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Witness: Ron Goodman

Application of Southern California Gas Company (U904G) to establish a Combined Heat and Power and Distributed Energy Resources Tariff

Application 14-08-XXX
(Filed August 8, 2014)

CHAPTER II

SERVICES, CUSTOMER DEMAND AND BENEFITS

PREPARED DIRECT TESTIMONY OF

RON GOODMAN

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

August 8, 2014

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PREPARED DIRECT TESTIMONY OF

RON GOODMAN

I. INTRODUCTION

The purpose of this testimony is to provide a detailed description of Southern California Gas Company's ("SoCalGas") proposed Distributed Energy Resources Services Tariff, an overview of the current Combined Heat and Power ("CHP") industry, benefits of the proposed service as well as other support for the proposed tariff.

SoCalGas believes there are several compelling reasons for the California Public Utilities Commission ("CPUC" or "Commission") to approve its proposed Distributed Energy Resources Services Tariff service including the following: 1) the state has clearly articulated its goals relating to increased adoption of CHP to support its greenhouse gas ("GHG") emission reduction goals; 2) customers have regularly inquired[1] about SoCalGas' ability to help them reduce their utility costs and increase overall efficiency; 3) a small sampling of potential customers have expressed interest in a SoCalGas Distributed Energy Resources Services Tariff offering, indicating that it would increase their level of confidence with these energy systems and potentially impact their decision to adopt sooner than later; 4) SoCalGas is viewed as a trusted provider of gas related services which could help remove certain barriers in the adoption of advanced energy systems;[2] 5) the proposed Distributed Energy Resources Services Tariff

[1] An inquiry is defined as an email or phone call from a customer or developer who is seeking general information about distributed energy systems.

[2] Southern California Gas Company received the highest ranking among large utilities in the West region of the U.S. in the proprietary J.D. Power and Associates 2014 Gas Utility Business Customer Satisfaction Study. Study based on online interviews ranking 54 brands in the Western U.S. (AZ, CA, CO, ID, MT, NV, NM, OR, UT, WA). Proprietary study results are based on experiences and perceptions of consumers surveyed in May-July 2013 and October-December 2013.

provides expanded business opportunities to new and existing equipment and service providers; and 7) the proposed tariff benefits ratepayers without the requirement for subsidy; shareholders provide all funds and absorb the risk of ownership.

The testimony in Chapter I discussed how SoCalGas' proposed service is consistent with, and supportive of, existing state law and Commission policy relating to increased adoption of distributed energy resources and CHP. Chapter III provides details concerning the cost tracking procedures and regulatory treatment that will track, record, and segregate costs associated with SoCalGas' proposed Distributed Energy Resources Services Tariff, ensuring that ratepayers are reimbursed for all utility activities funded through general rates that are used in the delivery of the tariff service by way of tracking and balancing accounts.

II. OVERVIEW OF PROPOSED SERVICE

SoCalGas requests Commission approval in this Application to establish the Distributed Energy Resources Services Tariff (Attachment A: Proposed Tariff GO-DERS) in order to encourage accelerated deployment of clean and efficient distributed energy resources facilities which reduce carbon emissions and lower customer operating costs. These systems are fueled in whole or in part by natural gas, biogas, or other gaseous fuels, (e.g., hydrogen or hythane). Examples of such technology applications are CHP, fuel cells, Waste Heat to Power (WHP), and mechanical drive applications. A brief description of the technologies SoCalGas plans to provide under the Distributed Energy Resources Services Tariff is as follows:

Combined Heat and Power: CHP generates electricity at a customer facility, and recovers and utilizes waste heat to create hot water, steam, or process heat.

Fuel Cells: Fuel cells create electricity by way of an electrochemical reaction between hydrogen and the oxygen in ambient air. The hydrogen fuel can be created from various feed

stocks including natural gas and biogas. Fuel cells can be configured for CHP as well as electric only generation. They feature higher electrical efficiencies and lower emission levels when compared to existing combustion technologies.

Waste Heat to Power ("WHP"): WHP, sometimes referred to a 'bottoming cycle CHP', is designed to capture residual (or 'waste') heat from combustion equipment (such as a boiler, furnace or any remaining useful heat from a CHP system) and produce electricity using off the shelf packaged units or custom-engineered equipment configurations. WHP systems increase system efficiency and reduce carbon emissions since electricity generated on-site partially offsets the need for electricity delivered by the grid.

Mechanical Drives: Mechanical drives are a subset of CHP in that, instead of generating electricity, they produce mechanical (or shaft) work/horsepower for water-pumping, gas-compression or other applications. Similar to CHP, mechanical drives recover waste heat to produce another useful byproduct (such as hot water, steam, etc.).

