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**PROPOSED DECISION**

Agenda ID #14873 (Rev. 1)

Quasi-legislative

6/9/2016 Item #11

Decision **PROPOSED DECISION OF COMMISSIONER SANDOVAL**  
(Mailed 5/4/2016)

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking into Policies  
to Promote a Partnership Framework  
between Energy Investor Owned Utilities  
and the Water Sector to Promote Water-  
Energy Nexus Programs.

Rulemaking 13-12-011  
(Filed December 19, 2013)

**DECISION APPROVING PILOTS TO TEST IMPACT OF JOINT DELIVERY OF  
ENERGY AND WATER DATA TO CUSTOMERS AND EXPLORING  
TECHNICAL ISSUES ASSOCIATED WITH SHARED USE OF ENERGY  
UTILITY ADVANCED METERING COMMUNICATION NETWORK**

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**DECISION APPROVING PILOTS TO TEST IMPACT OF JOINT DELIVERY OF ENERGY AND WATER DATA TO CUSTOMERS AND EXPLORING TECHNICAL ISSUES ASSOCIATED WITH SHARED USE OF ENERGY UTILITY ADVANCED METERING COMMUNICATION NETWORK****Summary**

This decision approves pilots by Pacific Gas and Electric Company, Southern California Gas Company, and Southern California Edison Company to test the impact of joint delivery of energy and water data to customers on energy and water saving behaviors and a pilot by San Diego Gas & Electric Company to explore technical issues associated with shared use of energy utility advanced metering communication network. This decision establishes the funding and cost recovery method for pilot costs and the evaluation requirements.

This proceeding remains open to address matinee rates, updates to the water-energy cost effectiveness tool, the communications-water-energy nexus, and other issues in the proceeding scope.

**1. Background**

California is undergoing an unprecedented drought, replete with grim implications for California's economy in general, and for energy supply, food supply and farm-related employment in particular. On January 17, 2014, Governor Brown declared a Drought State of Emergency,<sup>1</sup> in which the Governor observed that "the magnitude of the severe drought conditions presents threats beyond the control of the services, personnel, equipment and facilities of any single local government." On April 25, 2014, the Governor declared a continued

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<sup>1</sup> <http://gov.ca.gov/news.php?id=18368>.

state of emergency,<sup>2</sup> and on April, 1 2015, the Governor issued an Executive Order mandating substantial water reductions throughout the state in light of the ongoing drought emergency.<sup>3</sup>

“The use of water and the use of energy are intricately intertwined. The extraction, treatment, distribution, and use of water followed by the collection and treatment of wastewater require a lot of energy; likewise, the production of energy – particularly hydroelectric and thermometric power generation – requires a lot of water.”<sup>4</sup> For the past decade this Commission and other state and federal agencies have been exploring how to ensure that both the direct<sup>5</sup> and indirect<sup>6</sup> impacts of this interdependency are taken into consideration when making investment decisions in both energy and water resources. In Decision (D.) 15-09-023 we took an incremental step to adopt a water-energy calculator that quantified how much electric energy it takes to move and treat water, and calculates the associated indirect energy savings. We also adopted an avoided water capacity cost model that calculates an avoided water system capacity cost associated with water savings, which is a required input into the water-energy calculator.

In its comments on the proposed decision that ultimately became D.15-09-023, California Water Association (CWA) asked that the Commission

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<sup>2</sup> <http://gov.ca.gov/news.php?id=18496>.

<sup>3</sup> [http://gov.ca.gov/docs/4.1.15\\_Executive\\_Order.pdf](http://gov.ca.gov/docs/4.1.15_Executive_Order.pdf).

<sup>4</sup> <https://www3.epa.gov/region9/waterinfrastructure/waterenergy.html>

<sup>5</sup> Energy savings in this context generally refers to site specific energy use reductions achieved as a result of water savings, most frequently related to reducing the use of energy to heat water for end-use purposes.

<sup>6</sup> Indirect energy savings in this context generally refers to upstream energy savings with production, conveyance, treatment, and delivery of water to an end-user.

add approval of advanced meter infrastructure (AMI) installations to the scope of the water-energy nexus proceeding. CWA contended that as a result of the Governor's mandate to reduce statewide water consumption by 25 percent and the accompanying State Water Resources Control Board's promulgation of emergency regulations requiring per-utility conservation targets, there is an immediate need to provide customers with real-time information on their water consumption, which in turn created an accompanying potential for water and related energy savings.

While the Commission has approved deployment of smart electricity and gas meters, the Commission has not yet approved smart meters for Commission-jurisdictional water utilities. The main components of an AMI system are meters, communication networks, and data management systems. The most visible component is advanced meters which measure and store customer usage at hourly or finer intervals; an AMI module can be added to an existing meter to provide this capability. The next component is the communication network between meters and neighborhood data collection unit, and between the data collection unit and data management systems at the utility data center.

"PG&E's electric SmartMeters include two low-power radios embedded in the meter that are capable of both transmitting and receiving a signal through the radio. One radio is used to communicate with PG&E over its SmartMeter electric mesh network. This radio communicates to local collectors called Access Points which communicate that information back to PG&E's system. The second radio is currently off and would be used only if the customer affirmatively decides to implement an integrated Home Area Network (HAN). PG&E's gas SmartMeters have a single radio, which is used to transmit a low power radio frequency signal

to a Distribution Collection Unit (DCU). The DCU collects data from local meters and then communicates back to PG&E's systems."<sup>7</sup>

The San Diego Gas & Electric Company's (SDG&E) Smart Meter Network includes (i) a wide area network (WAN) provided by three carriers to establish connectivity between the Network Devices and the Smart Meter Headend, (ii) a radio frequency local area network (RFLAN) that establishes mesh connectivity between the Electric Meters and Cell Relays, and (iii) a ZigBee Smart Energy communication network (HAN) that establishes connectivity between the Network Points; the Gas Modules, and HAN Devices. The WAN, RFLAN and HAN have separate communication systems and provide appropriate integrated interfaces. Network Points refers to Electric Meters with low-power RFLAN and ZigBee radios, Direct Connect Electric Meters with low-power cellular and ZigBee radios, Gas Modules with low-power ZigBee radio, and Cell Relays with low-power cellular, RFLAN, and ZigBee radios. Cell Relay refers to a device which enables Endpoints to communicate with the WAN. Cell Relays may be stand-alone devices or incorporated into Electric Meters.

The essential elements of Southern California Edison Company's (SCE) AMI meter and telecommunications network include the smart meters, the local area network (LAN) to collect and transmit the communicated meter, the WAN to backhaul the information to the utility data center, the Network Management System to manage and configure the network, and the Network Operating Center to provide network systems operations capability.<sup>8</sup> The components of

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<sup>7</sup> D.12-02-014 at 6. D.06-07-027 and D.09-03-026 approved PG&E's AMI systems.

<sup>8</sup> SCE's AMI is generally described in SCE's testimony in its AMI Deployment Application (Application (A.) 07-07-026) in Exhibit 2 at 6 and 16.

the system collect, store, transmit, process, and transfer metering and other meter related data from meter data collection points to various SCE network systems depending on the eventual application or use of the data (i.e., billing, direct load control, outage management, energy procurement, etc.). Customers also have access to their personal usage data for purposes of assessing their own energy usage patterns.

SCE's advanced meter infrastructure "consists of two primary components - a meter transmission unit (module) attached to SoCalGas meters, and a communications network consisting of DCUs installed across the SoCalGas service territory. Data from the modules is communicated to the DCUs and then transmitted to SoCalGas' back-office systems."<sup>9</sup> "The communications network of the Advanced Meter system is designed to ensure that Southern California Gas Company (SoCalGas) customers receive their hourly consumption data. It consists of DCUs deployed across the SoCalGas service territory that receive the meter reading data from the modules installed on each meter. Most modules transmit twelve hourly meter reads four times a day with at least three DCUs. Each module communicates for less than two minutes per year. The data is encrypted and transmitted across a licensed frequency from the module to the DCU."<sup>10</sup>

Smart water meter data may offer significant water (and therefore direct and indirect energy) savings by, among other things, providing real-time

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<sup>9</sup> [https://www.socalgas.com/regulatory/documents/a-08-09-023/SoCalGas\\_Advanced\\_Meter\\_Semi\\_Annual\\_Report\\_FEB2016.pdf](https://www.socalgas.com/regulatory/documents/a-08-09-023/SoCalGas_Advanced_Meter_Semi_Annual_Report_FEB2016.pdf) at 3.

<sup>10</sup> *Id.* at 7.

feedback on water use. A smart meter can, under some circumstances, indicate immediately if there is a leak at a customer premises.

In response to CWA's comments, D.15-09-023 directed that the Presiding Officer or staff to conduct a workshop on one or more pilots on AMI integration. The goal of the pilots was to identify technical issues with a water corporation utilizing the existing electric corporation and/or gas corporation AMI infrastructure to transmit water usage data. Draft pilot proposals were filed January 13, 2016, the workshop was held on January 19, 2016, and pilot proposals were filed February 16, 2016 by Pacific Gas and Electric Company (PG&E), SDG&E, SCE, and SoCalGas. Comments on the pilots were filed on March 4, 2016 by the Office of Ratepayer Advocates (ORA), The Utility Reform Network (TURN), Utility Consumers' Action Network (UCAN), and CWA. Reply comments were filed on March 18, 2016 by PG&E, SDG&E, SCE, TURN, UCAN, and CWA.

## **2. The Pilot Proposals**

Each utility filed a unique pilot proposal designed to probe the technical issues associated with shared use of existing energy utility advanced metering infrastructure to obtain water smart meter data and advance water conservation programs that complements existing efforts to test shared infrastructure options. Each pilot is described below.

