

Decision 09-01-036 January 29, 2009

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Application of Pacific Gas and Electric Company
and San Diego Gas & Electric Company for
Approval of Their Separate Emerging Renewable
Resource Programs.

(U39E) (E902E)

Application 07-07-015
(Filed July 18, 2007)

**ALTERNATE PROPOSED DECISION DENYING WITHOUT PREJUDICE
EMERGING RENEWABLE RESOURCE PROGRAMS, BUT AUTHORIZING
ASSESSMENT OF THE WAVECONNECT PROJECT**

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**ALTERNATE PROPOSED DECISION DENYING WITHOUT PREJUDICE
EMERGING RENEWABLE RESOURCE PROGRAMS, BUT
AUTHORIZING ASSESSMENT OF THE WAVECONNECT PROJECT**

1. Summary

Today's alternate decision denies in part and without prejudice the proposed Emerging Renewable Resource Program application (ERRP). ERRP would have allowed Pacific Gas and Electric Company (PG&E) and San Diego Gas & Electric Company (Joint Applicants) to expend up to \$30 million and \$15 million, respectively, on external costs for a period of two years. The decision, nonetheless, authorizes assessment expenditures for the WaveConnect project of up to \$4.8 million.

The three projects proposed concurrently with the establishment of ERRP could potentially aid the state in its efforts to increase renewable generation and decrease greenhouse gas emissions. However, with the exception of the WaveConnect project, Joint Applicants failed to persuasively demonstrate that, apart from what is currently provided through the California Renewables Portfolio Standard program, there is a need for ratepayer funding of these early-stage projects at this time.

This decision recognizes the importance of ERRP's proposed objectives, but determines that an ERRP should involve more stakeholders. We find however that there is sufficient justification for PG&E's WaveConnect project. California is singularly situated to harvest this potentially enormous supply of baseload renewable generation. While there are a number of projects moving forward globally, no meaningful ocean energy project is currently in production along California's coast. In order to ensure that ratepayer funds are spent on the most promising and most effective technologies, a means of testing competing options should be established. Accordingly, this decision authorizes PG&E to

spend up to \$4.8 million in funds to cover the expenditures necessary to pursue WaveConnect, described in 5.3, while PG&E continues to examine the project.

This proceeding is closed.

2. RPS Background

The California Renewables Portfolio Standard (RPS) Program was established by Senate Bill (SB) 1078¹ and codified by California Public Utilities Code Section 399.11, et seq. The statute required that a retail seller of electricity such as PG&E purchase a certain percentage of electricity generated by Eligible Renewable Energy Resources (ERR). Originally, each utility was required to increase its total procurement of ERRs by at least 1% of annual retail sales per year until 20% is reached, subject to the Commission's rules on flexible compliance, no later than 2017.

The State's Energy Action Plan I (EAP I) called for acceleration of this RPS goal to reach 20% by 2010.² This was reiterated again in the Order Instituting Rulemaking (R.04-04-026) issued on April 28, 2004,³ which encouraged the utilities to procure cost-effective renewable generation in excess of their RPS annual procurement targets (APT),⁴ in order to make progress towards the goal expressed in the EAP. On September 26, 2006, Governor Schwarzenegger signed

¹ Chapter 516, statutes of 2002, effective January 1, 2003 (SB 1078).

² The Energy Action Plan I was jointly adopted by the Commission, the California Energy Resources Conservation and Development Commission (CEC) and the California Power Authority. The Commission adopted the EAP I on May 8, 2003.

³ http://www.cpuc.ca.gov/Published/Final_decision/36206.htm.

⁴ A Load Serving Entity's (LSE) APT for a given year is the amount of renewable generation an LSE must procure in order to meet the statutory requirement that it increase its total eligible renewable procurement by at least 1% of retail sales per year.

SB 107,⁵ which accelerates the State's RPS targets to 20% by 2010, subject to the Commission's rules on flexible compliance.⁶ During the past four years, California utilities including PG&E and San Diego Gas & Electric Company (SDG&E) have sought to increase the amount of eligible renewable energy procurement to meet RPS targets.

