E states that of these costs, $1.042 billion were previously authorized, $1.424 billion are in the 2012 Test Year General Rate Case, and $0.237 billion are in other active applications.[350]

SDG&E details its methodological approach to determining its costs and the business value of its Deployment Plan in section 7.2.[351] SDG&E provides historic costs (costs incurred), conceptual estimates of costs in 2011-2015, and a provisional range of costs for 2016-2020.[352]

Concerning costs per customer, SDG&E states that it "investigated calculating costs per customer, but ultimately determined that this metric would be misleading so did not calculate or provide this assessment."[353] SDG&E provided several justifications for its approach, including the fact that some programs impact only certain customers, the fact that there is no unambiguous way in some projects for determining a customer count that can be used for

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[348] *Id*. at 266.

[349] *Id*. at 267.

[350] *Id*. at 268.

[351] *Id*. at 268-272.

[352] *Id*. at 269-271.

[353] *Id*. at 271.

calculating per customer costs (particularly with pilot projects), the fact that economies of scope and scale may make initial cost per customer misleading as to ultimate costs, and the fact that as the smart grid evolves, rates will tie costs to services without cross-subsidization so that a customer's decision to use a service can drive the level of service deployment without impacting uninterested customers.[354]

The bulk of chapter 7 provides costs by program area, developing historical, conceptual, provisional and estimated costs for customer empowerment programs,[355] for renewable energy programs,[356] for electric vehicle programs,[357] for reliability and safety programs,[358] for security programs,[359] for programs promoting operational efficiency,[360] for research, development and demonstration programs,[361] for cross-cutting application platforms,[362] and for workforce development programs.[363]

Based on this review, this decision concludes that the SDG&E Plan meets the requirements of D.10-06-047. Specifically, the SDG&E Plan complies with Ordering Paragraph 12 of D.10-06-047 by presenting the estimated costs of its

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[354] *Id*. at 271-272.

[355] *Id*. at 273.

[356] *Id*. at 275.

[357] *Id*. at 276.

[358] *Id*. at 278.

[359] *Id*. at 279.

[360] *Id*. at 280.

[361] *Id*. at 281.

[362] *Id*. at 282.

plan for the next five years. In addition, the SDG&E Plan complies with the guidance contained in D.10-06-047 because it provides cost estimates for the proposed projects and explains why it does not calculate a per customer cost of the Deployment Plan. Although providing such an estimate would be preferable, as noted above, D.10-06-047 permits a utility, with justification, to take this approach. Moreover, since the Commission knows the number of customers served by SDG&E, the Commission can estimate the per customer cost to the extent needed for Commission planning purposes.

Concerning benefits, the SDG&E Plan states that "[d]etermining future benefits from technology innovations is an inexact science."[364] SDG&E specifically notes that:

> Empowering customers and maintaining and/or improving the reliability of the grid in the face of great change are pressing drivers for Smart Grid projects. Both of these drivers are difficult to value.[365]

The SDG&E Plan notes that "'soft' benefits take other forms such as reduced environmental impact through the safe and reliable integration of renewable generation, which Smart Grid investments ensure can be accomplished in the most cost-effective way…"[366]

After raising these notes of caution, the SDG&E Plan proceeds to develop a quantitative and monetary estimation of benefits. The SDG&E Plan states that "total estimated benefits of Smart Grid deployment described in this plan for the

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[363] *Id*. at 284.

[364] *Id*. at 286.

[365] *Id*. at 287.

[366] *Id*. at 289.

San Diego region are between approximately $3.8-$7.1 billion, including societal and environmental benefits for the years 2011-2020 of approximately $760 million - $1.9 billion."[367] The benefits include avoided emissions and peak load shifting, expanded use of renewable energy, integration of distributed energy, and emissions reduction by expanded use of electric vehicles. In addition, the use of electric vehicles will provide substantial benefits in reduced fuel costs.[368] SDG&E also sees substantial economic and reliability benefits from the smart grid.[369]

The bulk of chapter 8 provides a discussion and estimation of benefits by program area, developing historical, conceptual, provisional and estimated costs for customer empowerment programs,[370] for renewable energy programs,[371] for electric vehicle programs,[372] for reliability and safety programs,[373] for security programs,[374] for programs promoting operational efficiency,[375] for research, development and demonstration programs,[376] and for cross-cutting application platforms.[377] For workforce development programs, SDG&E states that "the

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[367] *Id*.

[368] *Id*. at 290-291.

[369] *Id*. at 292.

[370] *Id*. at 303.

[371] *Id*. at 304.

[372] *Id*. at 305.

[373] *Id*. at 306.

[374] *Id*. at 307.

[375] *Id*. at 308.

[376] *Id*. at 309.

[377] *Id*. at 310.

monetary benefit of the Workforce Development program is difficult to quantify"[378] and SDG&E therefore declines to provide a monetary estimate.

Based on this review, this decision finds that the SDG&E Plan meets the requirements of D.10-06-047. Specifically, the SDG&E Plan complies with Ordering Paragraph 13 of D.10-06-047 by evaluating the benefits of its plan forthe next 5 years. In addition, the SDG&E Plan complies with the guidance contained in D.10-06-047 because it provides quantitative benefits estimates for all the proposed program areas. SDG&E's estimate of benefits is thorough and sensitive to the difficulties of quantifying and monetizing environmental and safety benefits.

In addition, the SDG&E plan conforms to D.10-06-047, which asks for a quantitative discussion of reliability, because the SCE Plan discusses how the smart grid provides reliability and safety benefits.

11. Are the Metric Sections Contained in the Plans Adequate?

Concerning the SGDPs required section on metrics, D.10-06-047 recognized that metrics are an important part of a deployment plan, but that the record in the proceeding was not sufficient to adopt metrics. Subsequently, D.12-04-025 adopted metrics and required their inclusion in each utility's annual report. For this reason, a metric section is not essential to the SGDP filed in advance of the Commission's adoption of initial metrics.[379] D.12-04-025 also

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[378] *Id*. at 311.

[379] *Decision Adopting Metrics to measure the Smart Grid Deployments of Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company*, April 24, 2012 (D.12-04-025).

establishes that PG&E, SCE, and SDG&E will use these metrics when they file annual reports pursuant to ordering paragraph 15 of D.10-06-047.[380]

In light of these developments, the discussion of metrics in the PG&E Plan,[381] the SCE Plan,[382] and the SDG&E Plan,[383] which each rely on the consensus metrics under consideration at the time that these SGDPs were written, fulfill the requirements of D.10-06-047. D.12-04-025 renders further discussion of the metrics sections included in these plans moot, and no further discussion in this decision is warranted.

12. Workshop Report and Comments

The Commission's workshops on the SGDPs examined the deployment plans through the filter of Smart Customer, Smart Market, and Smart Utility. This approach sought to determine whether the deployment plans would produce the desired outcomes and meet the requirements of D.10-06-047.

Following the workshops held on the SGDP on January 30, 2012, through February 2, 2012, the Commission's Energy Division produced a report on the workshops.[384] Parties subsequently provided comments on the Workshop Report and on the SGDPs filed by PG&E, SCE and SDG&E.

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[380] D.12-04-025, Ordering Paragraph 2 at 51, citing D.10-06-047, Ordering Paragraph 14 at 114-115.

[381] PG&E Plan at 247-277.

[382] SCE Plan at 161-169.

[383] SDG&E Plan at 314-336.

[384] *California Public Utilities Commission, Smart Grid Workshop Report, Staff Comments and Recommendations*, 3/1/2012 (Workshop Report). This report was attached to *Administrative Law Judge's Ruling Adding Workshop Report to Record*, March 2, 2012 and is available at the Commission's website in the proceeding details associated with this proceeding.

The Workshop Report concludes:

> Overall, CPUC staff agrees that the Investor Owned Utilities (IOU) Plans are in compliance with the requirements set forth in D.10-06-047, as well as SB 17. However, the workshops as well as the comments from various stakeholders identified areas in which deployment plans could be improved through a shared understanding among parties or via revisions.[385]

The Workshop Report, however, also seeks to:

> [H]ighlight the key areas that were discussed during the workshops and provide direction on how to improve/enhance the Plans. A goal of this workshop report is to better align with the Smart Grid vision of the Commission, the stakeholders, and the utilities.[386]

The Workshop Report's Section 1 summarizes highlights from the workshops.[387] The Workshop Report uses this discussion to provide a groundwork supporting its conclusions and recommendations.

