Rulemaking No:	R.13-09-011
Exhibit No:	
Witness:	James Avery

Order Instituting Rulemaking to Enhance the Role of Demand Response in Meeting the State's Resource Planning Needs and Operational Requirements	R.13-09-011 (Filed September 19, 2013)

PREPARED DIRECT TESTIMONY OF

JAMES AVERY

CHAPTER 1

ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

May 6, 2014

TABLE OF CONTENTS

PREPARED DIRECT TESTIMONY OF

JAMES AVERY

CHAPTER 1

SDG&E POLICY

The purpose of my testimony is to present San Diego Gas & Electric Company's ("SDG&E") policy regarding the Commission's efforts to enhance the role of demand response in meeting California's resource planning needs and operational requirements. I am employed by SDG&E and hold the position of Senior Vice-President – Power Supply. My business address is 8330 Century Park Court, San Diego, CA 92123. My full statement of Witness Qualifications is set forth as part of my Prepared Direct Testimony.

I. THE IMPORTANCE OF DEMAND RESPONSE

Existing rate structures are out of date, based on antiquated costing models and do not reflect current cost causation principles. As a result, residential customers have a perverse incentive to use energy inefficiently which can lead to higher system costs and contribute to an increase in greenhouse gasses. By establishing rates that are based on sound cost causation principles, customers are afforded the opportunity to react by conserving energy at times when the cost of energy is high. At the same time, when the cost of energy is low, customers will have the choice to consume energy to meet their household needs. While not all energy usage at home is manageable, the customer should be able to choose when and how to use energy for loads that are manageable. This will lead to a better utilization of the electric grid which translates to lower costs for all customers. A side benefit of having an electric grid that operates more efficiently is the ability to integrate intermittent renewable resources into the system more efficiently.

While SDG&E has implemented programs such as Reduce Your Use, these measures have been implemented in a programmatic and targeted manner; they do not create economically efficient incentives for all customers. Instead, residential customers are charged rates that fail to encourage them to reduce use at times of peak demand or to shift demand to times of low demand, and customers instead are perversely incented to use electricity at the wrong times of the day.

These characteristics have resulted in a number of economically inefficient outcomes that lead to higher emissions and a reduced ability to cost effectively integrate intermittent renewable resources. For example, the current tiered rate structures in effect do provide an incentive for the customer who uses energy in the upper two tiers to curtail their energy use. However, this does nothing for the vast majority (over 75%) of our residential customers who rarely if ever consume energy outside of the first two tiers. And it actually increases electricity demand during times of peak energy usage. In the case where the customer is provided a rate incentive to pre-cool their house, that same customer contribution to peak demand and actual energy usage during these peak demand periods is greatly reduced. In addition, customers are agnostic to when their pool pumps run, when the laundry is done, or when they might charge their electric vehicles. By contrast, customers that are exposed to TOU rates generally consume more energy at times of low demand and consume less energy at times of high demand on the system.

The lack of accurate price signals leads to unnecessarily high emissions and costs. Of equal or greater importance, the lack of accurate price signals to trigger economically efficient demand limits the ability of SDG&E to cost-effectively integrate intermittent renewable resources at higher levels of market penetration. These emissions and costs can and should be avoided and intermittent renewables more cost effectively integrated into the utility grid, through

time varying dynamic rates, DR, and enabling technology tightly integrated with intermittent renewables.

As we move forward, the system net load shape will also continue to change as depicted in the CAISO Duck Curve.[1] In addition, increased reliance on solar renewables is likely to lead to over-generation situations, times when generation exceeds demand, during the middle of the day, the time of day we currently consider as some of the higher load hours. A recent analysis of the most cost effective way to implement a higher RPS found that the lowest emitting and least cost means of addressing these issues in many situations will be DR integrated with renewables.[2] In its Report, E3 included the following table, which found that the least cost renewable integration demand solution is "Load shift achieved through rate design at no incremental cost."

[1] See, California Independent System Operator, Building a Sustainable Future, 2014-2016 Strategic Plan, at page 9.
[2] See, Energy and Environmental Economics, Inc, Investigating a Higher Renewables Portfolio Standard in California (January 2014), at p. 27, https://ethree.com/documents/E3_Final_RPS_Report_2014_01_06_with_appendices.pdf

Table 9: High and low cost estimates for solution categories modeled in this study (2012 $)

Solution	Sensitivity	Basis	Cost Metric
Storage	Low	Pumped hydro cost ($2,230/kW; 30-yr lifetime); Black and Veatch *Cost and Performance Data for Power Generation Technologies*[16]	$375/kW-yr
	High	Battery cost ($4,300/kW; 15-yr lifetime); Black and Veatch *Cost and Performance Data for Power Generation Technologies*	$787/kW-yr
Flexible Load	Low	Load shift achieved through rate design at no incremental cost	$0/kW-yr
	High	Average TRC cost of thermal energy storage ($2,225/kW; 15-yr lifetime); E3 *Statewide Joint IOU Study of Permanent Load Shifting*[17]	$413/kW-yr
Regional Coordination	Low	Assume CA receives $50/MWh for exported power	-$50/MWh exported
	High	Assume CA pays $50/MWh to export incremental power	$50/MWh exported

As the forgoing illustrates, the most economically efficient form of DR is DR in response to accurate price signals.