In addition to the 2010 mandate, in 2005 the EAP II set a more ambitious goal to reach 33% renewable energy by 2020.⁷ In 2005, the Governor called for an acceleration of the RPS to 33% by 2020. In 2008, the California Air Resources Board (CARB) adopted the Assembly Bill 32 (AB 32) Scoping Plan, which featured a 33% RPS as a central component of the state's greenhouse gas (GHG) abatement strategy.⁸

3. Procedural Background

Joint Applicants filed Application (A.) 07-07-015 (Application) on July 18, 2007, requesting approval for separate ERRP programs to support the expansion of renewable energy development and undertake specific projects leading to commercialization of identified technologies. PG&E and SDG&E request authorization for ERRP funding of \$30 million, and \$15 million,

⁵ Chapter 464, Statutes of 2006 (SB 107).

⁶ Public Utilities Code Section 399.14(a)(2)(C).

⁷ EAP II, released October 2005, supports and expands the commitment to cooperation among state agencies embodied in EAP I and reflected in the State's coordinated actions since adoption of EAP I.

⁸ Assembly Bill 32 (the Global Warming Solutions Act of 2006) led to a joint CPUC and California Energy Commission proceeding on regulatory strategies for reducing GHG emissions to 1990 levels by 2020. As a result of that proceeding, the Joint Commissions issued a Scoping Plan to the CARB, which included a recommendation of utilizing a 33% RPS mandate as one element of a diversified strategy for GHG emissions reductions in California.

respectively, for two years. PG&E and SDG&E propose that ERRP costs will be recovered in the Energy Resource Recovery Account (ERRA) and charged to bundled service customers, but will not include administrative costs. PG&E and SDG&E expect to coordinate with other utilities, government entities and non-market participants involved in renewable energy technologies and seek joint funding and partnership funding for ERRP projects.

The Application requests that ERRP projects be approved through the Tier I advice letter (AL) process, thereby delegating authority to Commission staff for project acceptability and eligibility for rate recovery. Joint Applicants propose establishing an Emerging Renewable Resources Coordinating Council (ERRCC), which would meet quarterly to facilitate information-sharing, coordination and potential cost-sharing of projects. ERRCC members would include representatives of the California Energy Commission (CEC), the Commission Energy Division (ED), the Division of Ratepayer Advocates (DRA), The Utility Reform Network, Joint Applicants and other California utilities.

The Application proposes that information deemed proprietary by project participants be protected, and that commercially sensitive information about emerging technology or resource projects not be publicly available. PG&E and SDG&E would share such information with their respective Procurement Review Groups and through confidential AL filings.

In addition to establishing separate programs, the Application requests approval of three ERRP projects.⁹

⁹ PG&E proposes to expend up to \$2 million towards the Solar Center and \$6 million towards WaveConnect. WaveConnect consists of two wave power projects off the coast of Northern California. SDG&E proposes to expend up to \$4 million on the Wastewater Biomethane Demonstration (WBD) project in SDG&E's service territory.

DRA timely protested the Application requesting that the proceeding consider whether other sources of ERRP project funding were available. DRA also questioned whether ratepayers should bear all of the costs if utility shareholders and other states benefit from the ERRP studies, and whether ERRP will produce intellectual property that should accrue rights to ratepayers. On August 27, 2007, PG&E and SDG&E responded.

At a September 14, 2007 prehearing conference (PHC), DRA explained that it was obtaining information from the Joint Applicants and was unsure whether it would continue to protest the Application. During the PHC the assigned Administrative Law Judge (ALJ) asked the utilities a series of questions regarding ERRP. On September 24, 2007, PG&E and SDG&E filed a joint response to the ALJ's questions.

On October 11, 2007, the assigned ALJ issued a ruling asking PG&E and SDG&E additional questions about ERRP. On October 23, 2007, PG&E responded (PG&E Response), and on October 26, 2007, SDG&E responded (SDG&E Response).