The Workshop Report's Section 2 assesses the strengths and weaknesses of the deployment plans and develops solutions that the staff proposes.[388] Concerning the area of Smart Customer, the Workshop Report concludes that there are two areas of plan weaknesses:

1. The plans lack a timeline that connects specific projects with specific marketing and outreach efforts.

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[385] Workshop Report at 1.

[386] *Id*.

[387] *Id*. at 2-9.

[388] *Id*. at 9.

2. The plans do not include specific steps to overcome roadblocks as identified in the workshops and included in this report.[389]

In the area of Smart Market, the Workshop Report identifies four plan weaknesses:

1. The Plans outlined initiatives that support utility programs, but fail to explain how the initiatives enable third-party services or programs, such as DR.
2. Market rules are vaguely defined and not discussed in much detail.
3. Due to the timing of the proceedings, the Plans are not aligned with the Plug-in Electric Vehicles (PEV) decisions made in the PEV proceeding (R.09-08-009).
4. There is limited discussion of the role of the utilities vs. third parties (e.g., addressing a possible demarcation point).[390]

Concerning the area of Smart Utility, the Workshop Report notes the different levels of detail in the plans to promote cybersecurity,[391] the different formats in each plan's roadmap,[392] the need for standards development,[393] and a lack of specificity in some of the technical discussions.[394]

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[389] *Id*. at 10.

[390] *Id*. at 11.

[391] *Id*.

[392] *Id*. at 12.

[393] *Id*.

[394] *Id*.

The Workshop Report also provides a summary of staff recommendations of specific issues that utilities should address in the comments that they file on the Workshop Report. The staff recommends:

1. The utilities should submit a joint template for the Annual Report (including any revisions to the customer roadmap in Appendix 1).
2. The utilities should submit a prioritized list of standards to indicate the current priorities (the list may be limited to the top ten standards).
3. The parties should submit their comments pertaining to whether the Commission should set a demarcation point and if so, whether this should be done now or at another time. Also, the parties should comment on whether a more detailed record should be established for this issue (e.g., as part of a separate proceeding).
4. The parties should submit suggestions for how the CPUC should address cybersecurity concerns, either as part of the Smart Grid Deployment Plan effort or through other methods.[395]

In addition, the Workshop Report recommends that in conjunction with the Annual Reports that the utilities must file every October, the CPUC staff recommends that the utilities include the following information:

1. Key Takeaways and Highlight: Summary of the most important Smart Grid developments by each utility (these could be used to brief senior decision-makers, the Governor's Office and the Legislature).
2. Summary of updates to the Plans: List of any major changes that have been/need to be made, with a brief explanation for the changes.

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[395] *Id*. at 13.

3. Project updates: Short summary of projects completed, currently in progress, planned to start, and/or to be submitted for the Commission's approval in the next year. The project information should be complete with cost and benefit estimates where available. The estimates for future projects could also be provided in aggregate, rather than at the project level. All projects should indicate a funding source (e.g., Application vs. GRC) and state start and end dates.
4. Customer Roadmap: Overview of the customer engagement plan as provided in Appendix 1.
5. Key Risks: The utilities should identify key risks and actions taken to address them (e.g., standards maturity, cybersecurity, etc.). This may be done at a risk category level, with the high priority risks specified.
6. Reporting on metrics and goals: Provide data on the Smart Grid metrics and goals, to be set in a separate decision (R.08-12-009).[396]

12.1. Comments of Parties

The PG&E Comments state that PG&E agrees with the Workshop Report's "recommendation that the utilities' Smart Grid Plans be approved without revisions, subject to ongoing updates in annual Smart Grid reports and Commission oversight and monitoring."[397]

The PG&E Comments respond to the Workshop Reports recommendation that the utilities propose a template for the annual report and propose a prioritized list of smart grid-related standards. The PG&E Comments note that

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[396] *Id*. at 15.

[397] PG&E Comments at 2.

"PG&E, SCE and SDG&E have coordinated on development of a recommended template for annual Smart Grid reports" and the "recommended template is attached to these comments as Appendix A."[398] PG&E asserts that the template is "consistent with the Staff recommendations"[399] and recommends that the Commission adopt this template because "it complies with D.10-06-047 and incorporates recommendations provided by Commission staff."[400]

PG&E Comments also include a "prioritized list of national Smart Grid-related standards and standard development efforts" as Appendix B,[401] which the Workshop Report requested.

Concerning the issue of setting a demarcation point, the PG&E Comments state that PG&E's current "business judgment and management decision" is that "PG&E will not provide Smart Grid-related products or services in retail markets 'beyond the meter'"[402] "PG&E, however, cautions "against trying to establish a 'bright line' demarcation point."[403] PG&E argues that:

> For the last thirty years, the Commission and the energy utilities have been deeply engaged in "beyond the meter" retail energy services and products ranging from customer energy efficiency rebates and services, to demand response pilots and home energy management devices, to rooftop solar net energy metering, to SmartMeter-enabled home area networks and the "Green Button." In each of these

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398 *Id*. at 3.

399 *Id*.

400 *Id*.

401 *Id*.

402 *Id*. at 4.

403 *Id*.

> retail services and products, the dividing line between direct utility participation in the retail market (such as rebates for compact fluorescent light bulbs) and utility "enablement" of third parties in the market (such as the "Green Button" and home area networks) has been difficult to establish.[404]

PG&E also argues that "the development of new Smart Grid technologies and products are likely to continue to require extensive collaboration and coordination between utilities and third-party vendors, given the complexity and capital-intensity of the technology development effort."[405] PG&E concludes that because of these considerations, the Commission should "decline to attempt to set a 'bright line' demarcation point."[406]

PG&E also responded to the Commission staff's request that the utilities address cybersecurity concerns. PG&E refers to the discussion in its SGDP and states its intention to "update the Commission on the status of its Smart Grid cybersecurity strategy and plans in its annual Smart Grid report."[407] PG&E recommends that "the Commission continue to address cyber issues through the monitoring and updating of the utilities' Smart Grid Deployment Plans."[408]

The SCE Comments respond to the Workshop Reports recommendation that the utilities propose a template for the annual report and propose a prioritized list of smart grid-related standards. SCE Comments state that "[t]he

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[404] *Id*. at 4-5.

[405] *Id*. at 5.

[406] *Id*.

[407] *Id*. at 6.

[408] *Id*.

Commission should adopt the IOUs' proposed template because it complies with D.10-06-047 and incorporates all recommendations provided by Commission Staff."[409] The SCE Comments also include a "prioritization of ongoing Smart Grid standards development efforts,"[410] which the Workshop Report recommends. SCE argues that this prioritization "is based on how critical the standard is for achieving Smart Grid capabilities."[411] Concerning the issue of setting a demarcation point, the SCE Comments argue:

> Given the diversity and continuing evolution of technology and communication pathways used to enable energy management within customers' premises, determining a physical demarcation point—conventionally delineated at the meter—is becoming less relevant. Stakeholders should instead work to define clear functional roles around smart grid consumer products and services, when those products and services are sufficiently mature.[412]

Concerning cybersecurity issues, SCE suggests that these issues and concerns "should be addressed through standards development efforts at the national level."[413] SCE, however, states that it "welcomes a workshop dedicated to the many issues and complexities pertaining to cybersecurity."[414]

The SDG&E Comments assert that the proposed outline and template "complies with the requirements adopted in Decision 10-06-047 and the

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[409] SCE Comments at 3.

[410] *Id*.

[411] *Id*.

[412] *Id*. at 4.

[413] *Id*. at 6.

[414] *Id*.

Commission's recommendations in the Staff Workshop Report."[415] In addition, SDG&E reports that it "does not have any changes or comments to the customer roadmap template included in Appendix 1 of the Staff Workshop Report."[416]

Concerning priority standards, SDG&E includes a list of "priority standards that are of interest to SDG&E in developing its smart grid project portfolio…"[417]

Concerning the setting of a demarcation point, SDG&E recommends addressing this issue "on a case-by-case basis."[418] SDG&E cites some of the complex arrangements that characterize today's electric networks and argues that:

> Unnecessarily limiting or preventing the utility from offering product or service options on the customer side of the meter may stifle innovation and adoption of smart devices in the home that could leverage energy information (usage, price, event notification/signals).[419]

Concerning the issue of cybersecurity policy, SDG&E argues that this policy "should be addressed either in Smart Grid OIR (R.12-08-009) or in a new rulemaking."[420] SDG&E also recommends that the Commission "coordinate its

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[415] SDG&E Report at 3.