Under the proposed tariff, the customer will have the ability to utilize and potentially combine the aforementioned technologies in order to create a microgrid that will be designed, installed, owned, operated, and/or maintained by SoCalGas. SoCalGas does not propose to own the energy provided to or produced from any of the systems, including microgrids.

The proposed Distributed Energy Resources Services Tariff will be available to all customer classes and is structured so that participating tariff customers pay for all costs. Tariff customers will pay a negotiated service fee that captures, at a minimum, the full system cost, including both capital and O&M over the contract term. Agreement to provide service is at SoCalGas' discretion and will depend on non-discriminatory factors such as safety, system capacity, SoCalGas resource availability, technical feasibility, and acceptability of commercial

terms. The Distributed Energy Resources Services Tariff is a fully elective, optional tariff service and will not be tied to any other tariff or non-tariff services the customer may receive from SoCalGas (such as transportation or commodity services) nor change the manner in which such service is delivered.

When a customer expresses a clear interest in the Distributed Energy Resources Services Tariff, SoCalGas will begin tracking and charging costs to a shareholder funded internal order. SoCalGas will then conduct a feasibility analysis with the intent of determining the technical and economic feasibility of the design, installation, operation and maintenance of the facility as provided in the Feasibility Analysis Agreement ("Feasibility Agreement") (Appendix B: Feasibility Analysis). Pending the outcome of the Feasibility Analysis, and for those customers who elect to proceed with the tariff service, SoCalGas will design, install, own, operate, and/or maintain the distributed energy resources facility on or adjacent to the tariff service customer's premises and charge the tariff service customer the negotiated price of providing the service under a long term (10 to 20 year) service agreement, identified as the Distributed Energy Resources Services Agreement ("Services Agreement") (Appendix C: Services Agreement). SoCalGas is not proposing to charge any of the costs of this service to its general ratepayers. SoCalGas' role will be to own, operate, and/or maintain the equipment as contractually specified by the tariff service customer in the Services Agreement. SoCalGas plans to contract with third party technology service providers and /or utilize SoCalGas personnel, who will perform the design, construction, installation, day to day operation, and maintenance of the distributed energy resources facility.

III. OVERVIEW OF CHP/DER IN CALIFORNIA

A. Current Situation

As described in Chapter 1, the AB 32 Scoping Plan established a target for new CHP installations totaling 4,000 MW statewide by 2020. The rate of CHP adoption in California has been stagnant for some time (see Figure 1 below),[3] and according to a California Energy Commission ("CEC") study, the state is expected to only develop an additional 1,499 MW of CHP installed capacity by 2020 in its most conservative, base case (or 'business as usual') scenario, less than half the goal as envisioned by AB 32.[4]

Barring a new technology breakthrough that can dramatically lower the cost of new CHP system capacity, it appears highly unlikely that if California maintains its current CHP installation rate, California will be able to achieve its CHP policy goal by 2020.

California experienced a boom of CHP development in the 1980's and 1990's under the Public Utility Regulatory Policies Act (PURPA) which encouraged electric utilities to buy generation from Qualified Facilities with CHP systems. The CHP market has been stagnant since the end of PURPA despite the inception of several programs designed to increase adoption.

[3] ICF CHP Installation Database, 2012.
[4] IBID. Table ES-2.