At a second PHC on October 30, 2007, the Independent Energy Producers Association (IEP) stated its desire to make ERRP research public. IEP also indicated its concern that PG&E's proposed WaveConnect project could be viewed as utility-owned project development. IEP argued that research towards project development may not comply with competitive project solicitations required under Decisions (D.) 04-12-048, D.06-05-016, and D.07-12-052. Also, at the second PHC, Southern California Edison Company (SCE) indicated it would be filing an application similar to A.07-07-015 but with a focus on grid

integration of renewable energy.¹⁰ SCE also stated it was willing to participate in the ERRCC. No party requested an evidentiary hearing. Parties filed briefs and reply briefs on November 19 and 29, 2007, respectively.

The proceeding was submitted on November 29, 2007.

4. ERRP Projects

4.1. Solar Center

PG&E has requested \$2 million to support advanced solar technologies through the California Solar Testing Center at the University of California Merced. This proposed solar testing center would test utility-scale advanced solar technologies, which fall into two categories: solar electric technologies and solar thermal or concentrating solar power (CSP). Solar electric technologies include thin-film photovoltaic (PV) and CSP technologies include dish engine, power tower, and trough. PG&E states that the Solar Center project will assess and provide independent evaluations of the effectiveness of solar equipment systems. PG&E explains there are few such testing facilities in the world, and the two accredited facilities in the United States are experiencing a backlog.¹¹

PG&E's funding request of \$2 million represents 20% of the facility's required budget of \$8 million over the next five years. PG&E proposed to structure the arrangement so that 75% of its \$2 million contribution requires formal commitments for matching funds by other sources.¹² In addition, PG&E expects the Solar Center will charge fees-for-service that will provide additional

¹⁰ SCE filed A.08-03-014 for a Renewable Integration and Advancement Program on March 18, 2008.

¹¹ Accredited solar testing facilities are available in Arizona and Florida, and similar but non-accredited facilities in New Mexico and Colorado.

¹² PG&E's Response, p. 32.

funding. In return for its contribution, PG&E will receive solar testing services from the Solar Center and expert consultation for the next five years. As a result of this project, PG&E expects to receive critical information related to performance, safety and reliability from a broader range of solar technologies than under commercial use today.

We agree this is a project that could help meet RPS goals. PG&E argues that the Solar Center project could reduce the cost of solar technology, accelerate market entry, and demonstrate the potential for commercial applications. Since California leads the country with the most installed megawatts (MW) of solar thermal and solar PV, California ratepayers could benefit from a solar testing facility located within the state that helps accelerate deployment of new, cost-effective technologies. The untapped solar potential in the state is substantial.¹³ On a statewide basis, National Renewable Energy Laboratory estimates the potential of advanced solar thermal technologies to be 877 gigawatts of capacity, or over 2 million gigawatt hours (GWh).¹⁴

The center could benefit all three investor-owned utilities (IOUs) since they all have a good solar resource within their territories. Other publicly-owned utilities can benefit as well since the solar resource is distributed throughout the state. The information provided by the solar testing center could help the IOUs and other utilities exploit the sun's potential and help the state meet its long-term renewable and GHG goals. Despite these potential benefits, we are not persuaded that there is a significant need for public funding in this

¹³ See, www.seia.org/yearinreview.php, p. 5.

¹⁴ *Id.*, p. 16.

area given the significant amount of private equity being invested in solar research at this time.

4.2. Wastewater Biomethane Demonstration Project

SDG&E has requested \$4 million to fund the WBD project that would test and commission biogas cleaning equipment at one or more installations in order to produce pipeline quality biomethane. SDG&E states this project is intended to upgrade biogas from 55%-75% methane to 97% methane and also remove trace components so that the biogas can be used in natural gas pipelines. SDG&E notes that wastewater biogas has been demonstrated in Europe, but not commercially in California. While California can learn from Europe's experience, the technology is not completely transferable since California has different air quality standards and the composition of the wastewater is site-specific. SDG&E explains that the WBD project will further the potential for cost reductions due to increased economies of scale, and address permitting, quality control and monitoring standards. SDG&E also points out that the WBD project will utilize an existing resource, help meet GHG targets, and can be used in existing natural gas-fueled generators.