### **2.1. Pacific Gas and Electric Company**

Since November 2014, PG&E has actively collaborated with a water utility to allow up to 200 water meters to utilize PG&E's gas AMI network, allowing PG&E to test the performance of its AMI network as a platform for offering services such as data collection and validation, and to explore avenues for expanding this platform to accommodate multiple water utilities. PG&E has

successfully identified and overcome relevant technical challenges with data separation, transformation, and transmittal when carrying water smart meter data on its gas AMI system.

PG&E's proposed pilot evaluates the potential to achieve water-energy savings by delivering high-resolution data to end-use customers using advanced analytics and reporting platforms. To provide customers with real-time granular water-use reporting, PG&E will collaborate with both a water utility and a third-party water-energy data analytics provider. Execution requires recruitment of participating customers, as well as agreement between PG&E and the participating water utility on protections for customer privacy and information security.

Evaluation of water-energy savings will be carried out by studying the water, electric, and gas usage of roughly 10,000 residential sector overlapping customers in PG&E's and East Bay Municipal Utility District's (EBMUD) service territories. Among the 10,000 target households to be studied, up to 5,000 households will receive smart water meters that communicate granular usage data via EBMUD's existing and expanded AMI network. The selection of customers that will receive smart meters will be based on EBMUD's anticipated meter replacements, which represent a diverse population and climate across its 330 square-mile service territory. Based on the size of the treatment group, up to 5,000 similar customers in the same geographic area will be selected as a control group with AMI-connected smart gas and electric meters, but with standard water meters that are read bi-monthly.

The initial budget estimate for the project includes \$350,000–\$400,000 from PG&E and up to \$1,725,000 of in-kind contributions from EBMUD. The final budget will depend on the selected participants, as well as the AMI equipment

and meter installations required. PG&E funding will be provided via its Energy Efficiency Emerging Technologies Program. The projected pilot duration is between 27 and 30 months, inclusive of the time required to select AMI locations, install the hardware, conduct a 12 month-long observation, analyze the data, and publish the final report for broad dissemination.

PG&E and its research partner, the Center for Water Energy Efficiency at the University of California, Davis will focus on collecting primary data on water, electricity, and gas usage in the Residential sector, aspiring to determine where a measurable positive correlation exists between behavior-based water conservation and energy conservation. The presence of such a correlation will justify PG&E's wider engagement with EBMUD and other water utilities and the scaling of this initiative going forward.

## **2.2. San Diego Gas & Electric Company**

At the January 19, 2016 workshop SDG&E presented a draft proposal together with California American Water Company. As proposed, the pilot would have studied two network technologies to determine the most efficient and effective method of data delivery. Following the workshop, California American Water Company notified SDG&E that it would pursue a pilot in other parts of its service territory where water reduction targets were not being met.

The filed pilot establishes a framework for SDG&E to partner with San Diego water agencies, such as the member agencies of the San Diego County Water Authority.<sup>11</sup> SDG&E has begun discussions with several San Diego

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<sup>11</sup> The San Diego County Water Authority sustains a \$218 billion regional economy and the quality of life for 3.2 million residents through a multi-decade water supply diversification plan, major infrastructure investments and forward-thinking policies that promote fiscal and environmental responsibility. A public agency created in 1944, the Water Authority delivers a

*Footnote continued on next page*

agencies to explore a joint AMI project. One of SDG&E's pilot design objectives is for its proposed framework to have the flexibility to allow more than one interested water agency to participate in the pilot. Should the Commission approve SDG&E's pilot, SDG&E states it will continue to invite as many agencies that can participate in the pilot with the objective of assessing the feasibility and scalability of utilizing SDG&E's network infrastructure to transmit water usage data.

SDG&E expects that participating water agencies would use the pilot to establish data management systems, data analytics, and event correlation<sup>12</sup> utilizing AMI water customer usage data so that their water customers could benefit from being informed about their water usage. Combined with analytics, such usage data may result in measureable water savings.

SDG&E plans to test and integrate new technology, Itron OpenWay Riva, to leverage new functionality that enables piggybacking. The OpenWay Riva communications platform features a unified and secure multi-service network for electricity, gas and water utilities and for smart cities. Supporting third party applications, the platform enables new and innovative solutions to increase utility service levels and delivery reliability while enhancing city sustainability.

SDG&E states that its standards-based multipurpose AMI network was designed to enable secure, robust and reliable network communications for utility applications and devices to deliver dynamic near real-time information to

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safe and reliable wholesale water supply at an affordable cost to 24 retail water agencies, including cities, special districts and a military base.

<sup>12</sup> One of the benefits of an AMI system is to be able to collect time-synchronized interval consumption data, and meter events and alerts such as customer leak, tamper alert, reverse flow detection, etc., and correlate the data to help identify and prioritize situations in the water distribution network that need attention.

customers and utilities. Leveraging SDG&E's network for a participating water agency's AMI data transmission would minimize the water agency's implementation and support costs and take advantage of SDG&E's expertise in operating and maintaining smart meter infrastructure, leading to greater efficiencies and value to the water agency customers.

SDG&E proposes that during the pilot, AMI data will be backhauled to a third party data center that will host AMI software applications for the water utility. Post-pilot, the data can continue to be backhauled to a third party data center, to SDG&E's data center, or to the water utility data center. Once the consumption data reaches the third party data center it will be processed and then securely routed to the water utility data center where the data will be validated and made available for billing. Additionally, all of the raw AMI data will also be routed to a third party analytics software application to support utility reporting and analysis and customer web portals. Analytics software allows water utilities to report and analyze usage at the customer, district and system levels, and it offers the data collected to utility users for customer service, conservation support, advanced operational analysis, custom reporting, and improved revenue vigilance. The customer web portal will enable water utility customers to view detailed consumption hourly, daily, monthly, and annually. The portal enables a customer to set up water usage budgets, so the portal can monitor usage and send customers messages when they trend, approach and reach their water consumption budget. The water utility can use the same customer web portal for broadcast communications and for individual customer communications such as potential customer premise leak detection.

The initial budget estimate for the project includes \$149,000 from SDG&E but does not identify contributions from water agency partners since none are

currently identified. Because the SDG&E costs depend on the number of actual participating water agencies, SDG&E requests a memorandum account to track costs associated with this pilot. SDG&E plans to formally request implementation of a memorandum account, if approved, as a Tier 2 advice letter. SDG&E suggests the memorandum account balance be addressed in SDG&E's Annual Regulatory Account Update filing or other applicable proceeding as directed by the Commission for recovery through distribution rates to be paid for by all customers.

### **2.3. Southern California Edison Company**

Parties at the workshop agreed that SCE's existing AMI system structure precludes third party use of SCE's AMI infrastructure. SCE stated that over the longer term, SCE plans to modernize its distribution grid to provide expansion capability to potentially backhaul water AMI data.

At the workshop, SCE discussed three potential approaches to a pilot to assist with reducing energy and water consumption. Based on the workshop discussion SCE proposes a behavioral pilot with the City of Beverly Hills (a city with the highest water conservation target assigned by the State Water Resources Control Board, and which has struggled to meet its conservation goals) to leverage electric usage data from SCE's existing electric AMI infrastructure with water usage data from Beverly Hills' existing water AMI infrastructure pilot. The usage data from both of these AMI infrastructures will be combined on a single display for presentation to the customer by a third party provider. The goal of this pilot is to determine if there are any customer behavioral changes that will result in lower water usage when near real time electric usage data and near real time water usage data are provided at the same time through a single display.

SCE will leverage the Green Button<sup>13</sup> process to provide customer electric usage data to the third party provider.

SCE has deployed an AMI infrastructure for electricity and the City of Beverly Hills is currently in the process of piloting an AMI water infrastructure. SCE has been working with the City of Beverly Hills and its third-party vendor, Triton, to explore the ability to deliver both AMI electric usage data and AMI water usage data in a common display through a mobile application. In addition to the usage data for electricity and water, the common display would also provide other information (e.g., usage goals, usage profiles, budget limits, etc.) that when combined with the full electricity and water usage data may lead to behavioral changes that result in a reduction in overall water usage. Triton, the third-party vendor for the common display, would also conduct various customized analytics to assist customers in realizing their usage and conservation goals for water consumption. For this pilot, Triton can utilize the existing Green Button process to access customer usage data and ensure customer data security. The pilot is proposed on an opt-in basis for 18-24 months and SCE expects 100 customers to sign up.

If the pilot has positive results, especially in capturing cost-effective embedded energy savings, SCE plans to incorporate the program strategy into an existing energy efficiency program. SCE's projected budget is \$50,000 for the pilot, primarily for data analysis, as cost-sharing is anticipated from the City of

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<sup>13</sup> The Green Button initiative is an industry-led effort that responds to a White House call-to-action to provide utility customers with easy and secure access to their energy usage information in a consumer-friendly and computer-friendly format. Customers are able to securely download their own detailed energy usage with a simple click of a literal "Green Button" on electric utilities' websites. <http://energy.gov/data/green-button>.

Beverly Hills and Triton. SCE will utilize Energy Efficiency Emerging Technologies Program funds for the pilot costs.

#### **2.4. Southern California Gas Company**

SoCalGas has partnered with San Gabriel Valley Water Company (San Gabriel) and Valor Water Analytics to develop its pilot, although it is open to adding additional water company partners. Unlike the PG&E or SCE pilots which will rely on water provider AMI networks to transmit water data, the SoCalGas pilot will gather data from water meters associated with a particular water agency and transmit that data over the existing SoCalGas network to an Aclara (SoCalGas AMI technology vendor) hosted server for each participating water agency. The pilot will cover 1,000 meters that are joint SoCalGas and San Gabriel customers. Based on workshop feedback, the pilot now includes an analytics component for identification and evaluation of potential hot water leaks based on analysis of anomalous gas consumption patterns, and behavioral analytics on the combined gas and water usage data.