[416] *Id*. at 4.

[417] *Id*. at 5.

[418] *Id*. at 6.

[419] *Id*. at 7.

[420] *Id*.

cybersecurity policy efforts with federal level legislators, regulators and interested stakeholders."[421]

The Joint Parties argue that "supplier diversity and General Order 156 are not adequately raised in the staff comments and recommendations."[422] The Joint Parties recommend that the smart grid have a "40% supplier diversity goal for the Smart Grid Deployment."[423] The Joint Parties also recommend that the smart grid put aside "5% funding for outreach and communication education programs" by "community-based organizations that focus on underserved and low-income communities."

CEP argues that "SB 17's safety requirements have not been met" and assert that "[t]he number of reports of harmful effects occurring following installation of smart meters is overwhelming."[424] As a result, CEP recommends that the Commission not accept the plans and hold public hearings.

UCAN argues that the Workshop Report fails to note that the list on pages 3-4 was based on "a presentation earlier that day."[425] UCAN also seeks clarification of the terms "roadblocks" and "barriers," and asks that the Commission provide "a specific list of the roadblocks upon which the Commission seeks additional data."[426] UCAN asks that the "utilities' annual reports should identify specific technologies that they have identified that will be

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[421] *Id*. at 9.

[422] Joint Parties Comments at 2.

[423] *Id*. at 3.

[424] CEP Comments at 2.

[425] UCAN at 2.

[426] *Id*. at 3.

used in their deployments and describe why those technologies are superior to other potential solutions to deployments."[427] UCAN also calls for "greater detail on cost-benefit criteria" and "the importance of metrics."[428] Finally UCAN argues against the creation of a demarcation point at this time because of "technological uncertainties and the extremely undeveloped state of third-party provider markets."[429]

CESA Comments[430] state "we are quite surprised and disappointed that the Workshop Report contains no discussion of energy storage at all."[431] CESA asks that "the Commission direct the Staff to amend or otherwise update or supplement the Workshop Report to include energy storage and its central role in the Smart Grid."[432]

EDF Comments state that "EDF supports adoption of plans and recommends focus on next steps."[433] EDF reports that it has worked with SDG&E and states "SDG&E has intelligent plans for smart grid that could make it – and California – ever more a thought leader on smart grid and clean technology deployment."[434] EDF recommends that "utility updates should use

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[427] *Id*. at 4.

[428] *Id*.

[429] *Id*. at 5.

[430] CESA's Motion for Party Status was granted via e-mail on March 20, 2012.

[431] CESA Comments at 2.

[432] *Id*. at 3.

[433] EDF Comments at 2.

[434] *Id*. at 3.

benefit methodology developed by EDF and SDG&E."[435] EDF also recommends additions to the framework presented in the Workshop Report:

> First, we believe that it is critical for the utilities to evaluate their own progress towards meeting state goals, so that they are able to change course as necessary. Second, we have observed the implications to public discourse when utilities do not do a good job communicating the benefits of smart grid technologies, and would like them to take steps to ensure that user-friendly cost and benefit information is available.[436]

EDF also asks for "yearly updates of the roadmaps to reflect an evolving understanding of the potential of smart grid as information is collected."[437]

DACC/AReM oppose the Workshop Report's recommendation to accept the SGDPs and rely on the annual updates to improve the reports over time. DACC/AReM argues that they "do not believe that this annual update approach will adequately address the shortcomings in the IOUs' plans regarding competitive access."[438] In addition, DACC/AReM criticize the Workshop Report, stating that it "does not include a review of discussion that took place at the workshop with respect to competitive issues of concern."[439] DACC/AReM argue that to support competition," [s]etting a demarcation point at the Smart Meter is a critical next step for the Commission, but it is not the only step."[440]

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[435] *Id*. at 4.

[436] *Id*. at 8.

[437] *Id*. at 9.

[438] DACC/AReM Comments at 3.

[439] *Id*.

[440] *Id*. at 4.

DACC/AReM urge "the Commission to define the proper long-term role of the utility in Smart Grid as part of a separate phase of this consolidated proceeding."[441]

EnerNoc Comments state that EnerNoc "is largely in agreement with the Staff Workshop Report and supports approval of the SGDPs."[442] EnerNoc, however, argues that "given that the SDGPs do not adequately address the tenet of market enablement for third parties, the Commission, as part of providing directional and policy guidance to the IOUs, must firmly establish the importance of market enablement for third parties in its decision."[443] Concerning this matter, EnerNoc supports a "separate proceeding to explore the role of the utility in providing after-the-meter services to customers."[444]

Clean Coalition[445] criticizes the SGDPs, arguing that the plans do not "clearly explain" how the plans support distributed generation and renewables. The Clean Coalition states that it "disagrees with staff's assertion that the Plans have met the minimum requirements of market enablement because they do not address interconnection reform and access to grid data."[446] The Clean Coalition asks that the Commission "require the IOUs to include in their annual reports progress towards a standardized, and minimum amount of foundational

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[441] *Id*. at 7.

[442] EnerNoc Comments at 1.

[443] *Id*. at 3-4.

[444] *Id*. at 5.

[445] The Motion for Party Status of Clean Coalition, filed on January 10, 2012, was granted via an e-mail note to the service list by ALJ Sullivan on January 10, 2012

[446] Clean Coalition Comments at 1.

infrastructure that can accommodate higher penetrations of DG and renewables and meet the grid capabilities stated in SB 17."[447]

Greenlining Comments argue that the Commission "should not approve the utilities' Smart Grid Deployment Plans unless and until they are amended to remedy the significant deficiencies identified…"[448] Greenlining asks that the SGDPs include an "actual strategy and timeline for outreach to customers…"[449] Greenlining also asks that the plans include "guiding principles and a basic strategy."[450] Finally, Greenlining argues that "Annual Reports include a supplier diversity assessment."[451]

DRA Reply Comments recommend that the Commission "adopt a decision which states the IOUs have met their statutory obligations to submit Deployment Plans" but "clarifies that those Deployment Plans are currently deficient."[452] DRA Comments request that the Commission "adopt an update process for Deployment Plans whereby the utilities update their Deployment Plans on a three-year cycle coinciding with their respective general rate cases (GRCs)."[453] In addition, DRA recommends that the Commission "establish a process to update the Smart Grid metrics."[454] DRA also recommends that the Commission "require

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[447] *Id*.

[448] Greenlining Comments at 1.

[449] *Id*. at 2.

[450] *Id*. at 3.

[451] *Id*. at 4.

[452] DRA Reply Comments at 1-2.

[453] DRA Comments at 2.

[454] *Id*.

utilities to detail their project selection processes"[455] including deployment priorities.[456] Concerning cybersecurity, DRA recommend that the Commission have "a limited role" in cybersecurity.

DRA supports a demarcation point at the meter, but argues that "the Commission should extend this proceeding to specifically examine the demarcation point issue."[457] Finally, DRA asks that stakeholders "be allowed to provide input on the template for the Annual Report to the Commission."[458]

MEA Reply Comments support the DACC/AReM proposal for "a new phase to address competitive concerns."[459] Concerning the benefits produced by the smart grid, MEA argues that "[t]he Commission must ensure that who benefits from the program pays, and that who pays for the program benefits."[460]

CLECA Reply Comments express support for the opening comments of TURN, which argue that the SGDPs have numerous failings. CLECA asks that the Commission "direct the utilities to address the failings in these plans before the utilities file for cost recovery of specific Smart Grid projects with the Commission."[461] CLECA also argues that "cost-effectiveness issues have largely

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455 *Id*.

456 TURN Reply Comments express support for this position.

457 DRA Comments at 2.

458 *Id*.

459 MEA Reply Comments at 2.

460 *Id*. at 3.