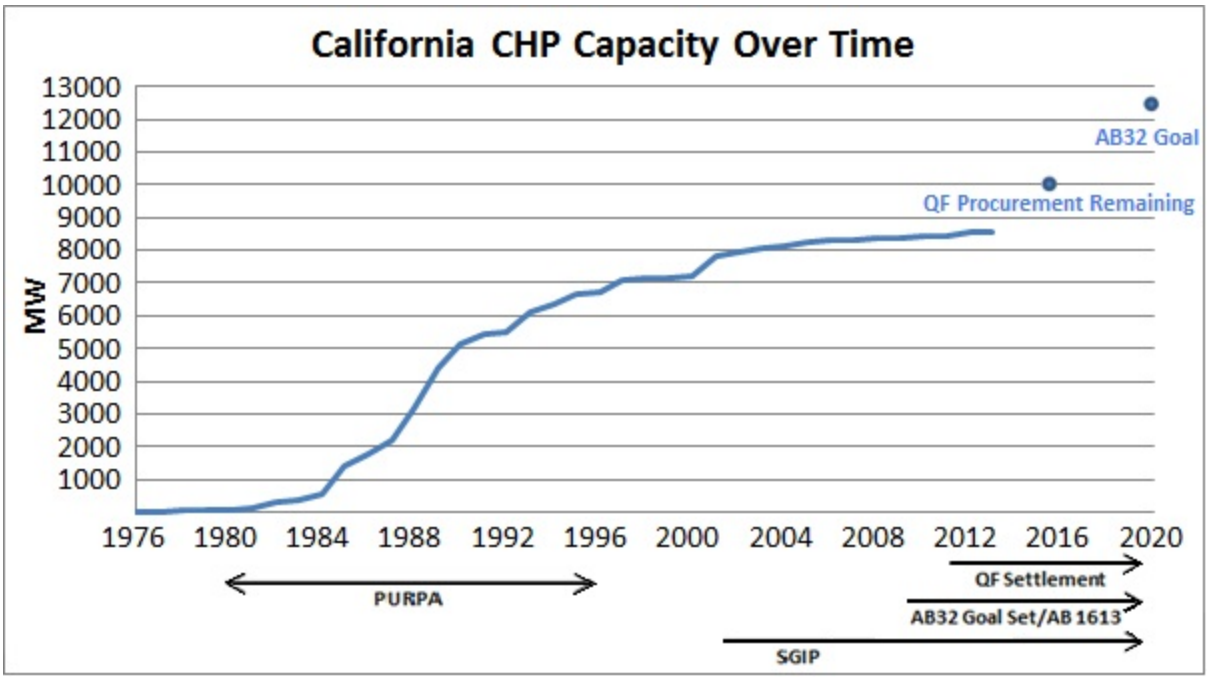

Figure 1: Annual Capacity Additions of CHP in California[5]

SoCalGas' Distributed Energy Resources Services Tariff can stimulate an increase in CHP adoption rates by providing an additional option to customers considering the installation of CHP and can thereby help close the gap between the ICF forecasted growth rate for CHP and the state's goals. The projected impact[6] of the Distributed Energy Resources Services Tariff over ICF's Base Case Adoption scenario[7] is shown in Figure 2 below.

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[5] PURPA is the Public Utility Regulatory Policies Act which encouraged electric utilities to buy excess generation from Qualified Facilities with CHP systems. SGIP is the Self Generation Incentive Program which provides a monetary incentive to CHP systems (among other self-generation technologies) which meet certain performance and size characteristics AB32 scoping plan set a goal of 4000 MW of new CHP in CA by 2020. AB 1613 was passed to encourage electric utility procurement from smaller CHP systems. QF settlement is a continuance of PURPA with a 3000 MW CHP procurement goal for electric utilities.

[6] SoCalGas internal forecast assumes 10% capture of the medium case adoption forecast by 2020 and adding 5 MW each year afterwards.

[7] California Energy Commission, "Combined Heat and Power: Policy Analysis and 2011-2030 Market Assessment", February 2012, prepared by ICF International, CEC-200-2012-002. Base case forecast for SoCalGas territory was calculated by taking the summation of LADWP, SCE, and Other South territories, Page D1-D7.

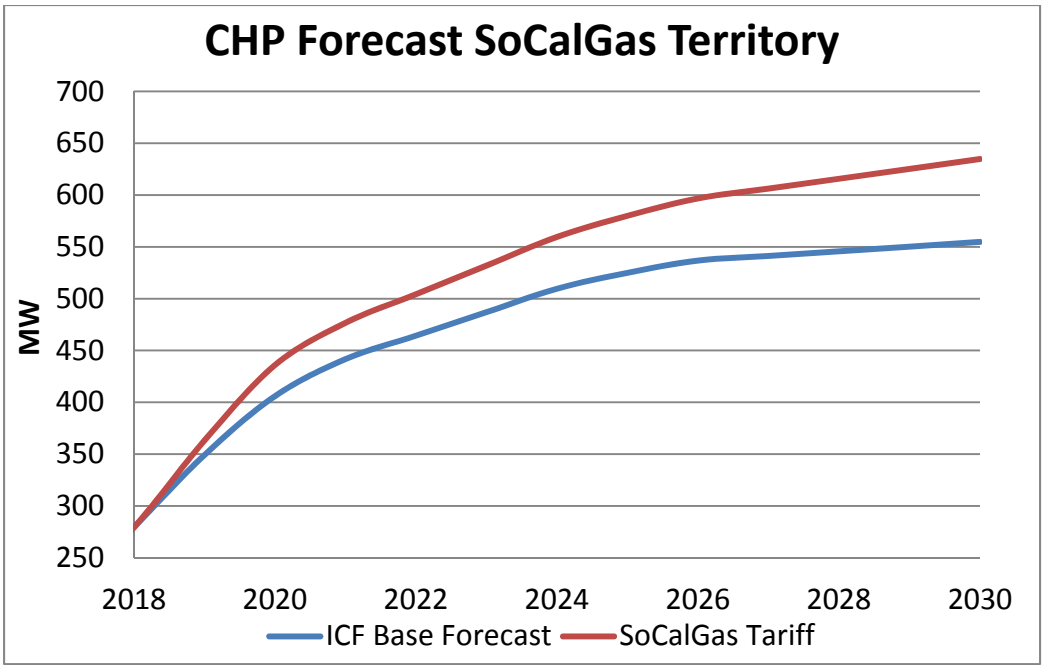

Figure 2: CHP Adoption Forecast in SoCalGas Territory

B. Opportunity for Growth

Some of the technological applications SoCalGas plans to provide as part of the Distributed Energy Resources Services Tariff are listed below and each has its own opportunity for growth.