SDG&E estimates that there are 20 potential sites within SDG&E and Southern California Gas Company service territories that can use this technology. Depending on the size of the plant, the total potential at these twenty sites is between 10-100 GWh¹⁵ of Electric Energy Equivalent.¹⁶ According

¹⁵ SDG&E's Response, p. 8.

¹⁶ Electric Energy Equivalent is calculated using a combined cycle heat rate of 7000 British thermal units (Btu) per kilowatt hour.

to the CEC's PIER preliminary roadmap for development of biomass in California,¹⁷ the statewide potential for wastewater biomethane is approximately 10 trillion Btu, or approximately 1,400 GWh of Electric Energy Equivalent.

While the WBD project could potentially help the state meet RPS and GHG goals, applicants have failed to demonstrate that there is a need for ratepayer funding of this kind of early stage research for this technology at this time.

4.3. WaveConnect

PG&E proposes to document the feasibility of a facility that converts wave energy into electricity by using wave energy conversion (WEC) devices in the open ocean adjacent to PG&E's service territory. PG&E explains that WEC devices have been tested in Europe and Hawaii but have not been demonstrated for commercial viability. PG&E believes that wave power is a viable energy source along California's coast, and received preliminary Federal Energy Regulatory Commission (FERC) permits in March 2008.

PG&E proposes that WaveConnect will be funded in three stages. The first stage includes all of the feasibility and licensing work for the two wave sites and is estimated to cost \$6 million over three to five years. These costs include fees for consultants, legal services, engineering and technical consultants, environmental studies, design and planning for WEC devices and costs for the deployment of a limited number of WEC devices for testing. The second stage, estimated to cost between \$15-\$20 million per site over two to four years, includes development of infrastructure, undersea cabling, and greater numbers of WEC devices.¹⁸ During Stage 3, the most promising WEC devices will be

¹⁷ CEC-500-2006-095 p. 10.

¹⁸ PG&E's Response filing, p. 41.

deployed in larger quantities up to 40 MW per site and connected to the grid. PG&E does not have a cost estimate for Stage 3. In the Application, PG&E is only requesting funding for Stage 1. PG&E states it will request funding for Stages 2 and 3 either in separate applications or through subsequent ERRP AL filings. A description of proposed activities for Stage 1 is provided below:

Table 2: Proposed WaveConnect activities for Stage 1, Years 1-5¹⁹

Year 1 Initial Assessment	Year 1 - continued Detailed Assessment	Years 2-3 License Application Development	Years 4-5
Begin discussions with stakeholders	Continue detailed discussions with stakeholders	Continue discussions with stakeholders	Continue environmental and other studies to support license application
Begin competitive selection process	Conduct detailed resource analysis	Finalize technology selection and design	Anticipate FERC development license granted
Begin wave resource studies	Identify and quantify site constraints	Perform technology testing	
Begin initial siting analysis	Develop construction and interconnection strategy for potential sites	Continue environmental and other studies needed for license activities	
Identify preliminary shortlist of deployment sites within permitted area	Begin WEC device evaluation	File license application	
Identify preliminary studies and begin preliminary work on those studies	Continue and expand environmental studies	Possibly install limited number of test devices to support licensing activities	
	Develop energy yield analysis		
	Develop initial financial models		
	Compile information for and file NOI/PAD		

¹⁹ *Id.*, adapted from information provided on pp. 33-34.

IEP contends that WaveConnect should be denied ERRP funding. IEP argues that PG&E's WaveConnect project would provide project development costs and give PG&E an unfair advantage over independent power producers in a competitive solicitation. IEP recommends that if PG&E wishes to pursue wave energy, it should do so through a competitive wave energy RPS solicitation. In response, PG&E argues that the results of the WaveConnect project will not be known for three to five years, at which time a commercial plant may or may not be proposed. Furthermore, PG&E notes the immediate aim of WaveConnect is not to develop a commercial generating facility to compete against other project developers, but to evaluate the feasibility of extracting energy from ocean waves.