461 CLECA Reply Comments at 1-2.

been ignored."[462] CLECA voices support for DRA's call for a "process to update the Smart Grid metrics."[463]

AT&T and Verizon jointly late-filed Comments that addressed the issue of whether to set a demarcation point beyond which a utility could not make investments. AT&T and Verizon argue that:

> [T]he Commission should, at a minimum, define a set of expectations or principles to guide the manner in which third-party equipment can interface with the customer side of the Smart Meter. Those expectations or principles would assist in determining whether a specific physical or logical demarcation point is needed. The primary objectives of the Commission should be to help eliminate regulatory uncertainty, minimize entry barriers for market participants, foster consumer choice, and prevent IOUs from gaining an unfair advantage in the Smart Grid market.[464]

Although AT&T and Verizon state that "a more detailed record is needed regarding demarcation point issues," they argue that:

> [T]he Commission should set forth certain principles that would guide the setting of any demarcation point, including (1) the prohibition against barriers to entry, (2) prompt, unfettered and reasonable access to customer energy usage data at the smart meter (subject to customer authorization), and (3) adherence by the utilities to consistent standards for communication with the smart meters.[465]

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[462] *Id*. at 2.

[463] *Id*. at 3

[464] AT&T and Verizon Comments at 1.

[465] *Id*.

AT&T and Verizon urge the Commission to adopt these policies now, arguing that innovators "will benefit from greater certainty in this area as they undertake their own product development."[466]

In response to this filing, SCE argues that "there is not an adequate record upon which the Commission can determine whether these principles are sufficient in and of themselves."[467] Concerning the principle of "unfettered access," SCE reports that this request "would require significant and potentially costly meter reconfigurations and/or hardware changes."[468] Regarding the issue of standards of communications, SCE states that "SCE will enable its customers to provision, or pair, a third-party HAN device simply by visiting SCE.com, without the need to even speak with a Customer Service Representative (CSRs)."[469] SCE argues further that its process is "simple, efficient, and provides customer choice."[470]

The SDG&E Response argues that "the Commission should define any set of expectations or principles to address the issue of demarcation on a case-by-case basis."[471] Specifically, SDG&E argues that a policy of prohibiting investments beyond the meter "does not make sense" in an electric industry where:

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[466] *Id*. at 2.

[467] SCE Response at 2-3.

[468] *Id*. at 4.

[469] *Id*.

[470] *Id*.

[471] SDG&E Response at 2.

- Electric generation can exist before or after the meter;
- Peak shaving services could be provided by electric vehicles behind the meter/inside a customer's private garage;
- Home and facility energy management services could be controlled remotely; and
- Price signals can automatically trigger customer equipment operation.[472]

Concerning the issue of third-party access to smart meter data and participation in the smart grid market, SDG&E emphasizes that "safeguards are necessary to ensure the safety of the utility's electric system and that safety will take priority."[473]

Concerning the issue of uniform standards, SDG&E cautions "that while the utilities strongly support and participate in this evolution [of standards], they do not control it."[474]

12.2. Discussion

Concerning the Workshop Report's recommendation that the utilities submit a joint template for the Annual Report, this decision finds that the utilities have complied with this request and that the proposed template is reasonable to use. In particular, the template complies with D.10-06-047 and incorporates the recommendations provided by Commission staff in their Workshop Report. Therefore, it is reasonable for each of the utilities to use this common template in

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472 *Id*. at 2-3.

473 *Id*. at 5.

474 *Id*.

filing their future Annual Reports.[475] The template is Attachment A to this decision.

In addition, PG&E, SCE and SDG&E have each included in their opening comments a prioritized list of national smart grid-related standards and standard development efforts in their opening requirements, thereby providing the information requested in the Workshop Report.

Concerning the issue of whether to set a demarcation point at this time, this decision finds that it is unwise to create a 'bright line' demarcation point at this time. In particular, the capital-intensity, complexity, and diversity of the technologies and applications now impacting the grid make a case-by-case approach a practical way of proceeding.

Concerning cybersecurity issues, this decision declines to adopt any particular rules pertaining to this issue in this proceeding. At this time, the Commission is considering the best avenue for addressing cybersecurity issues.

Concerning the issue of supplier diversity raised by the Applicants, this decision finds that the SGDP Plans have adequately addressed this issue and decline to adopt additional requirements.

Concerning CEP's issue of reviewing the "harmful effects following installation of smart meters," this decision finds that this issue is beyond the scope of this proceeding. In particular, the Scoping Memo in this proceeding "establishes that the scope of this proceeding does not include consideration of the health consequences of the deployment of smart meters."[476]

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[475] Because of the passage of time, the utilities have already filed an initial annual report.

[476] Scoping Memo and Ruling of the Assigned Commissioner (October 4, 2011) at 1-2.

Concerning UCAN's request that the annual reports identify specific technologies and discuss them and UCAN's request for greater detail on cost-benefit analysis, this decision finds that these topics are appropriate for consideration in applications proposing specific smart grid investments.

CESA's concern that "the Workshop Report contains no discussion of energy storage at all" [477] is misplaced. The SDGP Plans discuss storage[478] and there is no need for further discussion in the Workshop Report.

Concerning EDF's request for yearly updates to the Roadmaps, this decision declines to adopt this requirement at this time. It is important to evaluate the reports as they come in to determine whether changes are needed.

Concerning DACC/AReM's opposition to reliance on the annual updates to improve plans is premature at this time. The Annual Reports can change over time and it is unreasonable to abandon this process without any experience.

Similarly, DACC/AReM's criticism that the Workshop Report failed to reflect full discussion of competitive issues is not dispositive. The comment and reply process enables DACC/AReM to make a record on this point. Substantively, this decision sees no need to take further actions concerning issues related to competition at this time in which smart grids are only beginning to be deployed.

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[477] CESA Comments at 2.

[478] PG&E Plan at 12, 19, 22, 23, 26, 27, 42-44, 65-70, 72, 75, 111,127-130, 132, 136, 195, 218, 223, 249, 266, 275, 279, 280; SCE SGDP Plan at 22, 29 33, 37, 48, 52 54, 56-60, 66, 68, 6, 77, 91, 100, 113, 117, 119, 120, 129, 138, 148, 167, 172; SDG&E SGDP principally at 42, 50 and 328.

EnerNoc's support for a separate proceeding to explore the role of the utility in providing after-the-meter services to customers requires no further action at this time because it is premature.

Clean Coalition's argument that the SGDPs do not "clearly explain" how the plans support distributed generation and renewables, and their argument that the Workshop Report's finding that the Plans meet the minimum requirements for market enablement are unconvincing. Clean Coalition desires a detailed discussion of interconnection and access to grid data that is beyond the scope of this proceeding. The SDGPs focus on infrastructure deployment, not interconnection rules or access to data, both of these issues are being dealt with in other Commission proceedings.

Greenlining's argument that the Commission should not approve the utilities' SGDPs unless amended is not persuasive. Our review of each company's SGDP demonstrates that they comply with the requirements of SB 17 and the requirement of D.10-06-047, which were adopted pursuant to SB 17. Concerning Greenlining's request that the SGDP's include a strategy and timeline for outreach to customers, we find there is no need to adopt further requirements at this time concerning outreach to customers. Greenlining also asks that the Annual Reports filed include a supplier diversity assessment. This decision finds that there is no need for an additional filing on this matter because the Commission already receives adequate information concerning the supplier diversity program.

DRA recommends that the Commission adopt the deployment plans but find that they are deficient. This decision declines to follow this recommendation because the SDGPs comply with both statutory obligations and the criteria in D.10-06-047 adopted to implement the statutory obligations.

Although refinements and updates will clearly improve SGDPs, this decision agrees with the Workshop Report that the best path for revisions is through the Annual Reports.

13. Outstanding Motions

There are no outstanding motions.

14. Conclusion

The decision concludes that the PG&E, SCE and SDG&E SGDPs meet the requirements on SB 17 and D.10-06-047. The decision adopts templates to guide the preparation of Annual Reports required in D.10-06-047. Finally, the decision declines to set a "demarcation point" beyond which utility investment is prohibited.

15. Comments on Proposed Decision

The proposed decision of Commissioner Peevey in this matter was mailed to the parties in accordance with Section 311 of the Public Utilities Code and comments were allowed under Rule 14.3 of the Commission's Rules of Practice and Procedure. Comments were filed on July 1, 2013 by PG&E, SCE, SDG&E, DRA, TURN, Greenlining, Joint Parties, SCWSSM, MEA, DACC/AReM. Reply comments were filed on July 8, 2013 by PG&E, SCE, SDG&E, DRA and UCAN. This section discusses and responds to the comments filed on the proposed decision.