1) Combined Heat and Power

CHP, otherwise referred to as 'cogeneration,' generates electricity on-site (using a combustion turbine, microturbine, internal combustion engine or fuel cell) and recovers waste heat that is used to produce another byproduct (such as hot water, chilled water, steam, et. al.). A properly-designed CHP system increases overall efficiency and reduces carbon emissions. The potential for tariff adoption can be divided into several distinct customer classes:

- Residential - single family dwellings and multifamily complexes which have modest heating loads such as domestic hot water and space heating. A CHP system could

eliminate top tier electricity costs while providing all hot water. Residential Micro-CHP is a rapidly emerging technology. The Ene-Farm program in Japan promotes the adoption of residential micro CHP fuel cell units. 34,000 Ene-Farm units have been installed in Japan by the end of 2012. The goal is to have 5.3 million units installed by 2030.[8] Gas utility involvement has been crucial for the success of this program and Japanese gas utilities have been involved in technology development, financing, marketing, and distribution. The Distributed Energy Resources Services Tariff filing will provide the regulatory framework for SoCalGas to become directly involved in customers choosing to install residential fuel cells.

- Commercial – the bulk of the commercial opportunities are in smaller offices and other facilities with relatively high heating, ventilation, air conditioning ("HVAC") and lighting loads. Restaurants and laundromats have sizable water heating loads. Larger office buildings/towers typically have consistent water heating loads - in some cases, waste heat from a CHP system could be used to produce chilled water for the HVAC system.
- Industrial - Industrial users have a variety of electricity, heat and/or cooling energy needs. These customers typically have a relatively high electric load and, in most cases, a high thermal load as well (e.g., metal processing/forging, food processing, etc.).
- Institutional - large complexes and/or campus environments with multiple buildings and relatively high electricity, cooling and thermal loads. Examples are hospitals, prisons, universities, and government facilities.

[8] http://www.fuelcellinsider.org/?p=1388, http://altenergymag.com/emagazine/2013/10/residential-scale-power-generation-/2162.

- Modern Greenhouses - facilities requiring high thermal loads to maintain optimum year round growing conditions. CHP offers growers the benefits of electricity, thermal heat, and CO_2 for photosynthesis, making these applications particularly attractive.
- Repower Opportunities – approximately 3000 MW of existing CHP in the SoCalGas service territory has been operating in excess of 20 years.[9] This equipment is approaching its end of useful life, thus providing an opportunity to replace antiquated equipment with new, state of the art systems that feature increased efficiency, reliability, and emissions compliance. These customers are already familiar with CHP and rely on it to maintain operational efficiency. Through the Distributed Energy Resources Services Tariff, SoCalGas can assist these customers with updating their facilities and realizing increased efficiency, reliability, additional GHG savings, and compliance with AQMD emissions guidelines.

Table 1 summarizes the current installed base of CHP capacity in SoCalGas territory by customer class:[10]

Customer Class	<1 MW	1-20 MW	> 20 MW	Total MW
Industrial	14	231	2,944	3,189
Institutional	27	180	321	521
Commercial	45	97	-	141
Multi-family residential	6	4	-	17
Total	92	512	3,264	3,868

Table 1: Existing Installed CHP Capacity in SoCalGas Territory

The existing on-site technical potential for new CHP in SoCalGas territory is summarized in Table 2 (excluding the potential for electricity exports):[11]

[9] ICF CHP Installation Database, 2012.
[10] ICF CHP Installation Database, 2012.

Customer Class	<1 MW	1-20 MW	> 20 MW	Total MW
Industrial	584	983	185	1,752
Institutional	413	809	256	1,479
Commercial	913	401	27	1,340
Multi-family Residential	82	38	-	120
Total (MW)	1,991	2,231	468	4,690

Table 2: Total Technical Potential of CHP in SoCalGas Territory

According to the figures above, 84% of the existing CHP capacity in SoCalGas territory resides in large systems with site capacities greater than 20 MW. SoCalGas expects that the proposed tariff will likely be most attractive to CHP projects sized below 20 MW. CHP projects under 20 MW represent about 16% of the existing, combined total for CHP but 90% of the potential for tariff adoption.