Valor Water Analytics will perform analysis to quantify the benefits of using combined AMI data and assess how data integration will allow the utilities to address apparent water losses, enhance conservation efforts, increase energy savings and reduce greenhouse gas emissions -- to a greater extent than can be done with just the data analytics from one AMI utility source. This analysis will also be used to improve the accuracy of water leak modeling for both utilities.

SoCalGas is open to including other Commission-jurisdictional water utilities into the pilot. SoCalGas is exploring opportunities with additional water providers, but no firm commitments have been made at this time. The pilot

should be able to launch quickly as SoCalGas currently has shared network pilots underway<sup>14</sup> with water agencies not under Commission jurisdiction. SoCalGas has completed preparation of its network for shared services and has developed gas data algorithms which will be used to detect possible hot water leaks.

The cost to SoCalGas for the pilot with San Gabriel is estimated to be \$150,000, which includes fees for the analytics services from Valor Water Analytics, expanded SoCalGas field visits for SoCalGas detected hot water leak verification, IT costs for establishing a data link to Valor Water Analytics, and project management. This estimate is specific for the pilot with San Gabriel; if analytics services are performed for additional water utilities or agencies, a new cost estimate based on the number of customers within the added pilot population would be determined.

To accommodate additional water partners, SoCalGas proposes that contracts with Commission-jurisdictional water utilities be signed within 90 days of a final decision to be included in the pilot. Costs for additional pilots will be determined using the same methodology as was used for determining the SoCalGas costs for its pilot with San Gabriel, adjusting for differences in size of pilot populations. Because the costs depend on the number of actual participating water agencies and their respective pilot populations, SoCalGas requests a memorandum account to track costs associated with this pilot. No new or additional investment is required for the network sharing portion of the pilot. SoCalGas will record verifiable incremental expenditures associated

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<sup>14</sup> Existing pilots were part of the SoCalGas Advanced Meter Business Case presented in SoCalGas' Advanced Meter proceeding, A.08-09-023, approved by Commission Decision D.10-04-027, prior to the Commission's direction to establish pilot programs as part of the Water-Energy Nexus.

primarily with: (1) set-up for the pilot; including IT costs; (2) fee to collaborative analytics vendor for providing analytics services for this pilot; (3) project management; and (4) field visits conducted in order to confirm detected potential hot water leaks. SoCalGas plans to formally request implementation of a memorandum account, if approved, as a Tier 2 advice letter. SoCalGas suggests the memorandum account balance be addressed in SoCalGas's Annual Regulatory Account Update filing or other applicable proceeding as directed by the Commission for recovery through distribution rates to be paid for by all customers.

### **3. Discussion and Analysis**

Because the utilities were in various stages of conducting similar research and pilots, they vary in how closely the proposed pilots address the goal posed in D.15-09-023: to identify technical issues with a water corporation utilizing the existing electric corporation and/or gas corporation AMI infrastructure to transmit water usage data. Of the pilots proposed, only the SDG&E pilot truly addresses this goal, but only if SDG&E can find a water agency partner. Neither the PG&E nor SCE pilots will utilize a shared network to transmit energy and water data. SoCalGas's pilot will utilize a shared network to transmit data, but the pilot itself is focused on data display and analytics like the PG&E and SCE pilots, rather than on overcoming technical barriers to sharing a network. Both PG&E and SoCalGas state that earlier work has allowed them to fully address the technical barriers to sharing a data transmission network and therefore three of the four pilots really are testing a shared data presentation mechanism.

The commenting parties focused on ratemaking for the pilot costs, time frames, evaluation plans, data security, and cost sharing with participating water

agencies. In their responses, the utilities provided citations and clarifications to their proposals to respond to these questions.

Parties generally support testing the energy and water usage outcomes when usage data is delivered together versus separately. Party comments focused on evaluation and ratemaking details, rather than on the fundamental concepts of ~~whether to pursue~~ pilots. UCAN suggests that we not authorize SDG&E's pilot because it has not yet found a water agency partner and that we should not "waste money" on SCE's pilot since its system is incapable of transmitting water usage data. ORA suggests that SoCalGas's pilot be limited to San Gabriel and not allow any other Commission-regulated water utility participation. ORA also suggests that water utility participation should be limited to companies that are already equipped with AMI meters. TURN recommends minimizing energy ratepayer funding because so little is known about the amount and value of embedded energy savings the pilots will provide.

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The pilots have a total expected energy ratepayer cost of less than \$1.0 million, even assuming that SoCalGas brings on two additional water partners at similar cost to its current partner. In light of the relatively low ratepayer exposure to costs associated with these pilots, in comparison to utility authorized budgets in their General Rate Case and the size and scale of the Energy Efficiency program, we will approve the pilots of all four utilities with some variations as described below.

### **3.1. Pilot Cost Limit for SDG&E and SoCalGas**

SDG&E and SoCalGas each propose budgets of \$150,000 for their pilots. Because SDG&E does not currently have a water partner, this estimate is not tied to the characteristics of the partner water agency. SoCalGas's budget is tied to the specific pilot with San Gabriel, but SoCalGas is open to adding additional

water partners. In order to provide flexibility but some fiscal constraints, we will approve a maximum budget of \$250,000 for SDG&E and of \$300,000 for SoCalGas without additional approvals required. The pilots of these two companies are not to exceed \$175,000 per water partner, to create some operational flexibility while imposing a cap to keep rates just and reasonable, without seeking approval through a Tier 3 Advice Letter, but SDG&E and SoCalGas may partner with as many water partners as possible, within the maximum level authorized. Contracts with water partners must be signed within 90 days of a final decision to be included in the pilot.

### **3.2. Cost Recovery**

PG&E and SCE plan to use Energy Efficiency Emerging Technologies Program dollars to fund their pilots. SDG&E seeks memorandum account treatment in light of the uncertainty of their water partners. SoCalGas seeks memorandum account treatment in order to allow additional water partners. TURN recommends the Commission reject the memorandum accounts and instead require that the pilots be funded using the existing rules governing pilots for energy efficiency programs and existing budget processes as discussed in D.14-10-046. (TURN Comments at 7.)

In D.15-09-023, at footnote 103, the Commission declined the utilities' request to establish memo accounts for water-energy nexus projects generally. That footnote indicates that the utilities should fund water-energy nexus projects consistent with the existing processes described in D.14-10-046. D.14-10-046 establishes the annual utility energy efficiency budgets for 2015 through 2025 and describes the rules for shifting funds across programs and the process for making larger programmatic changes outside the fund shifting rules. D.14-10-046 discusses the 2013-2014 water-energy nexus pilot programs and continues

funding for them.<sup>15</sup> Although there is some uncertainty regarding the costs for SDG&E and SoCalGas pilots that we authorize today, there has been no change in the rationale for why the Commission determined separate memorandum accounts were not necessary in D.15-09-023 since the existing energy efficiency rules allow the utilities to re-allocate funds within their existing energy efficiency budgets for new water-energy nexus pilots. Therefore we direct SDG&E and SoCalGas to use Energy Efficiency Emerging Technologies Program dollars to fund their pilots approved today.

### **3.3. Evaluation Approach**

A number of parties raise issues about the evaluation approaches, size of the sample and control group, and type of data to be gathered. The utilities have responded to these criticisms by clarifying a number of these points in their reply comments. Because of the small scale of these pilots and the limited outlay of ratepayer funds, we do not believe that the Commission should be as prescriptive as some parties appear to prefer in establishing the evaluation approach. Rather, within 30 days of the effective date of this decision for PG&E and SCE, or 30 days from signing agreements with water partners for SDG&E and SoCalGas, each utility should each file and serve, by Tier 2 Advice Letter, a Program Implementation Plan for their approved pilot that includes, but is not limited to, detailed schedules for implementation, proposed budgets, projected savings and cost-effectiveness using the water-energy calculator, marketing, education, and outreach guidelines, data requirements, measurement and evaluation plan, and control group size. Energy Division will review the

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<sup>15</sup> D.14-10-046 at 90-93.

Advice Letter for consistency with standard energy efficiency review protocols. The detailed measurement and evaluation plan should be vetted through the standard public process set forth in D.10-04-029.

### **3.4. Data Security**

CWA raises concerns over water data security generally, recommending that “each pilot should develop best practices for data security agreements and technical protections to address cybersecurity concerns.” CWA also requests that water customer data should be confidential except for third parties that need access to the data as part of their partnerships. ORA urges the inclusion of data security protocols in all pilots. PG&E replied that all external vendors with access to customer data must submit to PG&E’s Third-party Security Review process which reflects an assessment based on standards issued by the International Standards Organization (ISO 27001). SCE, SDG&E, and SoCalGas did not reply to ORA’s recommendation regarding data security. TURN supports CWA’s recommendations and would apply it to both water and energy customer data.

We agree that protection of water and energy customer data is an important element of the pilots. The Commission has previously established data privacy requirements in D.11-07-056, D.12-08-045, D.13-09-025, and D.14-05-016. PG&E’s Third-party Security Review process stemmed from the requirements of those decisions, specifically D.11-07-056, Attachment D, Rule 6.b, and there is no need to reinvent the requirements for purposes of these pilots. We will require all external vendors associated with the pilots with access to energy or water customer data to submit to their partner energy utility’s Third-party Security Review (or comparable) process established consistent with the requirements of

D.11-07-056, D.12-08-045, D.13-09-025, and D.14-05-016. This requirement applies regardless of whether the vendor contracts with an energy or water provider.

#### **4. Reporting on Energy Efficiency Activity That Impacts Water**

The water-energy nexus pilots that we approve today are but one of the activities that energy utilities are engaged in that affect water use. Because of the importance of utility energy efficiency activities that impact water use in light of California's drought, we take this opportunity to add special reporting to the already existing energy efficiency annual report to highlight activities that impact water use across the utility portfolios. Water impacting activities are occurring across sectors, but there is currently no spot where these activities are reported together so that the water impacting activities can be easily reviewed together. Starting with the annual report on 2016 energy efficiency activity (due in 2017) required by D.04-12-048 Ordering Paragraph 13,<sup>16</sup> Pacific Gas and Electric Company, San Diego Gas & Electric Company, Southern California Edison Company, and Southern California Gas Company should include a discrete chapter describing all energy efficiency activities affecting water use, both activities authorized as part of the water-energy nexus and other programs that impact water use across their energy efficiency portfolios, as well as energy and water savings, and spending and spending resulting from these activities.