PG&E, SCE, and SDG&E filed comments supporting the proposed decision and recommending that the Commission adopt the proposed decision without change.

DRA asks that the Commission revise the proposed decision to include a process to update each utilities SGDP, that the Commission pursue through a rulemaking proceeding policies addressing the demarcation point, and state that

the utilities have met their statutory obligations but that the SGDPs are deficient in meeting the requirements of D.10-06-047.[479]

DRA's arguments are not persuasive. There is no need to set a schedule for the updating of the SDGP until the Annual Reports indicate Smart Grid deployment has changed sufficiently to warrant a new plan. Similarly, DRA has not persuaded us that further investigation into the demarcation point is warranted at this time. The decision declined to adopt a demarcation point because of the emerging and rapidly changing technologies in the Smart Grid. No party asserted that that this is no longer the case. Finally, DRA's argument that the SGDPs fail to meet the requirements of D.10-06-047 is also unpersuasive. The detailed review of the SDGPs developed in this decision demonstrates that the three plans have complied with the many requirements of D.10-06-047.

TURN criticizes the proposed decision, arguing that "[n]one of the recommendations from other parties seeking to further enhance the plans and the Commission's review of future Smart Grid investment proposals were adopted."[480] TURN argues that this decision should "fully discuss and resolve the intervenor-raised issues that the Proposed Decision chose to ignore, downplay or shunt to later project-specific proceedings."[481] TURN concludes "[t]he Proposed Decision seems to be driven by a desire to run through the SB 17 and D.10-06-017 checklist without addressing many of the substantive and relevant issues raised by TURN and other parties,"[482]

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[479] DRA Opening Comments on PD at 1-2.

[480] TURN Opening Comments on PD at 2.

[481] Id. at 3.

[482] *Id*. at 9.

TURN's arguments ignore the extensive workshop collaborations in this proceeding. The give-and-take of the collaborative workshops shaped many elements of the Commission's policies towards the Smart Grid, affecting both the staff's report and this decision. Moreover, the scope of this proceeding was to approve plans, not projects, and we remain convinced that the issues of concern to TURN, such as the assessment of the costs and benefits of a specific investment, are better considered at the time of implementation of a detailed proposal. Finally, at TURN's request, we note that the Scoping Memo in this proceeding stated that the utilities' SGDPs are guidance documents, and the approval of the SDGP does not constitute a finding of reasonableness for any specific project. This is indeed the approach taken in this proceeding.

Greenlining argues that "[t]he Deployment Plans lack the specificity required to determine a strategy for meeting General Order 156 goals and requirements."[483] Greenlining also argues that SDG&E and SCE provide a scant discussion of how they plan to meet the GO 156 goals, and PG&E fails to develop a strategy. Greenlining also argues that the plans fail to discuss how difficult to reach customers will become smart customers.

Joint Parties, on a similar note, argue that there is "not a sufficient baseline for outreach to the underserved."[484] Joint Parties ask that "five percent of funding be devoted to outreach and community education programs by community-based organizations that focus on underserved and low-income

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[483] Greenlining Opening Comments on PD at 1.

[484] Joint Parties Opening Comments on PD at 2

communities."[485] Joint Parties ask for the utilities to use "a metric that takes into account small business with less than one million dollars in revenue."[486]

In response to Greenlining and Joint Parties, we find that the SGDPs address the issues concerning GO 156 and consumer outreach adequately. As this decision has previously discussed, the GO 156 programs and community outreach programs are best considered in conjunction with specific programs and investments, not in the abstract. SCE rightly points out that "the IOUs will provide outreach plans, where necessary, that are appropriately tailored to the program or service for which Commission authorization (and potentially cost recovery) is sought."[487] That is the time for the review of these issues.

MEA argues that this proceeding should adopt a "streamlined application process for further Smart Grid projects and pilots."[488] MEA also argues that this decision should develop cost allocation and competitive neutrality issues that arise from Smart Grid projects.

Once again, the Commission's experience is that investment decisions in Smart Grid projects are best addressed in either applications or in General Rate Cases and we decline to adopt a special fast-track procedure at this time. In addition, the allocation of costs across customer classes depends on what the Smart Grid investment does and where it does it. For example, the costs of phasors installed on transmission lines should be allocated between customers in a way that differs from the allocation of the costs of phasors installed on

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[485] *Id*. at 3.

[486] *Id*. at 4.

[487] SCE Reply Comments on PD at 3.

[488] MEA Comments on PD at ii.

distribution lines. Thus, the allocation of cost is best addressed when a specific project is under consideration by the Commission, not in the abstract.

DACC/AREM argues that the utilities' "plans are essentially devoid of discussion of how they would facilitate and maximize third-party access to the grid."[489] As noted above, issues concerning interconnection to the grid and access to information are under consideration in other proceedings, and do not need to be addressed here.

SCWSSM argues that the PD "is deficient because it did not evaluate the smart grid deployment compliance with all applicable laws and regulations.[490] In response, we find this argument unpersuasive. In particular, the SCWSSM filing fails to cite a single statute that a SGDP contravenes.

16. Assignment of Proceeding

Michael R. Peevey is the assigned Commissioner and Timothy J. Sullivan is the assigned ALJ in this proceeding.

Findings of Fact

1. D.10-06-047 adopted the standards and protocols required by § 8362 and directed that PG&E, SCE and SDG&E each file an application with its SGDP by July 1, 2011.

2. D.10-060-047 required that each SDGD contain 8 elements: 1) Smart Grid Smart Grid Vision Statement; 2) Deployment Baseline; 3) Smart Grid Strategy; 4) Grid Security and Cybersecurity Strategy; 5) Smart Grid Roadmap; 6) Cost Estimates; 7) Benefits Estimates; and 8). Metrics.

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[489] DACC/AREM Opening Comments on PD at 2.

[490] SCWSSM Opening Comments on PD at 2.

3. D.12-04-025 established the metrics that PG&E, SCE and SDG&E will use when they file annual reports and thereby rendered moot the details of the metrics section in the PG&E Plan, the metrics section in the SCE Plan and the metrics section in the SDG&E Plan.

4. The PG&E Plan contains a vision statement that describes how PG&E's deployment of a smart grid will support a smart energy market, smart consumers and a smart utility.

5. The PG&E Plan's vision statement addresses how the smart grid will perform in meeting the goals identified in SB 17.

6. The PG&E Plan's vision statement addresses how the smart grid will facilitate energy technologies, energy management services, energy efficiency, demand response and how it can reduce the environmental footprint of electric generation and delivery.

7. The PG&E Plan has fulfilled the requirements of Ordering Paragraph 3 of D.10-06-047.

8. The SCE Plan contains a vision statement that describes how SCE's deployment of a smart grid will support a smart energy market, smart consumers and a smart utility.

9. The SCE Plan's vision statement addresses how the smart grid will perform in meeting the goals identified in SB 17.

10. The SCE Plan's vision statement addresses how the smart grid will facilitate energy technologies, energy management services, energy efficiency, demand response and how it can reduce the environmental footprint of electric generation and delivery.

11. The SCE Plan meets the requirements set forth in Ordering Paragraph 3 of D.10-06-047.

12. The SDG&E Plan contains a vision statement that describes how SDG&E's deployment of a smart grid will support a smart energy market, smart consumers and a smart utility.

13. The SDG&E Plan's vision statement addresses how the smart grid will perform in meeting the goals identified in SB 17.

14. The SDG&E Plan's vision statement addresses how the smart grid will facilitate energy technologies, energy management services, energy efficiency, demand response and how it can reduce the environmental footprint of electric generation and delivery.

15. SDG&E has met the requirements in Ordering Paragraph 3 of D.10-06-047.

16. The PG&E Plan's Baseline provides a list of current generation facilities and identifies generation investments required to meet GHG emission standards.

17. The PG&E Plan's Baseline describes its current transmission and distribution system and a multi-year transmission and distribution modernization plan that it has been pursuing since 2010.

18. The PG&E Plan's Baseline provides a list of "smart grid baseline projects" and how that will produce engaged customers, smart energy markets, a smart utility and provide foundational and cross-cutting infrastructure.