SoCalGas service territory contains the largest amount of CHP technical potential in the state and the majority of this technical potential resides in systems below 20 MW in size.[12] The Distributed Energy Resources Services Tariff was developed to directly address this untapped potential in order to advance state goals. Technical potential by service territory is summarized in Table 3.

[11] California Energy Commission, "Combined Heat and Power: Policy Analysis and 2011-2030 Market Assessment", February 2012, prepared by ICF International, CEC-200-2012-002, Appendix C. SoCalGas territory **was** calculated by taking the summation of LADWP, SCE, and Other South territories.
[12] IBID. Page 47. SoCalGas territory was calculated by taking the summation of LADWP, SCE, and Other South territories.

Utility Region	<1 MW	1-20 MW	>20 MW	Total
SoCalGas	1,991	2,231	468	4,690
PG&E	1,468	1,589	297	3,354
SDG&E	325	321	46	692
SMUD	124	182	21	327
Other North	80	117	0	197
Total (MW)	3,986	4,440	833	9,259

Table 3: Technical Potential of CHP by Utility Service Territory

Small to medium sized customers are most likely to benefit from the proposed tariff since capital resources are more constrained. These customers also have less knowledge on energy systems and are less willing to operate energy equipment when compared to larger customers. Because SoCalGas has a reputation as a trusted energy service provider, the customer will likely see additional value in the tariff service. SoCalGas will also work closely with existing service providers in order to stimulate growth in the distributed energy industry.

2) Fuel Cell

Fuel cell systems use an electrochemical reaction to create electricity. They operate at higher efficiencies than combustion technologies and lower GHG emission levels. Fuel cells offer electricity at higher quality and reliability than grid services which is appealing to the following customer classes:

- Data Centers – operations require high quality, reliable electricity and these customers are willing to pay a premium in order to ensure their data is protected.
- Industrial – certain businesses require high electrical reliability as interruptions in service could cause a loss of inventory or disruption to operations.

3) Waste Heat to Power (WHP)

Waste Heat to Power systems convert heat streams into electricity. Applications with significant potential for the Distributed Energy Resources Services Tariff can be divided into three customer classes:

- Industrial – processes produce medium to high temperature waste heat that would be otherwise vented to the atmosphere, providing an opportunity to convert the waste heat into electricity using steam turbines, organic Rankin cycle, or emerging solid state energy conversion technologies.
- Landfills – biogas powered onsite electric generation facilities may produce sufficient waste heat to generate additional electricity.
- CHP/Mechanical Drives - many applications lack thermal demand to take advantage of all waste heat recovered from an engine or turbine. For those applications with a high capacity factor, WHP may be cost-effective.

4) Mechanical Drive

Mechanical drive is a subset of CHP where instead of generating electricity, the system provides mechanical work. Like CHP, the system also provides waste heat which can be utilized in a number of ways. Customer classes requiring mechanical drives are:

- Municipal water pumping - water pumping stations use electricity to deliver large volumes of water and are often located in remote locations. Natural gas engines reduce site electric demand from the grid by providing mechanical drive pumping power. In some cases, it may be feasible to capture waste heat to produce electricity or utilize both the heat and CO2 from the exhaust stream in an algae farm which can provide agricultural feedstock, nutrachemicals, or biofuel.

- Desalination plants - typically require the use of very large electric motors for water pumps. Possible uses for waste heat include additional electrical production, feed water preheating, and evaporating a portion of the concentrate into salt blocks.
- Oil & Gas production – Extractive operations provide great potential for CHP/distributed energy resources derived improvements in efficiency, productivity, and emissions reductions while also offering underground capacity for carbon sequestration. Diesel engines can be replaced with cleaner burning natural gas engines.[13] The waste heat and CO2 may be utilized in enhanced oil recovery operations.
- Commercial & Industrial - mechanical drive systems can play various roles in facility energy management systems by reducing operating costs. Mechanical drives can reduce the impact of a potential electrical grid outage and reduce demand charges.[14] The most commonly applications include air compression, chilled water, refrigeration and water pumping.

C. Elements of the CHP Industry

In general, the cost and performance of CHP technologies drive their economic value, competitiveness and ultimately, adoption. CHP systems displace purchased electricity and boiler fuel with self-generated power and thermal energy that is recovered and utilized. Ideally, the value of reduced electricity costs more than offsets the incremental system cost, fuel cost, and other operating and maintenance costs throughout the life of the CHP system. There are, however, several barriers faced by our customers, who may want to choose CHP, which

[13] http://www.eia.gov/tools/faqs/faq.cfm?id=73&t=11.
[14] Through replacing electrically driven chillers.

discourage them from actively seeking or ultimately pursuing CHP. This barrier induced reluctance stands in the way of accelerated deployment of CHP. Reduction or minimization of these barriers is directly addressed by SoCalGas' proposed Distributed Energy Resources Services Tariff:

- High equipment capital cost: Customer pays SoCalGas on a monthly basis throughout the life of the agreement and the upfront costs are funded by SoCalGas.
- Technology risk: SoCalGas plans to mitigate risk to the customer by contracting with experienced providers and using best practices maintaining the system.
- Unwillingness to operate energy systems: SoCalGas plans to operate the energy system and provide agreed upon energy outputs.
- Electric utility interconnection: SoCalGas plans to contract with experienced providers who have done multiple successful interconnections.
- Air quality emission regulations: SoCalGas plans to use its AQMD experience in getting systems permitted.