#### **5. California Association of Small and Multi-Jurisdictional Utilities**

On January 13, 2016, Bear Valley Electric Service, Liberty Utilities (CalPeco Electric) LLC, and PacifiCorp, d.b.a. Pacific Power filed a joint response as the

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<sup>16</sup> The reporting guidelines are set forth in Appendix D of the Standard Practice Manual available at [http://www.cpuc.ca.gov/uploadedFiles/CPUC\\_Public\\_Website/Content/Utilities\\_and\\_Industries/Energy - Electricity and Natural Gas/EEPPolicyManualV5forPDF.pdf](http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy_-_Electricity_and_Natural_Gas/EEPPolicyManualV5forPDF.pdf)

California Association of Small and Multi-Jurisdictional Utilities (CASMU). CASMU explains that none of these utilities have AMI in their California service territories as a result of prior Commission decisions exempting them from smart grid-related and AMI requirements. For these reasons, CASMU asks the Commission to confirm that its members are exempt from submitting AMI piggybacking pilots. Given that CASMU members have no AMI in their service territories and the fact that the Commission has historically recognized the unique issues associated with these utilities, it is clear that an exemption from the requirement to submit a proposal is warranted and we confirm that the requirement to file pilots was limited to PG&E, SDG&E, SCE, and SoCalGas.

#### **6. Safety Considerations<sup>17</sup>**

When we first approved AMI systems for the utilities, we identified a number of ways in which safety might be improved. For example, we found that “AMI will improve safety and provide greater service reliability through superior outage response and service restoration.” D.07-04-043 at 10. Other benefits suggested were in the form of a reduction in injuries to meter readers, reduced vehicle usage and accidents, improvement in responding to outages in real time leading to quicker restoration of street and traffic lights, reduction of outage duration for life-support customers, and increasing electric service availability to safety, health, and law enforcement services.

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<sup>17</sup> The Scoping Ruling specifically requested parties to identify safety issues raised by the issues that were scoped and to propose steps to address those concerns, including reliability, water quality, and fire-fighting resources, and communications interconnection for public safety. These issues were not implicated by the pilots and thus are not addressed in this decision. If there is significant water savings that occurs as a result of these pilots it is possible that there could be some improvement in fire flows in supply constrained areas but this premise was not evaluated in determining whether to approve the pilots.

The approved pilots will not change the way that the AMI infrastructure of any utility presently operates and therefore we find there are no safety implications for approving the AMI pilots.

**7. Categorization and Need for Hearing**

Pursuant to Resolution ALJ-301, this proceeding is categorized as quasi-legislative and *ex parte* communications are allowed without restriction or reporting.

**8. Comments on Proposed Decision**

The proposed decision of Commissioner Sandoval 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 May 23, 2016, by PG&E, SDG&E, SoCalGas, ORA, UCAN, and CWA, and reply comments were filed on May 31, 2016, by SDG&E and SoCalGas.

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**9. Assignment of Proceeding**

Catherine J.K. Sandoval is the assigned Commissioner and Michelle Cooke is the assigned Administrative Law Judge in this proceeding.

**Findings of Fact**

1. The pilots have a total expected energy ratepayer cost of less than \$1.0 million, even assuming that SoCalGas brings on two additional water partners at similar cost to its current partner.

2. SDG&E and SoCalGas each propose budgets of \$150,000 for their pilots. Because SDG&E does not currently have a water partner, this estimate is not tied to the characteristics of the partner water agency. SoCalGas’s budget is tied to the specific pilot with San Gabriel, but SoCalGas is open to adding additional water partners.

3. D.14-10-046 establishes the annual utility energy efficiency budgets for 2015 through 2025 and describes the rules for shifting funds across programs and the process for making larger programmatic changes outside the fund shifting rules.

4. Because of the relatively small scale of these pilots and the limited outlay of ratepayer funds, the Commission should not be prescriptive as some parties recommend in establishing the evaluation approach for these pilots.

5. The Commission previously established data privacy requirements in D.11-07-056, D.12-08-045, D.13-09-025, and D.14-05-016.

6. None of the California Association of Small and Multi-Jurisdictional Utilities members have AMI in their California service territories as a result of prior Commission decisions exempting them from smart grid-related and AMI requirements.

**Conclusions of Law**

1. In light of the relatively low ratepayer exposure to costs associated with these pilots, we should approve the pilots of all four utilities.

2. There is no need to reinvent the data privacy requirements for purposes of these pilots.

3. There has been no change in the rationale for why the Commission found separate memorandum accounts were not necessary to fund water-energy nexus projects in D.15-09-023.

4. There are no safety implications for approving the AMI pilots, and the pilots may improve safety by conserving water and energy, and preventing leaks that can damage property, including utility assets.

**O R D E R**

**IT IS ORDERED** that:

1. Pacific Gas and Electric Company shall implement a pilot with East Bay Municipal Water District to evaluate the potential to achieve water-energy savings by delivering high-resolution data to end-use customers using advanced analytics and reporting platforms. The pilot cost may not exceed \$400,000 unless Pacific Gas and Electric Company files and receives approval through a Tier 3 Advice Letter.

2. If it is successful in identifying one or more water agency partners, San Diego Gas & Electric Company may implement its proposed pilot to assess the feasibility and scalability of utilizing SDG&E's network infrastructure to transmit water usage data. San Diego Gas & Electric Company may not exceed \$175,000 per water partner, without seeking approval through a Tier 3 Advice Letter, but may partner with as many water partners as possible, within the funding authorized. Contracts with water partners must be signed within 90 days of a final decision to be included in the pilot. The pilot cost may not exceed \$250,000 unless San Diego Gas & Electric Company files and receives approval through a Tier 3 Advice Letter.

3. Southern California Edison Company shall implement a behavioral pilot with the City of Beverly Hills to leverage electric usage data from SCE's existing electric AMI infrastructure with water usage data from Beverly Hills' existing water AMI infrastructure pilot in a single display for presentation to the

customer. The pilot cost may not exceed \$50,000 unless Southern California Edison Company files and receives approval through a Tier 3 Advice Letter.

4. Southern California Gas Company shall implement a pilot to gather data from water meters associated with San Gabriel Valley Water Company and transmit that data over the existing Southern California Gas Company network that includes an analytics component for identification and evaluation of potential hot water leaks based on analysis of anomalous gas consumption patterns, and behavioral analytics on the combined gas and water usage data. Southern California Gas Company may add additional water partners, not exceed \$175,000 per water partner, without seeking approval through a Tier 3 Advice Letter, and may partner with as many water partners as possible, within the funding authorized. Contracts with water partners must be signed within 90 days of a final decision to be included in the pilot. The pilot cost may not exceed \$300,000 unless Southern California Gas Company files and receives approval through a Tier 3 Advice Letter.

5. A maximum of \$1.0 million from the \$19.688 million authorized 2016 Energy Efficiency Emerging Technologies Program funds for Pacific Gas and Electric Company, San Diego Gas & Electric Company, Southern California Edison Company, and Southern California Gas Company shall be allocated and used to establish and implement the water-energy nexus advanced metering infrastructure pilot programs authorized in this decision.

6. Within 30 days of the effective date of this decision, Pacific Gas and Electric Company and Southern California Edison Company shall each file and serve, by Tier 2 Advice Letter, a Program Implementation Plan, adapted to meet the pilot criteria set forth in the Energy Efficiency Policy Manual v.5., for their approved pilot that includes, but is not limited to, detailed schedules for implementation,

proposed budgets, projected savings and cost-effectiveness using the water-energy calculator as applicable, marketing, education, and outreach guidelines, data requirements, measurement and evaluation plan, and control group size.

7. Within 30 days of signed agreements with water partners, San Diego Gas & Electric Company and Southern California Gas Company shall each file and serve, by Tier 2 Advice Letter, a Program Implementation Plan, adapted to meet the pilot criteria set forth in the Energy Efficiency Policy Manual v.5., for their approved pilot that includes, but is not limited to, detailed schedules for implementation, proposed budgets, projected savings and cost-effectiveness using the water-energy calculator as applicable, marketing, education, and outreach guidelines, data requirements, measurement and evaluation plan, and control group size.

8. All external vendors associated with the approved pilots with access to energy or water customer data must submit to their partner energy utility's Third-party Security Review (or comparable) process established consistent with the requirements of Decision (D.) 11-07-056, D.12-08-045, D.13-09-025, and ~~D.14-05-016.~~

9. Starting with the annual report on 2016 energy efficiency activity required by Decision 04-12-048 Ordering Paragraph 13, Pacific Gas and Electric Company, San Diego Gas & Electric Company, Southern California Edison Company, and Southern California Gas Company must include a discrete chapter describing all energy efficiency activities affecting water use, both activities authorized as part of the water-energy nexus and other programs that impact water use across the energy efficiency portfolio, as well as energy and water savings, and spending and spending resulting from these activities. In addition to being filed and

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served on relevant energy efficiency service lists, the Annual Report must be filed and served on the service list of Rulemaking 13-12-011 through 2020.

10. Bear Valley Electric Service, Liberty Utilities (CalPeco Electric) LLC, and PacifiCorp, d.b.a. Pacific Power are exempt from submitting Advanced Metering Infrastructure integration pilot proposals.

This order is effective today.

Dated \_\_\_\_\_, at San Francisco, California.