We view this proceeding, in which the Commission is considering the bifurcation of DR programs into supply and load modifying resources, as part of a necessary transition to a future energy market in which the bulk of SDG&E customers are empowered to and do respond to accurate temporal price signals, allowing the utility to phase out load modifying DR programs. However, there is a role for supply-side DR programs that can act within 30 minutes. It can fill a need to respond to unpredictable real-time variations in CAISO markets. On May 1st the CAISO moved from a 90 minute ahead forecast with hourly binding prices to a 37.5 minute ahead forecast with 15 minute binding prices. This change greatly increases the accuracy of price

signals and responds much faster to any changes in variable generation or other system conditions. Fast acting DR becomes more valuable with this change and can lower the cost of preventing NERC violations through a timely response to system contingencies.

SDG&E is already laying the groundwork for such a future, including the proposal we have made for default TOU residential rates in Phase 1 of R. 12-06-013 as well as our plan to move fast responding DR products to supply-side DR, and bidding some supply-side DR into the CAISO market this year. With TOU rates, customers will save money by reducing demand at times of peak demand and by shifting demand to times of lower demand. This, in turn, will create market opportunities for developers of demand response automation devices, making it easier for customers to save money, for the grid to more cost effectively integrate intermittent renewable resources, and to reduce demand at times of peak demand.

Contrary to the explicit statement in the Demand Response Auction Mechanism (DRAM) in Attachment B that the Commission's goals for price responsive DR is as a supply-side resource,[3] the future should be one where the bulk of price responsive DR is through TOU rates, Critical Peak Pricing programs, real-time pricing, and technology to maximize customer response to prices either directly or through a Demand Response Provider.

II. SUPPLY RESOURCE ISSUES

D.14-02-036 defines a supply-side DR resource as one that is integrated into the CAISO's energy markets. To qualify as a supply-side resource, SDG&E envisions a bright-line distinction that requires supply side DR to meet the basic eligibility requirements and obligations that apply to all Resource Adequacy resources. To the extent DR is relied on as a supply

[3] See, Joint Assigned Commissioner and Administrative Law Judge Ruling and Revised Scoping Memo Defining Scope and Schedule for Phase Three, Revising Schedule for Phase Two, and Providing Guidance for Testimony and Hearings, Attachment B, at page 2, "the DRAM is focused on achieving a goal of 5% of peak capacity by 2020."

resource, but fails to provide the same delivery assurances as other RA resources, reliability will suffer. DR that is unable to meet these requirements and obligations should not be considered a supply-side resource, and should instead be assessed under the heading of "load modifying" DR. This would include DR programs used to solve problems on the distribution system, like feeder or transformer overloads, that will be controlled by the utility for operational reasons.

While supply-side DR must satisfy requirements and obligations generic to other RA resources, it should also be noted that both the CPUC and the CAISO are proposing to cap the amount of RA-eligible supply-side DR. In that regard, both the CPUC and the CAISO are proposing a cap of 5% of total flexible needs for the most limited use category. For SDG&E with a flexible RA need of around 1000 MW, only 50 MW of supply side DR would be allowed to be counted towards our flexible RA requirements. Given these limitations and the requirements to become supply-side DR, SDG&E does not see the wisdom in setting arbitrary targets for procurement of supply-side price responsive demand response resources.

In addition, the Demand Response Auction Mechanism (DRAM) is an unnecessary complication and a flawed approach for procurement of supply-side DR. The proposed DRAM acquisition uses a "silo approach" to acquisition of DR capacity, acquiring DR capacity resources separately from other preferred resources or other RA products. Once DR capacity qualifies as an RA product (system, flexible, or local), it will have opportunities for sale into utility Request for Offers for preferred resources, opportunities to sell to any LSE through the bilateral RA market, and the potential future opportunity to sell the RA product into the CAISO proposed voluntary/backstop capacity market. Procurement of DR RA capacity in an isolated DR-only market with an administratively-determined cost cap is decidedly inferior to cost

effectiveness determined by direct competition with other preferred resources or other RA products.

III. WITNESS QUALIFICATIONS

My name is James P. Avery. I am employed by San Diego Gas & Electric Company (SDG&E) as Senior Vice President – Power Supply. I oversee the company's electric and gas procurement, generation business unit, and electric transmission planning operations. I attended Manhattan College, New York City, New York, graduating with a Bachelor of Engineering Degree in Electrical Engineering with a major field of study in Electric Power. Prior to that, I attained an Associates Degree in the field of Electrical Engineering from New York City Community College. Prior to joining SDG&E in 2001, I was a consultant with R.J. Rudden Associates, one of the nation's leading management and economic consulting firms specializing in energy and utility matters. Prior to that, I functioned as the chief executive officer of the electric and gas operations at Citizens Utilities Company, a multi-service organization that provided electric, gas, telecom, water and wastewater services in over 20 states across the nation. I am currently on the Board of Directors of the California Power Exchange, and R.J. Rudden Associates, and I also served as a member of the Board of Directors of Vermont Electric Power Company, a transmission only company serving the state of Vermont, and I held positions at American Electric Power Service Corporation.

I have previously testified before this Commission.