Despite these challenges, the opportunity for expanded deployment of CHP in SoCalGas service territory is significant. More than half of California's CHP technical potential resides in SoCalGas' service territory.[15] SoCalGas believes that its proposed Distributed Energy Resources Services Tariff can help stimulate adoption of CHP and other innovative energy systems which enable participating customers to increase efficiency and lower GHG emissions. SoCalGas is well qualified to provide the proposed services described under the proposed

[15] IBID. Page 47.

Distributed Energy Resources Services Tariff. The utility routinely advocates the benefits of innovative energy solutions through direct customer contact, vendor discussions and educational events (e.g., seminars and industry showcase events held at SoCalGas' Energy Resources Center in Downey, CA). SoCalGas is recognized as a credible energy services provider with proven expertise in identifying and analyzing its customers' needs and energy use profiles, assessing the merits of various technology/product options and recommending the best solution for a specific customer application. Customers routinely express concerns about the high capital cost, reliability and durability of expensive energy solutions and, consequently, are often hesitant to pursue the opportunity, particularly if there is a long payback period. SoCalGas' willingness and ability to take responsibility for construction, operation, maintenance, and system reliability in the form of a shareholder funded program is expected to mitigate the concerns of many customers and serve as a catalyst for accelerated customer adoption of advanced, innovative energy solutions for the benefit of participating customers, ratepayers, and the environment.

The proposed Distributed Energy Resources Services Tariff will be available to all customer classes, but will not necessarily be a good fit for all customers. The feasibility of various CHP/distributed energy resources solutions depends on a number of factors including a customer's class, size, gas and electric energy demand/profile, existing plant equipment/expansion plans, site location/utility infrastructure, technology options under consideration, and the customer's desire to increase overall efficiency.

By encouraging investor-owned utilities to become investors in CHP through actions such as approving SoCalGas' Distributed Energy Resources Tariff, the Commission can actively provide tangible, vital support for increased adoption of CHP. As articulated by the CEC, "allowing the utilities to play a larger role in CHP development – working with developers,

customers and other industry participants to create projects that meet both the utility's system needs as well as a facility's on-site needs — will be necessary if the role that CHP plays in the electric grid is to grow."[16] While the CEC may have been envisioning electric utilities in this statement, the same logic applies to gas utilities that could be in a better position to play a role in CHP development.

Customer initiated investment in CHP and other innovative energy systems, from the customer's point of view, can be a very complicated and daunting undertaking, particularly for relatively smaller customers where management of energy costs is not considered to be a high priority compared to the energy profile of a large energy-intensive industrial plant. Prospective DER/CHP customers must consider several factors when evaluating the merits of actually constructing and using a CHP plant including: 1) the uncertainty of both natural gas and electricity rates; 2) gas and electric usage; 3) available technology options; 4) added complexity of operating on-site generation or waste heat recovery equipment; and 5) electric utility rules.

Significant legislative and regulatory uncertainty currently exists in developing policy areas including renewable electric procurement, the future of Self Generation Incentive Program ("SGIP") incentives and GHG regulations. These uncertainties often discourage customers from pursuing CHP solutions, particularly those for whom energy efficiency is not the most important operating consideration. SoCalGas' proposed Distributed Energy Resources Services Tariff can help provide its customers stability, energy expertise, energy management software, and additional capital, thus improving the range of options faced by energy consumers considering CHP. The Distributed Energy Resources Services Tariff proposal also offers a new, effective

[16] California Energy Commission Final Staff Paper: "A New Generation of Combined Heat and Power: Policy Planning for 2030" September 2012 CEC-200-2012-005 p.50.

channel for the Commission to encourage adoption and to participate directly in monitoring the service and evaluating the needs of this industry.