COM/CJS/jt2

**PROPOSED DECISION**

Agenda ID #14873 [\(Rev. 1\)](#)

Quasi-legislative

[6/9/2016 Item #11](#)

Decision **PROPOSED DECISION OF COMMISSIONER SANDOVAL (Mailed 5/4/2016)**

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking into Policies to Promote a Partnership Framework between Energy Investor Owned Utilities and the Water Sector to Promote Water-Energy Nexus Programs.

Rulemaking 13-12-011  
(Filed December 19, 2013)

**DECISION APPROVING PILOTS TO TEST IMPACT OF JOINT DELIVERY OF ENERGY AND WATER DATA TO CUSTOMERS AND EXPLORING TECHNICAL ISSUES ASSOCIATED WITH SHARED USE OF ENERGY UTILITY ADVANCED METERING COMMUNICATION NETWORK**

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**DECISION APPROVING PILOTS TO TEST IMPACT OF JOINT DELIVERY OF ENERGY AND WATER DATA TO CUSTOMERS AND EXPLORING TECHNICAL ISSUES ASSOCIATED WITH SHARED USE OF ENERGY UTILITY ADVANCED METERING COMMUNICATION NETWORK**

**Summary**

This decision approves pilots by Pacific Gas and Electric Company, Southern California Gas Company, and Southern California Edison Company to test the impact of joint delivery of energy and water data to customers on energy and water saving behaviors and a pilot by San Diego Gas & Electric Company to explore technical issues associated with shared use of energy utility advanced metering communication network. This decision establishes the funding and cost recovery method for pilot costs and the evaluation requirements.

This proceeding remains open to address matinee rates, updates to the water-energy cost effectiveness tool, the communications-water-energy nexus, and other issues in the proceeding scope.

**1. Background**

California is undergoing an unprecedented drought, replete with grim implications for California's economy in general, and for energy supply, food supply and farm-related employment in particular. On January 17, 2014, Governor Brown declared a Drought State of Emergency,<sup>1</sup> in which the Governor observed that "the magnitude of the severe drought conditions presents threats beyond the control of the services, personnel, equipment and facilities of any single local government." On April 25, 2014, the Governor declared a continued state of emergency,<sup>2</sup> and on April, 1 2015, the Governor issued an Executive

<sup>1</sup> <http://gov.ca.gov/news.php?id=18368>.

<sup>2</sup> <http://gov.ca.gov/news.php?id=18496>.

Order mandating substantial water reductions throughout the state in light of the ongoing drought emergency.<sup>3</sup>

“The use of water and the use of energy are intricately intertwined. The extraction, treatment, distribution, and use of water followed by the collection and treatment of wastewater require a lot of energy; likewise, the production of energy – particularly hydroelectric and thermometric power generation – requires a lot of water.”<sup>4</sup> For the past decade this Commission and other state and federal agencies have been exploring how to ensure that both the direct<sup>5</sup> and indirect<sup>6</sup> impacts of this interdependency are taken into consideration when making investment decisions in both energy and water resources. In Decision (D.) 15-09-023 we took an incremental step to adopt a water-energy calculator that quantified how much electric energy it takes to move and treat water, and calculates the associated indirect energy savings. We also adopted an avoided water capacity cost model that calculates an avoided water system capacity cost associated with water savings, which is a required input into the water-energy calculator.

In its comments on the proposed decision that ultimately became D.15-09-023, California Water Association (CWA) asked that the Commission add approval of advanced meter infrastructure (AMI) installations to the scope of the water-energy nexus proceeding. CWA contended that as a result of the Governor’s mandate to reduce statewide water consumption by 25 percent and the accompanying State Water Resources Control Board’s promulgation of

<sup>3</sup> [http://gov.ca.gov/docs/4.1.15\\_Executive\\_Order.pdf](http://gov.ca.gov/docs/4.1.15_Executive_Order.pdf).

<sup>4</sup> <https://www3.epa.gov/region9/waterinfrastructure/waterenergy.html>

<sup>5</sup> Energy savings in this context generally refers to site specific energy use reductions achieved as a result of water savings, most frequently related to reducing the use of energy to heat water for end-use purposes.

<sup>6</sup> Indirect energy savings in this context generally refers to upstream energy savings associated with production, conveyance, treatment, and delivery of water to an end-user.

emergency regulations requiring per-utility conservation targets, there is an immediate need to provide customers with real-time information on their water consumption, which in turn created an accompanying potential for water and related energy savings.

While the Commission has approved deployment of smart electricity and gas meters, the Commission has not yet approved smart meters for Commission-jurisdictional water utilities. The main components of an AMI system are meters, communication networks, and data management systems. The most visible component is advanced meters which measure and store customer usage at hourly or finer intervals; an AMI module can be added to an existing meter to provide this capability. The next component is the communication network between meters and neighborhood data collection unit, and between the data collection unit and data management systems at the utility data center.

“PG&E’s electric SmartMeters include two low-power radios embedded in the meter that are capable of both transmitting and receiving a signal through the radio. One radio is used to communicate with PG&E over its SmartMeter electric mesh network. This radio communicates to local collectors called Access Points which communicate that information back to PG&E’s system. The second radio is currently off and would be used only if the customer affirmatively decides to implement an integrated Home Area Network (HAN). PG&E’s gas SmartMeters have a single radio, which is used to transmit a low power radio frequency signal to a Distribution Collection Unit (DCU). The DCU collects data from local meters and then communicates back to PG&E’s systems.”<sup>7</sup>

<sup>7</sup> D.12-02-014 at 6. D.06-07-027 and D.09-03-026 approved PG&E’s AMI systems.

The San Diego Gas & Electric Company's (SDG&E) Smart Meter Network includes (i) a wide area network (WAN) provided by three carriers to establish connectivity between the Network Devices and the Smart Meter Headend, (ii) a radio frequency local area network (RFLAN) that establishes mesh connectivity between the Electric Meters and Cell Relays, and (iii) a ZigBee Smart Energy communication network (HAN) that establishes connectivity between the Network Points; the Gas Modules, and HAN Devices. The WAN, RFLAN and HAN have separate communication systems and provide appropriate integrated interfaces. Network Points refers to Electric Meters with low-power RFLAN and ZigBee radios, Direct Connect Electric Meters with low-power cellular and ZigBee radios, Gas Modules with low-power ZigBee radio, and Cell Relays with low-power cellular, RFLAN, and ZigBee radios. Cell Relay refers to a device which enables Endpoints to communicate with the WAN. Cell Relays may be stand-alone devices or incorporated into Electric Meters.

The essential elements of Southern California Edison Company's (SCE) AMI meter and telecommunications network include the smart meters, the local area network (LAN) to collect and transmit the communicated meter, the WAN to backhaul the information to the utility data center, the Network Management System to manage and configure the network, and the Network Operating Center to provide network systems operations capability.<sup>8</sup> The components of the system collect, store, transmit, process, and transfer metering and other meter related data from meter data collection points to various SCE network systems depending on the eventual application or use of the data (i.e., billing, direct load control, outage management, energy procurement, etc.). Customers also have

<sup>8</sup> SCE's AMI is generally described in SCE's testimony in its AMI Deployment Application (Application (A.) 07-07-026) in Exhibit 2 at 6 and 16.

access to their personal usage data for purposes of assessing their own energy usage patterns.

SCE's advanced meter infrastructure "consists of two primary components – a meter transmission unit (module) attached to SoCalGas meters, and a communications network consisting of DCUs installed across the SoCalGas service territory. Data from the modules is communicated to the DCUs and then transmitted to SoCalGas' back-office systems."<sup>9</sup> "The communications network of the Advanced Meter system is designed to ensure that Southern California Gas Company (SoCalGas) customers receive their hourly consumption data. It consists of DCUs deployed across the SoCalGas service territory that receive the meter reading data from the modules installed on each meter. Most modules transmit twelve hourly meter reads four times a day with at least three DCUs. Each module communicates for less than two minutes per year. The data is encrypted and transmitted across a licensed frequency from the module to the DCU."<sup>10</sup>

Smart water meter data may offer significant water (and therefore direct and indirect energy) savings by, among other things, providing real-time feedback on water use. A smart meter can, under some circumstances, indicate immediately if there is a leak at a customer premises.

In response to CWA's comments, D.15-09-023 directed that the Presiding Officer or staff to conduct a workshop on one or more pilots on AMI integration. The goal of the pilots was to identify technical issues with a water corporation utilizing the existing electric corporation and/or gas corporation AMI infrastructure to transmit water usage data. Draft pilot proposals were filed

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[https://www.socalgas.com/regulatory/documents/a-08-09-023/SoCalGas\\_Advanced\\_Meter\\_Semi\\_Annual\\_Report\\_FEB2016.pdf](https://www.socalgas.com/regulatory/documents/a-08-09-023/SoCalGas_Advanced_Meter_Semi_Annual_Report_FEB2016.pdf) at 3.

<sup>10</sup> *Id.* at 7.

January 13, 2016, the workshop was held on January 19, 2016, and pilot proposals were filed February 16, 2016 by Pacific Gas and Electric Company (PG&E), SDG&E, SCE, and SoCalGas. Comments on the pilots were filed on March 4, 2016 by the Office of Ratepayer Advocates (ORA), The Utility Reform Network (TURN), Utility Consumers' Action Network (UCAN), and CWA. Reply comments were filed on March 18, 2016 by PG&E, SDG&E, SCE, TURN, UCAN, and CWA.

## **2. The Pilot Proposals**

Each utility filed a unique pilot proposal designed to probe the technical issues associated with shared use of existing energy utility advanced metering infrastructure to obtain water smart meter data and advance water conservation programs that complements existing efforts to test shared infrastructure options. Each pilot is described below.