19. The PG&E Plan's Baseline provides a detailed list of all its "in-flight" smart grid projects and discusses each.

20. The PG&E Plan's Deployment Baseline meets the requirements set out in D.10-06-047. Specifically, PG&E's Plan includes information on the current state of the utility's grid, the smart technologies that have been deployed, the scope of

the deployments and investments as required by Ordering Paragraph 4 of D.10-06-047.

21. The SCE Plan's Baseline presentation is highly graphical, showing approved, proposed, forecast and conceptual infrastructure deployments.

22. The SCE Plan provides a detailed description of its deployment baseline on pages 50-124 of the SCE Plan.

23. The SCE Plan's Baseline identifies how the SCE smart grid platform infrastructure delivers the capabilities that are directly linked to SB 17 grid characteristics and goals.

24. The SCE Plan's Baseline addresses demand response, plug-in electric vehicle integration, and enhanced customer engagement.

25. The SCE Plan's provides baseline information and a roadmap to promote customer empowerment, providing information on current demand response and PEV programs.

26. The SCE Plan provides baseline and roadmap information on distribution and substation automation.

27. The SCE Plan provides baseline and roadmap information on transmission automation.

28. The SCE Plan provides information on current plans for advanced equipment monitoring.

29. SCE Plan's Deployment Baseline meets the requirements set out in Ordering Paragraph 4 of D.10-06-047. Specifically, SCE's Plan includes information on the current state of the utility's grid, the smart technologies that have been deployed, and the scope of the deployments and investments.

30. The SDG&E Plan develops its deployment baseline on pages 55-87 of its SGDP.

31. The SDG&E Plan's section called Deployment Baseline provides an overview of SDG&E's current grid – addressing the topic of generation, transmission, distribution, substations, and data transport in great detail.

32. The SDG&E Plan describes its current automation and control capabilities, AMI deployment, the "My Account" web portal and its "Sustainable Communities Program."

33. The SDG&E Plan details its "OPEX 20/20" initiative to focus on technology upgrades and process improvements and its current microgrid projects that have DOE and CEC funding.

34. The SDG&E Plan's baseline analysis includes information on the current state of the grid and describes smart technologies that have been deployed and the scope of those deployments and investments.

35. The SDG&E Plan assesses the customer data privacy and security questions posed in D.10-06-047 as part of its baseline analysis.

36. The SDG&E Plan's Deployment Baseline meets the requirements set out in D.10-06-047. Specifically, SDG&E's Plan includes information on the current state of the utility's grid, the smart technologies that have been deployed, the scope of the deployments and investments.

37. SDG&E Plan's baseline assesses the customer data privacy and security questions posed in D.10-06-047.

38. SDG&E has met all the requirements set forth in Ordering Paragraph 4 of D.10-06-047.

39. The PG&E Plan presents its smart grid strategy in chapter 3 of its SGDP.

40. The PG&E Plan's smart grid strategy identifies 10 high priority strategic objectives organized into four program areas – engaged customers, smart energy markets, smart utility, and foundational and cross-cutting.

41. The PG&E Plan identifies specific projects that it is pursuing and the benefits that the projects should provide to customers in each of the four program areas listed in Finding of Fact 48.

42. The PG&E Plan indicates that PG&E will integrate the smart grid deployment into its ongoing GO 156 efforts.

43. The PG&E Plan indicates that PG&E will evaluate the cost effectiveness, security and performance of third-party communications network providers both formally through competitive solicitations and informally through normal business channels.

44. The PG&E Plan explains how PG&E 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 set forth in SB 17 and in GO 156.

45. PG&E has met the requirements set forth in Ordering Paragraph 5 of D.10-06-047.

46. The PG&E Plan describes PG&E's current work with standard setting agencies and its efforts to promote open architecture and the interoperability of smart grid technologies.

47. The PG&E Plan describes how interoperability standards will be used to minimize the risk of stranded costs and how the reliance on technical protocols will protect the privacy of customer data.

48. PG&E has met the requirements set forth in Ordering Paragraph 6 of D.10-06-047.

49. The SCE Plan presents its smart grid strategy in chapter 4.

50. The SCE Plan develops its smart grid strategy from the SB 17 characteristics of a smart grid, from the policy drivers adopted in D.10-06-047, and from "value opportunities that SCE identifies."

51. The SCE Plan's smart grid strategy determines what infrastructure it needs to provide the smart grid capabilities identified in SB 17 and D.10-06-047 and assesses the deployment readiness of the necessary smart grid infrastructure.

52. The SCE Plan's Grid strategy identifies key capabilities and each capability specifically addresses at least one of the eleven capabilities listed in Section 3.3 of D.10-06-047.

53. Taken together, the key capabilities identified in the SCE Plan collectively address all eleven areas listed in Section 3.3 of D.10-06-047.

54. The approach taken by SCE Plan demonstrates that each of the capabilities identified in the SCE Plan are linked to the policy goals in its Vision chapter or is a driver of economic value, and that these capabilities will help ensure that the SCE Plan will deliver customer benefits in the form of either compliance with government policies or direct economic benefits to the customer.

55. The SCE Plan uses a platform infrastructure that leverages existing infrastructure and thereby reduces the risk of stranded costs.

56. The SCE Plan will integrate its smart grid deployment into its ongoing GO 156 efforts.

57. SCE participates in several DOE sponsored efforts to support the development and promulgation of interoperability standards for smart grid deployments.

58. SCE has met the requirements set forth in Ordering Paragraph 5 of D.10-06-047.

59. The SCE Plan identifies platform infrastructure elements that will provide a basis for an interoperable architecture that protects customers from stranded investment and protects the privacy of data.

60. SCE has met the requirements set forth in Ordering Paragraph 6 of D.10-06-047.

61. The SDG&E Plan presents its smart grid strategy in chapter 4 of its SGDP.

62. The SDG&E Plan maps its nine current smart grid programs to show how each of the policy goals of SB 17 is supported by one or many of its nine programs.

63. Figure 4.1 in the SDG&E Plan demonstrates how SDG&E's programs meet the policy requirements of SB 17. In addition to Figure 4.1, SDG&E supports its demonstration with a narrative discussion of how each of its programs operates and meets the SB 17 policy goals.

64. The SDG&E Plan includes a special section on technology because many drivers of a smarter grid are more pronounced in SDG&E's service territory than anywhere else in the nation.

65. The SDG&E's Plan uses a methodology called "IT [Information Technology] Product Lifecycle" to define and assess the total evolution of an IT product from conception to retirement.

66. The SDG&E Plan's use of the IT Product Lifecycle serves as an evaluative methodology that guides SGD&E's prioritization of smart grid projects.

67. SDG&E, in 2010, achieved greater than 36 percent Diverse Business Enterprise spending from all SDG&E's goods and services.

68. The SDG&E Plan states that SDG&E will employ the same procurement strategies that have proven successful in meeting GO 156 goals when deploying is smart grid.

69. The SDG&E Plan's approach to smart grid deployment will ensure that it continues to have success in its ongoing GO 156 efforts.

70. SDG&E currently gets its communications from a mix of private networks and third-party provider services. The SDG&E Plan indicates that SDG&E will continue to evaluate whether using existing communications infrastructure can reduce the costs of deploying the smart grid.

71. SDG&E's use of the NIST interoperability standards and the work of the GridWise Architectural Council, as well as its use of modularity and standards at key interfaces will lead to an interoperable architecture that will be able to protect the privacy of customer data.

72. SDG&E has met the requirements set forth in Ordering Paragraph 5 of D.10-06-047.

73. SDG&E has met the requirements set forth in Ordering Paragraph 6 of D.10-06-047.

74. The PG&E Plan discusses its grid security and cybersecurity strategy in Chapter 9.

75. The PG&E Plan fulfills the requirement of Ordering Paragraph 7 of D.10-06-047 because it includes a section discussing its grid security and cybersecurity strategy.

76. The PG&E Plan's cybersecurity strategy was developed based on the specific security documents identified in Ordering Paragraph 8 of D.10-06-047. For this reason the PG&E Plan satisfies the requirements of Ordering Paragraph 8.

77. The PG&E Plan's cybersecurity strategy demonstrates that it is using NIST guidance documents and best industry practices, and therefore fulfills the requirements of Ordering Paragraph 9 of D.10-06-047.

78. The PG&E Plan provides a baseline assessment of the security and privacy of customer data, thereby fulfilling a requirement of Ordering Paragraph 4 of D.10-06-047.