Commission approval of the proposed Distributed Energy Resources Services Tariff will expand business opportunities for third party service providers. SoCalGas plans to use new and existing service providers for the bulk of equipment and services to be purchased pursuant to the Distributed Energy Resources Services Tariff including feasibility studies, system design, construction, commissioning, and equipment maintenance. Although the proposed tariff is not limited in size, SoCalGas expects to focus on smaller projects (e.g., less than 20 MW CHP) which have a greater payback period and, therefore, are more difficult for the customer to finance. Larger project opportunities (e.g., greater than 50 MW) generally offer the potential for a greater financial rate of return and, therefore, are more easily able to attract the attention and interest of financial institutions, Independent Power Producers (IPP) and Energy Services Companies (ESCO's). IPP's and ESCO's generally pursue larger, capital-intensive energy system opportunities (such as CHP, renewable and energy efficiency measures) and could either become customers of the proposed Distributed Energy Resources Services Tariff or pursue other means of project financing.

SoCalGas believes that its proposed Distributed Energy Resources Services Tariff will help accelerate adoption of CHP and other advanced energy solutions as well as expand business opportunities to existing service providers. By reaching customers who may otherwise not adopt clean, efficient CHP/distributed energy resources systems, SoCalGas hopes that the program can help to build acceptance of these technologies, in order to create momentum that will motivate other customers to implement CHP/distributed energy resources projects outside the tariff.

IV. DISTRIBUTED ENERGY RESOURCES SERVICES TARIFF DESCRIPTION

Under the Distributed Energy Resources Services Tariff, SoCalGas would design, construct, own, operate, and/or maintain distributed energy resources equipment on or adjacent to customer properties. The service would be available to all SoCalGas customers. All project costs would be recovered from the tariff customer with no subsidy from or business risk borne by other ratepayers. Although equipment is positioned on or adjacent to the customer's property, the equipment is owned and/or maintained by the utility.

Under the Distributed Energy Resources Services Tariff, the service fee calculation will be case-specific and will ensure that, at a minimum, the full cost of the system will be charged to each customer under the tariff. Service fees paid by each customer and terms of service will be governed by a specific contract with each tariff customer.

The primary activities required to deliver the proposed tariff services are:

- Customer outreach
- Contract development
- Engineering and cost estimation
- Procurement and construction
- Engineering oversight
- Operations and maintenance

Notification to prospective customers of the Distributed Energy Resources Services Tariff and its features will be conducted in conjunction with ongoing outreach activities within existing SoCalGas organizations. SoCalGas will develop and use Commission approved competitively neutral scripts in answering inquiries concerning the Distributed Energy Resources

Services Tariff. The neutral scripts will provide information regarding other service options and protect against SoCalGas gaining an unfair competitive advantage.

Costs of any activities specific to the Distributed Energy Resources Services Tariff will be charged to Distributed Energy Resources Services Tariff internal orders from and after the time customer interest is expressed and detailed discussions regarding the proposed tariff occur. Customers that are interested in taking service under the Distributed Energy Resources Services Tariff will request a preliminary assessment of feasibility and cost. Prospective tariff customers will be required to fund any required site evaluation and design activities conducted on their behalf prior to execution of a tariff agreement. The extent and necessity of these pre-contract evaluation and design activities will depend on the size and complexity of the required facilities and site conditions. Assuming continuing interest, customer-specific terms within the approved tariff contractual framework will be developed and executed with the tariff customer.

Once agreements are executed, the required facilities will be permitted, engineered, procured, and constructed through contracts with qualified contractors. Procurement and contracting for Engineering, Procurement, and Construction ("EPC") services and project oversight will be provided by utility staff or outsourced to third party EPC contractors. It is expected that Distributed Energy Resources Services Tariff facilities will generally be contracted on a turnkey basis. SoCalGas may also contract ongoing operation and maintenance of the facilities. Any work performed by utility staff will be charged to the internal order for the tariff customer.

None of the incremental costs of providing service under this Distributed Energy Resources Services Tariff have been included in SoCalGas' past or future General Rate Case

("GRC") filings. To the extent that resources embedded in general rates are used to support the proposed tariff service, those costs will be reimbursed to ratepayers as addressed in Chapter III.

No upper or lower size limits are proposed for the tariff, however, SoCalGas proposes to emphasize CHP projects with a generation capacity less than 20MW. Above that size, adoption has already been generally adequate and utility participation is not deemed to be as necessary. In regard to smaller systems, we expect the initial focus to be on projects 65 kW (this represents the smallest, currently available packaged unit that can meet emissions regulations) and larger and then expanded to include smaller systems as technologies become more mature and cost effective.