### **2.1. Pacific Gas and Electric Company**

Since November 2014, PG&E has actively collaborated with a water utility to allow up to 200 water meters to utilize PG&E's gas AMI network, allowing PG&E to test the performance of its AMI network as a platform for offering services such as data collection and validation, and to explore avenues for expanding this platform to accommodate multiple water utilities. PG&E has successfully identified and overcome relevant technical challenges with data separation, transformation, and transmittal when carrying water smart meter data on its gas AMI system.

PG&E's proposed pilot evaluates the potential to achieve water-energy savings by delivering high-resolution data to end-use customers using advanced analytics and reporting platforms. To provide customers with real-time granular water-use reporting. PG&E will collaborate with both a water utility and a

third-party water-energy data analytics provider. Execution requires recruitment of participating customers, as well as agreement between PG&E and the participating water utility on protections for customer privacy and information security.

Evaluation of water-energy savings will be carried out by studying the water, electric, and gas usage of roughly 10,000 residential sector overlapping customers in PG&E's and East Bay Municipal Utility District's (EBMUD) service territories. Among the 10,000 target households to be studied, up to 5,000 households will receive smart water meters that communicate granular usage data via EBMUD's existing and expanded AMI network. The selection of customers that will receive smart meters will be based on EBMUD's anticipated meter replacements, which represent a diverse population and climate across its 330 square-mile service territory. Based on the size of the treatment group, up to 5,000 similar customers in the same geographic area will be selected as a control group with AMI-connected smart gas and electric meters, but with standard water meters that are read bi-monthly.

The initial budget estimate for the project includes \$350,000–\$400,000 from PG&E and up to \$1,725,000 of in-kind contributions from EBMUD. The final budget will depend on the selected participants, as well as the AMI equipment and meter installations required. PG&E funding will be provided via its Energy Efficiency Emerging Technologies Program. The projected pilot duration is between 27 and 30 months, inclusive of the time required to select AMI locations, install the hardware, conduct a 12 month-long observation, analyze the data, and publish the final report for broad dissemination.

PG&E and its research partner, the Center for Water Energy Efficiency at the University of California, Davis will focus on collecting primary data on water,

electricity, and gas usage in the Residential sector, aspiring to determine where a measurable positive correlation exists between behavior-based water conservation and energy conservation. The presence of such a correlation will justify PG&E's wider engagement with EBMUD and other water utilities and the scaling of this initiative going forward.

## **2.2. San Diego Gas & Electric Company**

At the January 19, 2016 workshop SDG&E presented a draft proposal together with California American Water Company. As proposed, the pilot would have studied two network technologies to determine the most efficient and effective method of data delivery. Following the workshop, California American Water Company notified SDG&E that it would pursue a pilot in other parts of its service territory where water reduction targets were not being met.

The filed pilot establishes a framework for SDG&E to partner with San Diego water agencies, such as the member agencies of the San Diego County Water Authority.<sup>11</sup> SDG&E has begun discussions with several San Diego agencies to explore a joint AMI project. One of SDG&E's pilot design objectives is for its proposed framework to have the flexibility to allow more than one interested water agency to participate in the pilot. Should the Commission approve SDG&E's pilot, SDG&E states it will continue to invite as many agencies that can participate in the pilot with the objective of assessing the feasibility and scalability of utilizing SDG&E's network infrastructure to transmit water usage data.

<sup>11</sup> The San Diego County Water Authority sustains a \$218 billion regional economy and the quality of life for 3.2 million residents through a multi-decade water supply diversification plan, major infrastructure investments and forward-thinking policies that promote fiscal and environmental responsibility. A public agency created in 1944, the Water Authority delivers a safe and reliable wholesale water supply at an affordable cost to 24 retail water agencies, including cities, special districts and a military base.

SDG&E expects that participating water agencies would use the pilot to establish data management systems, data analytics, and event correlation<sup>12</sup> utilizing AMI water customer usage data so that their water customers could benefit from being informed about their water usage. Combined with analytics, such usage data may result in measureable water savings.

SDG&E plans to test and integrate new technology, Itron OpenWay Riva, to leverage new functionality that enables piggybacking. The OpenWay Riva communications platform features a unified and secure multi-service network for electricity, gas and water utilities and for smart cities. Supporting third party applications, the platform enables new and innovative solutions to increase utility service levels and delivery reliability while enhancing city sustainability.

SDG&E states that its standards-based multipurpose AMI network was designed to enable secure, robust and reliable network communications for utility applications and devices to deliver dynamic near real-time information to customers and utilities. Leveraging SDG&E's network for a participating water agency's AMI data transmission would minimize the water agency's implementation and support costs and take advantage of SDG&E's expertise in operating and maintaining smart meter infrastructure, leading to greater efficiencies and value to the water agency customers.

SDG&E proposes that during the pilot, AMI data will be backhauled to a third party data center that will host AMI software applications for the water utility. Post-pilot, the data can continue to be backhauled to a third party data center, to SDG&E's data center, or to the water utility data center. Once the consumption data reaches the third party data center it will be processed and

<sup>12</sup> One of the benefits of an AMI system is to be able to collect time-synchronized interval consumption data, and meter events and alerts such as customer leak, tamper alert, reverse flow detection, etc., and correlate the data to help identify and prioritize situations in the water distribution network that need attention.

then securely routed to the water utility data center where the data will be validated and made available for billing. Additionally, all of the raw AMI data will also be routed to a third party analytics software application to support utility reporting and analysis and customer web portals. Analytics software allows water utilities to report and analyze usage at the customer, district and system levels, and it offers the data collected to utility users for customer service, conservation support, advanced operational analysis, custom reporting, and improved revenue vigilance. The customer web portal will enable water utility customers to view detailed consumption hourly, daily, monthly, and annually. The portal enables a customer to set up water usage budgets, so the portal can monitor usage and send customers messages when they trend, approach and reach their water consumption budget. The water utility can use the same customer web portal for broadcast communications and for individual customer communications such as potential customer premise leak detection.

The initial budget estimate for the project includes \$149,000 from SDG&E but does not identify contributions from water agency partners since none are currently identified. Because the SDG&E costs depend on the number of actual participating water agencies, SDG&E requests a memorandum account to track costs associated with this pilot. SDG&E plans to formally request implementation of a memorandum account, if approved, as a Tier 2 advice letter. SDG&E suggests the memorandum account balance be addressed in SDG&E's Annual Regulatory Account Update filing or other applicable proceeding as directed by the Commission for recovery though distribution rates to be paid for by all customers.

### **2.3. Southern California Edison Company**

Parties at the workshop agreed that SCE's existing AMI system structure precludes third party use of SCE's AMI infrastructure. SCE stated that over the longer term, SCE plans to modernize its distribution grid to provide expansion capability to potentially backhaul water AMI data.

At the workshop, SCE discussed three potential approaches to a pilot to assist with reducing energy and water consumption. Based on the workshop discussion SCE proposes a behavioral pilot with the City of Beverly Hills (a city with the highest water conservation target assigned by the State Water Resources Control Board, and which has struggled to meet its conservation goals) to leverage electric usage data from SCE's existing electric AMI infrastructure with water usage data from Beverly Hills' existing water AMI infrastructure pilot. The usage data from both of these AMI infrastructures will be combined on a single display for presentation to the customer by a third party provider. The goal of this pilot is to determine if there are any customer behavioral changes that will result in lower water usage when near real time electric usage data and near real time water usage data are provided at the same time through a single display. SCE will leverage the Green Button<sup>13</sup> process to provide customer electric usage data to the third party provider.

SCE has deployed an AMI infrastructure for electricity and the City of Beverly Hills is currently in the process of piloting an AMI water infrastructure. SCE has been working with the City of Beverly Hills and its third-party vendor, Triton, to explore the ability to deliver both AMI electric usage data and AMI

<sup>13</sup> The Green Button initiative is an industry-led effort that responds to a White House call-to-action to provide utility customers with easy and secure access to their energy usage information in a consumer-friendly and computer-friendly format. Customers are able to securely download their own detailed energy usage with a simple click of a literal "Green Button" on electric utilities' websites. <http://energy.gov/data/green-button>.

water usage data in a common display through a mobile application. In addition to the usage data for electricity and water, the common display would also provide other information (e.g., usage goals, usage profiles, budget limits, etc.) that when combined with the full electricity and water usage data may lead to behavioral changes that result in a reduction in overall water usage. Triton, the third-party vendor for the common display, would also conduct various customized analytics to assist customers in realizing their usage and conservation goals for water consumption. For this pilot, Triton can utilize the existing Green Button process to access customer usage data and ensure customer data security. The pilot is proposed on an opt-in basis for 18-24 months and SCE expects 100 customers to sign up.

If the pilot has positive results, especially in capturing cost-effective embedded energy savings, SCE plans to incorporate the program strategy into an existing energy efficiency program. SCE's projected budget is \$50,000 for the pilot, primarily for data analysis, as cost-sharing is anticipated from the City of Beverly Hills and Triton. SCE will utilize Energy Efficiency Emerging Technologies Program funds for the pilot costs.

#### **2.4. Southern California Gas Company**

SoCalGas has partnered with San Gabriel Valley Water Company (San Gabriel) and Valor Water Analytics to develop its pilot, although it is open to adding additional water company partners. Unlike the PG&E or SCE pilots which will rely on water provider AMI networks to transmit water data, the SoCalGas pilot will gather data from water meters associated with a particular water agency and transmit that data over the existing SoCalGas network to an Aclara (SoCalGas AMI technology vendor) hosted server for each participating water agency. The pilot will cover 1,000 meters that are joint SoCalGas and San

Gabriel customers. Based on workshop feedback, the pilot now includes an analytics component for identification and evaluation of potential hot water leaks based on analysis of anomalous gas consumption patterns, and behavioral analytics on the combined gas and water usage data.

Valor Water Analytics will perform analysis to quantify the benefits of using combined AMI data and assess how data integration will allow the utilities to address apparent water losses, enhance conservation efforts, increase energy savings and reduce greenhouse gas emissions -- to a greater extent than can be done with just the data analytics from one AMI utility source. This analysis will also be used to improve the accuracy of water leak modeling for both utilities.