PG&E states that wave energy has tremendous potential as a renewable energy source since California has over 750 miles of coastline, or over 37,000 MW of potential, of which an upper limit of about 20% could be converted into electricity. PG&E estimates that an average 7,460 MW might be expected to generate up to 65 terawatt hours (TWh) per year from California's ocean waves.

²⁰ California's 2005 total energy generated was 288 TWh. Thus, wave energy could potentially provide 23% of California's current electricity consumption.²¹ It should be noted, however, that this estimate is an upper limit, since environmental impacts, land-use, and grid interconnection constraints will likely impose limits on development. The wave potential along the 600 miles of Pacific Ocean coastline in PG&E's service territory is also very good, and has a higher wave energy climate than further south.²²

²⁰ PG&E's Response, p. 10.

²¹ *Id.*

²² *Id.*, p. 13.

Other states and countries are in various stages of testing wave energy projects. The State of Oregon has also begun exploring wave energy projects.²³ While these developments suggest wave energy may become a more common energy source, the question remains as to whether we should wait until other possible wave energy developers enter the market, or approve the WaveConnect project as a means of furthering wave energy development now. SB 1078, SB 107, and AB 32 encourage reasonable and cost effective means to increase renewable development and mitigate GHG emissions. Furthermore, as proposed by PG&E, the commercial development of wave energy is not an immediate goal but rather a lengthy study necessary to prove or disprove the potential for wave energy from various WEC devices. On that basis, we believe it important to begin expanding our knowledge and understanding of whether wave energy is a reasonable means for achieving these goals now rather than waiting to see how this market may develop.

In the October, 2008 Resolution E-4196, which rejected a PG&E contract for a 2 MW wave project, the Commission underscored the importance of further study in the area.²⁴ Unlike that proposed wave energy contract, WaveConnect would provide the Commission with a means of testing the relative viability of wave energy technologies. The PG&E WaveConnect project would provide useful information as to the commercial viability of wave energy. We are particularly interested in investigating the potential of a promising renewable option such as ocean energy as a renewable baseload generation, which California is particularly well-situated to cultivate.

²³ PG&E Response, p. 42.

²⁴ See Res E-4196 at 11.

As noted previously, in March 2008, FERC granted a preliminary license to the WaveConnect project. If the project is delayed, the FERC licensing timeline could be disrupted. The Commission should take steps to ensure that it does not become an unnecessary obstacle to exploring California's potentially enormous ocean energy resources.

We will therefore conditionally authorize PG&E to begin the WaveConnect project. However we are less certain about the WaveConnect project as proposed over the many years outlined in the Application and WaveConnect information provided in PG&E's Response. We will allow PG&E to move forward with the tasks to complete the goals and milestones in Stage 1, including steps necessary to file the Pre-Application Document by March 2009, which is the next milestone in the FERC licensing process. While PG&E is conducting these activities, ED will review the other activities proposed in Stage 1 from years two through five. As a result, we authorize PG&E to spend up to \$4.8 million in funds to cover the expenditures necessary to complete the tasks for Stage 1.

In addition to seeking funding for Stage 1, PG&E indicated that it would seek funding for Stages 2 and 3 through subsequent AL filings or through applications.

4.4. WaveConnect Costs Should Be Recorded in the Appropriate Utility ERRA

WaveConnect expenditures should be recorded in the ERRA, and a new line item be added to the Electric Preliminary Statement Part CP-Energy Resource Recovery Account authorizing a debit or credit entry equal to actual WaveConnect expenses. This method of accounting for WaveConnect costs will provide transparency in tracking WaveConnect actual expenditures against the budgeted amounts and we will adopt it.

PG&E also requests that in the event that any of the outputs from WaveConnect, such as site-development work products, facilities or equipment are later used to support a commercial project owned by PG&E, the owner of the project will be required to acquire the material at the higher cost (or appropriate share thereof) or market value, and the proceeds would be credited to the ERRA account.

Although we agree that WaveConnect work products, facilities or equipment should be identified and included in appropriate accounts, it is premature to adopt accounting for these assets. Instead, we will require PG&E to file an Application with the Commission denoting the specific WaveConnect-related assets to be disposed of and their potential value.