79. The PG&E Plan has fulfilled all the requirements of Ordering Paragraph 4 of D.10-06-047.

80. The PG&E Plan's section on cybersecurity answers the nine questions set forth in Ordering Paragraph 10 of D.10-06-047.

81. The SCE Plan discusses its grid security and cybersecurity strategy in Chapter VIII.

82. The SCE Plan fulfills the requirement of Ordering Paragraph 7 of D.10-06-047 because it includes a section discussing its grid security and cybersecurity strategy.

83. The SCE Plan's cybersecurity strategy uses a multi-layered, defense-in-depth strategy that provides integrated system-wide and asset-specific protection through multiple layers of technology procedures and controls.

84. The SCE Plan's cybersecurity strategy demonstrates how it relies on government guidance documents as part of its overall security strategy. It was developed based on the specific security documents identified in Ordering Paragraph 8 of D.10-06-047. For these reasons the SCE Plan satisfies the requirements of Ordering Paragraph 8 of D.10-06-047.

85. The SCE Plan's cybersecurity strategy demonstrates that it is using NIST guidance documents and best industry practices, and therefore fulfills the requirements of Ordering Paragraph 9 of D.10-06-047.

86. The SCE Plan provides a baseline assessment of the security and privacy of customer data, thereby fulfilling a requirement of Ordering Paragraph 4 of D.10-06-047.

87. Based on findings 29 - 36 and on finding 94, SCE has fulfilled all the requirements of Ordering Paragraph 4 of D.10-06-047.

88. The SCE Plan details the work that SCE is conducting to ensure the interoperability of the smart grid and its participation in the development of industry standards.

89. Starting on page 154, the SCE Plan's section on cybersecurity answers the questions set forth in Ordering Paragraph 10 of D.10-06-047. For this reason, the SCE Plan complies with Ordering Paragraph 10 of D.10-06-047.

90. The SDG&E Plan discusses its grid security and cybersecurity strategy in Chapter 5.

91. The SDG&E Plan fulfills the requirement of Ordering Paragraph 7 of D.10-06-047 because it includes a section discussing its grid security and cybersecurity strategy.

92. The SDG&E Plan adopts an approach to cybersecurity called "Secure by Design"

93. The SDG&E Plan's cybersecurity strategy was developed based on the specific security documents identified in Ordering Paragraph 8 of D.10-06-047. For this reason the SDG&E Plan satisfies the requirements of Ordering Paragraph 8.

94. The SDG&E Plan's cybersecurity strategy demonstrates how SDG&E integrated public security into its overall strategy.

95. Section 4.11 and 5.4 of the SDG&E Plan show how SDG&E is developing an interoperable architecture designed to protect customer privacy by using

NIST documents. For these reasons, the SDG&E Plan fulfills the requirements of Ordering Paragraph 6 of D.10-06-047.

96. The SDG&E Plan uses cybersecurity guideline's developed by NIST and DHS and best practices in the development of its cybersecurity plan. For this reason, the SDG&E Plan complies with the requirements of Ordering Paragraph 9 of D.10-06-047.

97. The SDG&E Plan's section on cybersecurity provides answers to the nine questions set forth in Ordering Paragraph 10 of D.10-06-047. For this reason, the SDG&E Plan complies with the requirements of Ordering Paragraph 10.

98. The PG&E Plan's Smart Grid Roadmap consists of 21 projects. PG&E demonstrates how each project meets certain policy goals, how the policy goals promote a smart utility, a smart customer, a smart market or how the project plays a foundational and cross-cutting infrastructure role.

99. The PG&E Plan's Smart Grid Roadmap shows how the proposed projects relate to state policy requirements.

100. The PG&E Plan's Smart Grid Roadmap shows the timing of each of the proposed projects.

101. The PG&E Plan's Roadmap fulfills the requirements of Ordering Paragraph of 11 of D.10-06-047 because it includes a roadmap that projects the timing of the utility's smart grid investments and describes how the investment relates to the state policy requirements.

102. The SCE Plan presents a Smart Grid Roadmap in Chapter V, a chapter of over 70 pages.

103. The SCE Plan develops a set of needed capabilities that an infrastructure needs to provide to meet the requirements of SB 17 and D.l0-06-047, and then develops a roadmap to provide these capabilities.

104. The SCE plan shows that DR programs supported by its smart grid infrastructure empower consumers, help to lower the costs of running the grid, promote DR, help meet AB 32 GHG goals, and comply with § 454.5.

105. The SCE Plan shows that its Plug-in Electric Vehicle integration capabilities will help reduce GHG from transportation.

106. The SCE Plan shows that SCE's Distribution Automation programs meet the SB 17/D.10-06-047 goals of promoting generation and storage, enabling markets to function, reducing the environmental footprint of the electric stystem, promote a self-healing and resilient grid, help run the grid efficiently, and promote the use of DR, EE, DG and storage. For these reasons, these programs help meet AB 32 goals and RPS goals.

107. The SCE Plan identifies economic value opportunities in the distribution automation program area pertaining to power and asset utilization, outage response and energy conservation.

108. The SCE Plan's Distributed Energy Resource Integration program, which is part of its roadmap, will help meet AB 32 and RPS requirements, which will lead to increased use of distributed resources.

109. The SCE Plan's Wide-Area Monitoring and Wide Area Protection programs, which are part of its roadmap, should permit actions to reduce and/or prevent wide-scale blackouts.

110. The SCE Plan's Asset Management program, which is part of its Smart Grid Roadmap, meets the SB 17 and D.10-06-047 goals of making the grid self-healing and resilient, improving power quality, improve outage management, and help the grid run efficiently.

111. The SCE Plan includes a tentative timeline for each element of its proposed platform infrastructure, including a baseline and a roadmap.

112. The SCE Plan's roadmap indicates projects approved, proposed, forecast or conceptual through 2020. In addition, the plan includes a timeline for the consumer empowerment baseline, the distribution and substation automation baseline, the transmission automation baseline and its asset management baseline.

113. The SCE Plan's Smart Grid Roadmap fulfills the requirements of Ordering Paragraph of 11 of D.10-06-047 because it includes roadmaps that project the timing of the utility's smart grid investments and describes how the investments relate to the state policy requirements.

114. The SDG&E Plan's Roadmap includes a 10-year forward-looking timeline.

115. The SDG&E Plan's Roadmap identifies general statutory and policy goals, specific state energy policy goals, and specific goals of SB 17 that its roadmap supports.

116. The SDG&E Plan's Roadmap identifies nine program areas where projects are needed to deliver the capabilities required to meet the demands of customer and California's policy goals.

117. The SDG&E Plan's Roadmap presents a list of proposed projects in each program area and describes what each program does and how it works.

118. For each set of projects, the SDG&E Plan provides a roadmap showing the project in a graphical timeline that illustrates when a project commences and ends.

119. The SDG&E Plan's Smart Grid Roadmap fulfills the requirements of Ordering Paragraph 11 of D.10-06-047.

120. The PG&E Plan presents estimates of the costs and benefits of its Deployment Plan in Chapter 7 of its SGDP.

121. The PG&E Plan provides a discussion of the methodology that it uses to estimate the costs and benefits of its smart grid projects.

122. The PG&E Plan provides estimates of its smart grid investment costs, annual costs, and per account costs, and per customer cost.

123. The PG&E Plan fulfills the requirements of Ordering Paragraph 12 of D.10-06-047 because it estimates smart grid costs for the next 5 years.

124. The PG&E Plan's discussion of costs follows the guidance contained in D.10-06-047. It provides cost estimates for the proposed projects and estimates a per customer cost of the Deployment Plan.

125. The PG&E Plan's SGDP follows the protocols outlined in standard benefit analysis tools.

126. The PG&E Plan provides economic estimates of customer cost savings, deferred capital costs and avoided operating and maintenance costs arising from the its deployment of the smart grid.

127. The PG&E Plan estimates that its deployment of a smart grid will reduce GHG emissions of 1.4 million to 2.1 million tons of CO2e and improve system reliability of 10 to 20 percent as measured by traditional outage frequency and duration metrics.

128. The PG&E' Plan discusses the safety benefits that arise from the deployment of the smart grid.

129. The PG&E Plan meets the requirements of Ordering Paragraph 13of D.10-06-047 because it provides an estimation of benefits provided by the smart grid, discusses how the smart grid avoids the need for other investments, improves the reliability of the Grid and improves grid safety.