SoCalGas is open to including other Commission-jurisdictional water utilities into the pilot. SoCalGas is exploring opportunities with additional water providers, but no firm commitments have been made at this time. The pilot should be able to launch quickly as SoCalGas currently has shared network pilots underway<sup>14</sup> with water agencies not under Commission jurisdiction. SoCalGas has completed preparation of its network for shared services and has developed gas data algorithms which will be used to detect possible hot water leaks.

The cost to SoCalGas for the pilot with San Gabriel is estimated to be \$150,000, which includes fees for the analytics services from Valor Water Analytics, expanded SoCalGas field visits for SoCalGas detected hot water leak verification, IT costs for establishing a data link to Valor Water Analytics, and project management. This estimate is specific for the pilot with San Gabriel; if analytics services are performed for additional water utilities or agencies, a new

<sup>14</sup> Existing pilots were part of the SoCalGas Advanced Meter Business Case presented in SoCalGas' Advanced Meter proceeding, A.08-09-023, approved by Commission Decision D.10-04-027, prior to the Commission's direction to establish pilot programs as part of the Water-Energy Nexus.

cost estimate based on the number of customers within the added pilot population would be determined.

To accommodate additional water partners, SoCalGas proposes that contracts with Commission-jurisdictional water utilities be signed within 90 days of a final decision to be included in the pilot. Costs for additional pilots will be determined using the same methodology as was used for determining the SoCalGas costs for its pilot with San Gabriel, adjusting for differences in size of pilot populations. Because the costs depend on the number of actual participating water agencies and their respective pilot populations, SoCalGas requests a memorandum account to track costs associated with this pilot. No new or additional investment is required for the network sharing portion of the pilot. SoCalGas will record verifiable incremental expenditures associated primarily with: (1) set-up for the pilot; including IT costs; (2) fee to collaborative analytics vendor for providing analytics services for this pilot; (3) project management; and (4) field visits conducted in order to confirm detected potential hot water leaks. SoCalGas plans to formally request implementation of a memorandum account, if approved, as a Tier 2 advice letter. SoCalGas suggests the memorandum account balance be addressed in SoCalGas's Annual Regulatory Account Update filing or other applicable proceeding as directed by the Commission for recovery though distribution rates to be paid for by all customers.

### **3. Discussion and Analysis**

Because the utilities were in various stages of conducting similar research and pilots, they vary in how closely the proposed pilots address the goal posed in D.15-09-023: to identify technical issues with a water corporation utilizing the existing electric corporation and/or gas corporation AMI infrastructure to

transmit water usage data. Of the pilots proposed, only the SDG&E pilot truly addresses this goal, but only if SDG&E can find a water agency partner. Neither the PG&E nor SCE pilots will utilize a shared network to transmit energy and water data. SoCalGas's pilot will utilize a shared network to transmit data, but the pilot itself is focused on data display and analytics like the PG&E and SCE pilots, rather than on overcoming technical barriers to sharing a network. Both PG&E and SoCalGas state that earlier work has allowed them to fully address the technical barriers to sharing a data transmission network and therefore three of the four pilots really are testing a shared data presentation mechanism.

The commenting parties focused on ratemaking for the pilot costs, time frames, evaluation plans, data security, and cost sharing with participating water agencies. In their responses, the utilities provided citations and clarifications to their proposals to respond to these questions.

Parties generally support testing the energy and water usage outcomes when usage data is delivered together versus separately. Party comments focused on evaluation and ratemaking details, rather than on the fundamental concepts of [whether to pursue](#) pilots. UCAN suggests that we not authorize SDG&E's pilot because it has not yet found a water agency partner and that we should not "waste money" on SCE's pilot since its system is incapable of transmitting water usage data. ORA suggests that SoCalGas's pilot be limited to San Gabriel and not allow any other Commission-regulated water utility participation. ORA also suggests that water utility participation should be limited to companies that are already equipped with AMI meters. TURN recommends minimizing energy ratepayer funding because so little is known about the amount and value of embedded energy savings the pilots will provide.

The pilots have a total expected energy ratepayer cost of less than \$1.0 million, even assuming that SoCalGas brings on two additional water partners at similar cost to its current partner. In light of the relatively low ratepayer exposure to costs associated with these pilots, in comparison to utility authorized budgets in their General Rate Case and the size and scale of the Energy Efficiency program, we will approve the pilots of all four utilities with some variations as described below.

### **3.1. Pilot Cost Limit for SDG&E and SoCalGas**

SDG&E and SoCalGas each propose budgets of \$150,000 for their pilots. Because SDG&E does not currently have a water partner, this estimate is not tied to the characteristics of the partner water agency. SoCalGas's budget is tied to the specific pilot with San Gabriel, but SoCalGas is open to adding additional water partners. In order to provide flexibility but some fiscal constraints, we will approve a maximum budget of \$250,000 for SDG&E and of \$300,000 for SoCalGas without additional approvals required. The pilots of these two companies are not to exceed \$175,000 per water partner, to create some operational flexibility while imposing a cap to keep rates just and reasonable, without seeking approval through a Tier 3 Advice Letter, but SDG&E and SoCalGas may partner with as many water partners as possible, within the maximum level authorized. Contracts with water partners must be signed within 90 days of a final decision to be included in the pilot.

### **3.2. Cost Recovery**

PG&E and SCE plan to use Energy Efficiency Emerging Technologies Program dollars to fund their pilots. SDG&E seeks memorandum account treatment in light of the uncertainty of their water partners. SoCalGas seeks memorandum account treatment in order to allow additional water partners.

TURN recommends the Commission reject the memorandum accounts and instead require that the pilots be funded using the existing rules governing pilots for energy efficiency programs and existing budget processes as discussed in D.14-10-046. (TURN Comments at 7.)

In D.15-09-023, at footnote 103, the Commission declined the utilities' request to establish memo accounts for water-energy nexus projects generally. That footnote indicates that the utilities should fund water-energy nexus projects consistent with the existing processes described in D.14-10-046. D.14-10-046 establishes the annual utility energy efficiency budgets for 2015 through 2025 and describes the rules for shifting funds across programs and the process for making larger programmatic changes outside the fund shifting rules. D.14-10-046 discusses the 2013-2014 water-energy nexus pilot programs and continues funding for them.<sup>15</sup> Although there is some uncertainty regarding the costs for SDG&E and SoCalGas pilots that we authorize today, there has been no change in the rationale for why the Commission determined separate memorandum accounts were not necessary in D.15-09-023 since the existing energy efficiency rules allow the utilities to re-allocate funds within their existing energy efficiency budgets for new water-energy nexus pilots. Therefore we direct SDG&E and SoCalGas to use Energy Efficiency Emerging Technologies Program dollars to fund their pilots approved today.

### **3.3. Evaluation Approach**

A number of parties raise issues about the evaluation approaches, size of the sample and control group, and type of data to be gathered. The utilities have responded to these criticisms by clarifying a number of these points in their reply comments. Because of the small scale of these pilots and the limited outlay of

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<sup>15</sup> D.14-10-046 at 90-93.

ratepayer funds, we do not believe that the Commission should be as prescriptive as some parties appear to prefer in establishing the evaluation approach. Rather, within 30 days of the effective date of this decision for PG&E and SCE, or 30 days from signing agreements with water partners for SDG&E and SoCalGas, each utility should each file and serve, by Tier 2 Advice Letter, a Program Implementation Plan for their approved pilot that includes, but is not limited to, detailed schedules for implementation, proposed budgets, projected savings and cost-effectiveness using the water-energy calculator, marketing, education, and outreach guidelines, data requirements, measurement and evaluation plan, and control group size. Energy Division will review the Advice Letter for consistency with standard energy efficiency review protocols. The detailed measurement and evaluation plan should be vetted through the standard public process set forth in D.10-04-029.

### **3.4. Data Security**

CWA raises concerns over water data security generally, recommending that “each pilot should develop best practices for data security agreements and technical protections to address cybersecurity concerns.” CWA also requests that water customer data should be confidential except for third parties that need access to the data as part of their partnerships. ORA urges the inclusion of data security protocols in all pilots. PG&E replied that all external vendors with access to customer data must submit to PG&E’s Third-party Security Review process which reflects an assessment based on standards issued by the International Standards Organization (ISO 27001). SCE, SDG&E, and SoCalGas did not reply to ORA’s recommendation regarding data security. TURN supports CWA’s recommendations and would apply it to both water and energy customer data.

We agree that protection of water and energy customer data is an important element of the pilots. The Commission has previously established data privacy requirements in D.11-07-056, D.12-08-045, D.13-09-025, and D.14-05-016. PG&E's Third-party Security Review process stemmed from the requirements of those decisions, specifically D.11-07-056, Attachment D, Rule 6.b, and there is no need to reinvent the requirements for purposes of these pilots. We will require all external vendors associated with the pilots with access to [energy or water](#) customer data to submit to their partner energy utility's Third-party Security Review (or comparable) process established consistent with the requirements of D.11-07-056, D.12-08-045, D.13-09-025, and D.14-05-016. [This requirement applies regardless of whether the vendor contracts with an energy or water provider.](#)

#### **4. Reporting on Energy Efficiency Activity That Impacts Water**

The water-energy nexus pilots that we approve today are but one of the activities that energy utilities are engaged in that affect water use. Because of the importance of utility energy efficiency activities that impact water use in light of California's drought, we take this opportunity to add special reporting to the already existing energy efficiency annual report to highlight activities that impact water use across the utility portfolios. Water impacting activities are occurring across sectors, but there is currently no spot where these activities are reported together so that the water impacting activities can be easily reviewed together. Starting with the annual report on 2016 energy efficiency activity (due in 2017) required by D.04-12-048 Ordering Paragraph 13,<sup>16</sup> Pacific Gas and Electric Company, San Diego Gas & Electric Company, Southern California Edison Company, and Southern California Gas Company should include a discrete

<sup>16</sup> The reporting guidelines are set forth in Appendix D of the Standard Practice Manual available at [http://www.cpuc.ca.gov/uploadedFiles/CPUC\\_Public\\_Website/Content/Utilities\\_and\\_Industries/Energy\\_-\\_Electricity\\_and\\_Natural\\_Gas/EEPPolicyManualV5forPDF.pdf](http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy_-_Electricity_and_Natural_Gas/EEPPolicyManualV5forPDF.pdf)

chapter describing all energy efficiency activities affecting water use, both activities authorized as part of the water-energy nexus and other programs that impact water use across their energy efficiency portfolios, as well as energy and water savings, and spending and spending resulting from these activities.