5. Conclusion

As conceived, the design of ERRP is too narrow, and fails to include all the relevant market participants, including independent power producers. For all of the foregoing reasons, we deny the request of Joint Applicants to establish ERRP as discussed herein. While the Commission has determined that the proposed program is too limited and could therefore result in unnecessary administrative costs and burdens, this decision recognizes the potential benefits that could accrue from a better designed program and does not foreclose a future role for the Commission in enabling projects that will allow the state to meet its RPS and GHG goals.

We recognize that all three projects discussed above could potentially aid the state in its efforts to meet both RPS and GHG goals. However, neither PG&E nor SDG&E have convincingly demonstrated that there is a need for ratepayer funding of the Solar Center and the WBD Project proposals at this time.

6. Categorization and Need for Hearings

In Resolution ALJ 176-3196, July 26, 2007, the Commission preliminarily categorized this Application as ratesetting, and preliminarily determined that hearings were not necessary. Although DRA protested the Application, parties agreed that hearings were unnecessary, and that issues should be addressed through briefs. Given this status, an evidentiary hearing is not necessary and the preliminary determinations made in Resolution ALJ 176-3196 with regard to categorization and hearings are affirmed.

7. Comments on Alternate Proposed Decision

The alternate proposed decision of Commissioner Simon 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 December 8, 2008, and reply comments were filed on December 15, 2008 by PG&E, SCE, SDG&E, IEP, and DRA.

8. Assignment of Proceeding

Timothy Alan Simon is the assigned Commissioner and the author of this alternate proposed decision.

Findings of Fact

1. WEC devices have been tested in Europe and Hawaii but have not been demonstrated for commercial viability in California.
2. California has potentially large ocean energy resources.
3. There is a need to test the viability of competing ocean energy technologies.
4. The results of the WaveConnect Stage 1 will not be known for three to five years.

5. Legislation encouraging renewable power and reductions in GHG strongly support all reasonable cost effective means to achieve these ends, including consideration of wave energy.

6. WaveConnect is a lengthy study necessary to prove or disprove the potential for wave energy from various WEC devices.

7. Accounting for WaveConnect costs through the ERRA will provide transparency in tracking actual expenditures against budgeted amounts.

8. It is premature to adopt an accounting procedure for WaveConnect work products, facilities or equipment.

9. ERRP is too narrowly designed.

Conclusions of Law

1. SB 1078 established the RPS program with a stated intent of attaining 20% renewable energy by 2017. SB 107 codified the acceleration of the 20% renewable energy target to 2010.

2. IOUs are responsible for RPS procurement.

O R D E R

IT IS ORDERED that:

1. Pacific Gas and Electric Company (PG&E) is not authorized to establish an Emerging Renewable Resource Program (ERRP) as discussed herein and spend up to \$30 million over a period of two years on ERRP projects approved through Tier 3 Advice Letter (AL) filings with the Commission's Energy Division (ED).

2. San Diego Gas and Electric Company is not authorized to establish an ERRP as discussed herein and spend up to \$15 million over a period of two years on ERRP projects approved through Tier 3 AL filings with ED.

3. PG&E is not authorized to undertake the University of California Merced Solar Center (Solar Center) ERRP project, and spend up to \$2 million on the Solar Center ERRP project.

4. SDG&E is not authorized to undertake the Wastewater Biomethane Demonstration (WBD) ERRP project, and spend up to \$3.2 million for the WBD ERRP project.

5. PG&E is authorized to undertake its wave energy (WaveConnect) project, and spend up to \$4.8 million on the WaveConnect project to complete activities for Stage 1.

6. PG&E may request further funding for WaveConnect beyond Stage 1 activities through Application.

7. Application 07-07-015 is closed.

This order is effective today.

Dated January 29, 2009, at San Francisco, California.

MICHAEL R. PEEVEY
President
DIAN M. GRUENEICH
JOHN A. BOHN
RACHELLE B. CHONG
TIMOTHY ALAN SIMON
Commissioners