130. The SCE Plan presents an estimate of Smart Grid costs in Chapter VI.

131. The SCE Plan presents an estimate of the costs of the Smart Grid for the 2011-2014 time period, with costs based on approved funding for projects authorized by the Commission or the proposed funding included in applications pending before the Commission.

132. The SCE Plan provides a summary estimate of costs in Table 3 on page 127.

133. The SCE Plan explains that it does not calculate a cost per customer because many of the costs are conceptual in nature.

134. The SCE Plan fulfills the requirements of Ordering Paragraph 12 of D.10-06-047 because it presents the costs for the next 5 years.

135. The SCE Plan's discussion of costs complies with the guidance contained in D.10-06-047 because it provides cost estimates for proposed projects and explains why it does not calculate a per customer cost of the Deployment Plan.

136. The SCE Plan presents an estimate of smart grid benefits in Chapter VII.

137. The SCE Plan's presentation of benefits follows the guidance provided in D.10-06-047 because it divides the benefits into three categories: 1) achievement of policy and/or legal requirements; 2) economic benefits; 3) other benefits, such as reliability and safety improvements.

138. The SCE Plan shows that its deployment of the smart grid will help advance DR and support GHG reductions.

139. The SCE Plan shows that deployment of the smart grid will produce economic benefits by reducing peak demand, avoid additional capital costs through demand response, increasing conservation, and improving utilization of the distribution and transmission systems.

140. The SCE Plans shows that deployment of the smart grid will produce improvements in system reliability, safety, and power quality.

141. The SCE Plan's discussion of benefits included a quantitative discussion of reliability. It estimates that the smart grid will result in an average of 33 minutes of reduction in Part Load Up Time and thereby conforms to the guidance in D.10-06-047.

142. The SCE Plan fulfills the requirements of Ordering Paragraph 13 because it provides an evaluation of benefits provided by the smart grid and discusses how the smart grid avoids the need for other investments.

143. The SDG&E Plan presents a discussion of the estimated costs associated with the smart grid in Chapter 7.

144. The SDG&E Plan presents an estimate of smart grid costs over the next 5 years, including costs previously authorized, costs under Commission consideration in SDGE's GRC, and costs presented to the Commission in other active applications.

145. The SDGE Plan details the costing methodologies used to estimate the costs of its smart grid plan, including historic costs, conceptual estimates for 2011-1015 and a provisional range of costs for 2016-2020.

146. The SDG&E Plan did not estimate a cost per customer because it believes that such a metric would be misleading.

147. The SDG&E Plan complies with Ordering Paragraph 12 of D.10-06-047 because it presents costs estimates for the next 5 years.

148. The SDG&E Plan's discussion of costs conforms to the guidance provided by D.10-06-047 because it provides cost estimates for the proposed projects and explains why it does not calculate a per customer cost of its Deployment Plan.

149. The SDG&E Plan presents a discussion of the projected benefits of the smart grid in Chapter 8.

150. The SDG&E Plan provides a quantitative and monetary estimate of benefits from the smart grid.

151. The SDG&E Plan estimates that the smart grid will produce benefits including avoided emissions, peak load shifting, expanded use of renewable energy, better integration of DER, and reduced emissions due to expanded use of electric vehicles.

152. The SDG&E Plan indicated that the smart grid will improve system reliability and safety.

153. The SDG&E Plan complies with Ordering Paragraph 13 of D.10-06-047 because it evaluates the benefits of the Plan for the next 5 years.

154. The SDG&E Plan's discussion of benefits of the smart grid follows the guidance provided by D.10-06-047 because it provides quantitative benefit estimates for all its proposed program areas with the single exception of workforce development, and because it provides a quantitative discussion of reliability, and it details how the smart grid provides reliability and safety benefits.

155. D.12-04-025 adopted specific metrics and required their inclusion in each utility's Annual Report.

156. Since D.12-04-025 provides guidance that replaces the metric sections in the PG&E Plan, the SCE Plan, and the SDG&E Plan, it is reasonable to conclude that these sections fulfill the requirements of D.10-06-047.

157. The utilities submitted a recommended template for their Annual Report that is consistent with the recommendations of Energy Division staff.

158. PG&E's comments on the Workshop Report include a prioritization of ongoing smart grid standards development efforts.

159. SCE's comments on the Workshop Report include a prioritization of ongoing smart grid standards development efforts.

160. SDG&E's comments on the Workshop Report include a prioritization of ongoing smart grid standards development efforts.

161. Because of the rapidly developing technology concerning the Smart Grid, it is inappropriate to set a physical demarcation point separating the grid from the customer premise.

162. The SGDPs of PG&E, SCE, and SDG&E adequately address supplier diversity issues.

163. The SGDPs of PG&E, SCE, and SDG&E adequately address storage issues.

164. It is too early to set a schedule for updating the SGDPs.

165. The SGDPs focus on infrastructure deployment, not interconnection rules.

166. The SGDPs are guidance documents, and approval of the SGDP does not constitute a determination of the reasonableness of any specific project.

Conclusions of Law

1. SB 17 (2009) added sections 8360-8369 to the Pub. Util. Code.

2. Section 8362 required the Commission to determine the requirements of SGDPs and required that the Commission adopt standards and protocols to ensure the functionality and interoperability of smart grids developed by California utilities.

3. Since the SGDP of PG&E meets the requirements of SB 17 (2009) and D.10-06-047, it should be approved.

4. Since the SGDP of SCE meets the requirements of SB 17 (2009) and D.10-06-047, it should be approved.

5. Since the SGDP of SDG&E meets the requirements of SB 17 (2009) and D.10-06-047, it should be approved.

6. Since the common template proposed for the Annual Report by PG&E, SCE and SDG&E facilitates review of the Annual Reports by the Energy Division, it should be approved.

7. Since there are no outstanding issues that require resolution, this proceeding should be closed.

O R D E R

IT IS ORDERED that:

1. The Smart Grid Deployment Plan of Pacific Gas and Electric Company is approved.

2. The Smart Grid Deployment Plan of Southern California Edison Company is approved.

3. The Smart Grid Deployment Plan of San Diego Gas & Electric Company is approved.

4. Pacific Gas and Electric Company, Southern California Edison Company and San Diego Gas & Electric Company shall use the common template, Attachment A to this decision, when filing their Annual Reports on the smart grid.

5. Application 11-06-06, Application 11-06-029 and Application 11-07-001 are closed.

This order is effective today.

Dated _____, at San Francisco, California.

Appendix A

Proposed Outline of Smart Grid Annual Report

I. Smart Grid Annual Report - Executive Summary

a. Key Takeaways and Highlight: Summary of the most important Smart Grid developments or changes to the Deployment Plans by each utility (these could be used to brief senior decision-makers, the Governor's Office and the Legislature) and how they impact the smart customer, smart market, and smart utility areas.

II. Smart Grid Deployment Plan Update

a. Summary of Updates to the Plans: List of any major changes that have been/need to be made, with a brief explanation for the changes. These changes can be described in the following categories:
   i. Changes to Deployment Plan as a result of regulatory action or legislation,
   ii. Changes to Deployment Plan as a result of IOU initiative, etc.

b. Project Updates: Short summary of projects completed, currently in progress, planned to start, and/or to be submitted for the Commission's approval in the next year. The project information should be complete with cost and benefit estimates where available. The estimates for future projects could also be provided in aggregate, rather than at the project level. All projects should indicate a funding source (*e.g.*, Application vs. GRC) and state start and end dates.
   For each project, identify impacts to the following:
   i. Smart Customer
   ii. Smart Market
   iii. Smart Utility

c. Customer Roadmap: Overview of the customer engagement plan as provided in Appendix 1 to the Commission Staff's Smart Grid Workshop Report.

d. Key Risks: The utilities should identify key risks and actions taken to address them (*e.g.* standards maturity, cyber-security, etc.). This may be done at a risk category level, with the high priority risks specified.
   i. Updates to the utility's security risk assessment and privacy threat assessment
   ii. Utility compliance with NERC security rules and other security guidelines and standards as identified by NIST and adopted by FERC

III. Smart Grid Metrics & Goals

a. Provide data on the Smart Grid metrics and goals, to be set in a separate decision (R.08-12-009)

(END OF APPENDIX A)