#### **5. California Association of Small and Multi-Jurisdictional Utilities**

On January 13, 2016, Bear Valley Electric Service, Liberty Utilities (CalPeco Electric) LLC, and PacifiCorp, d.b.a. Pacific Power filed a joint response as the California Association of Small and Multi-Jurisdictional Utilities (CASMU). CASMU explains that none of these utilities have AMI in their California service territories as a result of prior Commission decisions exempting them from smart grid-related and AMI requirements. For these reasons, CASMU asks the Commission to confirm that its members are exempt from submitting AMI piggybacking pilots. Given that CASMU members have no AMI in their service territories and the fact that the Commission has historically recognized the unique issues associated with these utilities, it is clear that an exemption from the requirement to submit a proposal is warranted and we confirm that the requirement to file pilots was limited to PG&E, SDG&E, SCE, and SoCalGas.

#### **6. Safety Considerations<sup>17</sup>**

When we first approved AMI systems for the utilities, we identified a number of ways in which safety might be improved. For example, we found that “AMI will improve safety and provide greater service reliability through superior outage response and service restoration.” D.07-04-043 at 10. Other

<sup>17</sup> The Scoping Ruling specifically requested parties to identify safety issues raised by the issues that were scoped and to propose steps to address those concerns, including reliability, water quality, and fire-fighting resources, and communications interconnection for public safety. These issues were not implicated by the pilots and thus are not addressed in this decision. If there is significant water savings that occurs as a result of these pilots it is possible that there could be some improvement in fire flows in supply constrained areas but this premise was not evaluated in determining whether to approve the pilots.

benefits suggested were in the form of a reduction in injuries to meter readers, reduced vehicle usage and accidents, improvement in responding to outages in real time leading to quicker restoration of street and traffic lights, reduction of outage duration for life-support customers, and increasing electric service availability to safety, health, and law enforcement services.

The approved pilots will not change the way that the AMI infrastructure of any utility presently operates and therefore we find there are no safety implications for approving the AMI pilots.

#### **7. Categorization and Need for Hearing**

Pursuant to Resolution ALJ-301, this proceeding is categorized as quasi-legislative and *ex parte* communications are allowed without restriction or reporting.

#### **8. Comments on Proposed Decision**

The proposed decision of Commissioner Sandoval 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 ~~\_\_\_\_\_~~ [May 23, 2016,](#) [by PG&E, SDG&E, SoCalGas, ORA, UCAN, and CWA,](#) and reply comments were filed on ~~\_\_\_\_\_~~ [by \\_\\_\\_\\_\\_](#) [May 31, 2016, by SDG&E and SoCalGas.](#)

#### **9. Assignment of Proceeding**

Catherine J.K. Sandoval is the assigned Commissioner and Michelle Cooke is the assigned Administrative Law Judge in this proceeding.

**Findings of Fact**

1. The pilots have a total expected energy ratepayer cost of less than \$1.0 million, even assuming that SoCalGas brings on two additional water partners at similar cost to its current partner.

2. SDG&E and SoCalGas each propose budgets of \$150,000 for their pilots. Because SDG&E does not currently have a water partner, this estimate is not tied to the characteristics of the partner water agency. SoCalGas's budget is tied to the specific pilot with San Gabriel, but SoCalGas is open to adding additional water partners.

3. D.14-10-046 establishes the annual utility energy efficiency budgets for 2015 through 2025 and describes the rules for shifting funds across programs and the process for making larger programmatic changes outside the fund shifting rules.

4. Because of the relatively small scale of these pilots and the limited outlay of ratepayer funds, the Commission should not be prescriptive as some parties recommend in establishing the evaluation approach for these pilots.

5. The Commission previously established data privacy requirements in D.11-07-056, D.12-08-045, D.13-09-025, and D.14-05-016.

6. None of the California Association of Small and Multi-Jurisdictional Utilities members have AMI in their California service territories as a result of prior Commission decisions exempting them from smart grid-related and AMI requirements.

**Conclusions of Law**

1. In light of the relatively low ratepayer exposure to costs associated with these pilots, we should approve the pilots of all four utilities.

2. There is no need to reinvent the data privacy requirements for purposes of these pilots.

3. There has been no change in the rationale for why the Commission found separate memorandum accounts were not necessary to fund water-energy nexus projects in D.15-09-023.

4. There are no safety implications for approving the AMI pilots, and the pilots may improve safety by conserving water and energy, and preventing leaks that can damage property, including utility assets.

## **O R D E R**

### **IT IS ORDERED** that:

1. Pacific Gas and Electric Company shall implement a pilot with East Bay Municipal Water District to evaluate the potential to achieve water-energy savings by delivering high-resolution data to end-use customers using advanced analytics and reporting platforms. The pilot cost may not exceed \$400,000 unless Pacific Gas and Electric Company files and receives approval through a Tier 3 Advice Letter.

2. If it is successful in identifying one or more water agency partners, San Diego Gas & Electric Company may implement its proposed pilot to assess the feasibility and scalability of utilizing SDG&E's network infrastructure to transmit water usage data. San Diego Gas & Electric Company may not exceed \$175,000 per water partner, without seeking approval through a Tier 3 Advice Letter, but may partner with as many water partners as possible, within the funding authorized. Contracts with water partners must be signed within 90 days of a final decision to be included in the pilot. The pilot cost may not exceed \$250,000

unless San Diego Gas & Electric Company files and receives approval through a Tier 3 Advice Letter.

3. Southern California Edison Company shall implement a behavioral pilot with the City of Beverly Hills to leverage electric usage data from SCE's existing electric AMI infrastructure with water usage data from Beverly Hills' existing water AMI infrastructure pilot in a single display for presentation to the customer. The pilot cost may not exceed \$50,000 unless Southern California Edison Company files and receives approval through a Tier 3 Advice Letter.

4. Southern California Gas Company shall implement a pilot to gather data from water meters associated with San Gabriel Valley Water Company and transmit that data over the existing Southern California Gas Company network that includes an analytics component for identification and evaluation of potential hot water leaks based on analysis of anomalous gas consumption patterns, and behavioral analytics on the combined gas and water usage data. Southern California Gas Company may add additional water partners, not exceed \$175,000 per water partner, without seeking approval through a Tier 3 Advice Letter, and may partner with as many water partners as possible, within the funding authorized. Contracts with water partners must be signed within 90 days of a final decision to be included in the pilot. The pilot cost may not exceed \$300,000 unless Southern California Gas Company files and receives approval through a Tier 3 Advice Letter.

5. A maximum of \$1.0 million from the \$19.688 million authorized 2016 Energy Efficiency Emerging Technologies Program funds for Pacific Gas and Electric Company, San Diego Gas & Electric Company, Southern California Edison Company, and Southern California Gas Company shall be allocated and

used to establish and implement the water-energy nexus advanced metering infrastructure pilot programs authorized in this decision.

6. Within 30 days of the effective date of this decision, Pacific Gas and Electric Company and Southern California Edison Company shall each file and serve, by Tier 2 Advice Letter, a Program Implementation Plan, [adapted to meet the pilot criteria set forth in the Energy Efficiency Policy Manual v.5.](#), for their approved pilot that includes, but is not limited to, detailed schedules for implementation, proposed budgets, projected savings and cost-effectiveness using the water-energy calculator [as applicable](#), marketing, education, and outreach guidelines, data requirements, measurement and evaluation plan, and control group size.

7. Within 30 days of signed agreements with water partners, San Diego Gas & Electric Company and Southern California Gas Company shall each file and serve, by Tier 2 Advice Letter, a Program Implementation Plan, [adapted to meet the pilot criteria set forth in the Energy Efficiency Policy Manual v.5.](#), for their approved pilot that includes, but is not limited to, detailed schedules for implementation, proposed budgets, [projected savings and cost-effectiveness using the water-energy calculator as applicable](#), marketing, education, and outreach guidelines, data requirements, measurement and evaluation plan, and control group size.

8. All external vendors associated with the approved pilots with access to [energy or water](#) customer data must submit to their partner energy utility's Third-party Security Review (or comparable) process established consistent with the requirements of Decision (D.) 11-07-056, D.12-08-045, D.13-09-025, and D.14-05-016.

9. Starting with the annual report on 2016 energy efficiency activity required by Decision 04-12-048 Ordering Paragraph 13, Pacific Gas and Electric Company, San Diego Gas & Electric Company, Southern California Edison Company, and Southern California Gas Company must include a discrete chapter describing all energy efficiency activities affecting water use, both activities authorized as part of the water-energy nexus and other programs that impact water use across the energy efficiency portfolio, as well as energy and water savings, and spending and spending resulting from these activities. In addition to being filed and served on relevant energy efficiency service lists, the Annual Report must be filed and served on the service list of Rulemaking 13-12-011 through 2020.

10. Bear Valley Electric Service, Liberty Utilities (CalPeco Electric) LLC, and PacifiCorp, d.b.a. Pacific Power are exempt from submitting Advanced Metering Infrastructure integration pilot proposals.

This order is effective today.

Dated \_\_\_\_\_, at San Francisco, California.

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