V. BENEFITS TO CALIFORNIANS

The program goal of greater CHP/distributed energy resources adoption not only aligns with California policy, but also provides various benefits to Californians. Expanded use of CHP creates substantial environmental benefits through the reduction of GHG emissions. Attainment of the CEC medium case deployment forecast (projected 3,013 MW of new CHP by 2020) in the 2011 CHP Market assessment report[17] will result in an estimated annual reduction in GHG emissions of 3.2 million metric tons CO2e GHG statewide by 2020.[18] Based on SoCalGas' estimates of CHP system costs and the GHG reductions calculated by the CEC, every $10 million in capital investment in the CHP sector results in annual reduction of 5,350 metric tons of GHG.[19] Applying that ratio, if, through adoption of the Distributed Energy Resources

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[17] *Combined Heat and Power: 2011-2030 Market Assessment;* ICF International, Inc.; sponsored by the California Energy commission; 2012.
[18] Ibid., p. 6.
[19] Assuming total CHP system costs of $2,000/kW, statewide total new CHP 3,013 MW by 2020 (IBID p. 6), and GHG reductions 3.225 million metric tons/year by 2019 (IBID p.6).

Services Tariff, SoCalGas were to provide $60 million in incremental capital to the CHP sector by 2020, then 32,100 metric tons of GHG would be avoided annually once the systems were deployed. This is equivalent to taking 6,758 cars off the road each year.[20]

The CEC report[21] also shows that added CHP adoption and penetration would:

- Add significant new investment, stimulating the state's economy.
- Create significant customer savings in energy costs thereby providing funds to be economically re-deployed towards new investment, higher business income or growth and more jobs and economic development.
- Lead to additional CO2 emission reductions.
- Improve electric utility operations impacts, including:
  - Decreased congestion and increased system reliability
  - Greater resource adequacy
  - Improved stability and power quality
  - Transmission and Distribution (T&D) and capacity investment deferrals
  - Reduced electricity supply costs resulting from decreased demand.

Finally, the proposed Distributed Energy Resources Services Tariff can serve to provide zero emission energy options for SoCalGas customers. Through this tariff service offering, biomethane or renewable natural gas could be used as the fuel source for a Distributed Energy Resources Services Tariff facility. The energy produced from such a Distributed Energy

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[20] EPA Greenhouse Gas Equivalencies Calculator: http://www.epa.gov/cleanenergy/energy-resources/calculator.html.

[21] *Combined Heat and Power: 2011-2030 Market Assessment;* ICF International, Inc.; sponsored by the California Energy commission; 2012.

Resources Services Tariff facility would be considered renewable energy, similar to other renewable technologies such as solar and wind.

VI. CUSTOMER CHOICE AND INDUSTRY GROWTH

The Distributed Energy Resources Services Tariff provides an additional option to customers with interest in distributed energy systems. In addition, the Distributed Energy Resources Services Tariff will expand opportunities for equipment and service providers as SoCalGas plans to outsource the majority of design, engineering, equipment supply, construction, operation, and maintenance of facilities required to deliver the proposed tariff service. Standard utility competitive procurement practices will be used including programs supporting Diverse Business Enterprises. Private developers will be eligible for service under the Distributed Energy Resources Services Tariff, providing them the opportunity to employ less of their own capital in each facility they construct and operate. Because the service will be offered as a tariff, the terms will remain transparent to tariff customers and ongoing Commission oversight can address any unforeseen adverse aspects of the proposed tariff.

Finally, if successful, this tariff would increase the number of jobs in state and provide the opportunity for businesses to lower their operating costs through increased efficiency without making a significant upfront investment or developing energy system expertise.

VII. CONCLUSION

SoCalGas has developed an innovative tariff that benefits ratepayers, supports customers, improves the environment, and assists the state in meeting its policy goals and mandates. The tariff provides a new business model to target the largest potential for CHP. This potential must be stimulated in order to make progress towards CHP goals. Ratepayers benefit from this service while costs are only recovered from participating tariff customers. SoCalGas' research and

experience demonstrates customer demand for the proposed service. The tariff helps to further expand the increased adoption of CHP and distributed energy resources thus providing greater opportunities for third party service providers. SoCalGas' accounting procedures and controls ensure proper allocation of the tariff service to tariff customers addressing concerns over an unfair cost advantage for the utility service relative to other products and services available to prospective customers of the Distributed Energy Resources Services Tariff.

For all of the reasons stated above, SoCalGas encourages the Commission to act expeditiously and approve the Distributed Energy Resources Services Tariff as proposed.

VIII. WITNESS QUALIFICATIONS

My name is Ron Goodman. My business address is 555 West Fifth Street, Los Angeles, California, 90013. I am employed by SoCalGas as the Director of Technology Solutions. I hold a Bachelor of Science degree in Mechanical Engineering Technology from California Polytechnic University, San Luis Obispo. I am responsible for leading the Research, Development and Demonstration of customer's end use equipment technologies as well as those in the emerging market. Developing and delivering clean energy solutions such as Low Emission Vehicles and Biogas Conditioning/Upgrading is also in my area of responsibility. I have held various positions since joining the SoCal Gas in 1991, including positions in Engineering, Field Operations, IT, Market Development, and supported several new business development efforts in Mexico and Canada. I have not previously testified before the California Public Utilities Commission.