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Filer:	Toni Stelling
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Form 6 Incremental Demand-Side Program Methodology

Efficiency Program Impacts

Estimates of energy savings, peak demand reductions and estimated useful life are based upon industry accepted “deemed” savings, engineer calculated estimates, or energy simulations. All efficiency programs are evaluated on a minimum of a three-year cycle and values are revised for the future based upon these evaluations. These measurement and evaluations studies are available on the smud.org website. Energy efficiency program impacts are included in the demand forecast reported in Form 1. Current efficiency programs are:

Commercial customized energy efficiency incentives: Promotes the installation of energy-efficient equipment, controls and processes at commercial and industrial customers’ facilities. Provides incentives to contractors and/or customers to promote the installation of energy-efficient lighting, HVAC, motors and refrigeration equipment and controls. The program also provides incentives for retro-commissioning, process improvements and data center storage projects that result in energy savings. These savings are generally calculated or simulated and tend to be larger projects.

Commercial Express Energy Solutions: Provides prescriptive incentives to participating qualified contractors and directly to customers for high-efficiency equipment across a variety of end-uses: lighting, HVAC, refrigeration and food-service equipment. Incentives are targeted to the contractor/supplier to stimulate the market for energy-efficient equipment and services and are designed to cover a significant portion of the incremental cost of the equipment. These savings are generally deemed values.

Commercial Complete Energy Solutions: A third-party administrator performs comprehensive energy audits of small- and medium-sized businesses. A customer receives a customized report detailing recommended energy improvements, estimated savings, estimated cost and payback. Third-party administrator then assists customer in hiring a contractor to complete the project. These savings are based upon deemed methodology but are sometimes calculated.

Commercial Savings by Design: Provides incentives to builders and their design teams to design new commercial and industrial buildings that are 10-30% more energy efficient than required by Title 24 (or typical new construction in the case of Title 24-exempt buildings and processes). These savings are derived using energy simulations with California Energy Code Title 24 as the base.

Residential equipment efficiency: This program provides rebates and/or SMUD financing for qualifying (ENERGY STAR®, Consortium for Energy Efficiency, and/or other high-efficiency products) efficiency and electrification improvements to homes’ building shells and equipment. Improvements include mini split heat pumps, whole house fans, central air conditioners and heat pumps, and heat pump water heaters. Energy savings for this program are based upon evaluated deemed savings.

Residential Home Performance Program: Participating contractors use building-science principles and diagnostic equipment to evaluate the current performance of the whole house, and then recommend comprehensive improvements that will yield an optimal combination of savings and comfort for homeowners. Once the homeowner selects the improvements that fit their needs and budget, participating contractors will do the work to Building Performance Institute standards. Program packages include

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both energy efficiency and electrification and are based upon deemed values from previous projects.

Residential appliance efficiency program: This program provides rebates for qualifying (ENERGY STAR or Consortium for Energy Efficiency-listed) appliances. This includes smart thermostats, refrigerators, variable speed pool pumps and room air conditioners. The program also offers refrigerator/freezer recycling and a retail partnership program. The refrigerator/freezer recycling program provides rebates for free pick-up and environmental recycling of old refrigerators and freezers. Our retail partnership program works with big box retailers to pay retailer incentives for all the energy efficiency items they sell in their stores. Savings for this program are based upon deemed values.

Residential retail lighting: This program promotes energy efficient residential lighting products by providing incentives for manufacturers and their retail partners to sell ENERGY STAR LED lighting at a discount and is implemented through agreements with manufacturers and retailers that involve cost buydowns, marketing and/or advertising. Savings for this program are deemed based upon previous measurement and verification studies.

Residential low-income weatherization: This program completes energy retrofits for qualifying low-income households through four offerings: Weatherization, Energy Saver Deep Retrofit, Energy Saver House Bundle and Energy Saver Apartment Bundle. Savings for this set of programs are based upon deemed values from previous projects and evaluation studies.

Demand Response Program Impacts

Peak Corps is a dispatchable and interruptible residential air conditioning load management program. Expected load shed is 41 MW when operated at a participant's maximum elected level of cycling (full cycling). It is based on forecasted number of "operating" cyclers as of Sept 2018: 1,137 cyclers on Option 1 (50% cycling level), 32,554 cyclers on Option 2 (67% cycling level), and 6,051 cyclers on Option 3 (100% cycling level). The 41 MW reduction is at 100 degrees F at the hour ending 1800 and using 102-degree one day prior, 102 degrees two days prior and 97 degrees three days prior. MW load reduction was estimated using an in-house developed "ACLM model". Expected load shed is 61 MW when operated at 100% full shed (emergency shed). It is based on forecasted number of operating cyclers as of Sept 2018: 1,137 cyclers on Option 1 (50% cycling level), 32,554 cyclers on Option 2 (67% cycling level), and 6,051 cyclers on Option 3 (100% cycling level). All air conditioners would be shut down. The 61 MW reduction is at 100 degrees F at the hour ending 1800 and using 102 degrees one day prior, 102 degrees two days prior and 97 degrees three days prior. MW load reduction was estimated using an in-house developed "ACLM model".

Curtailment Agreement is a dispatchable and interruptible agreement between SMUD and a specific customer to curtail at least 6.5 MW of plant load within 10 minutes of the declared event notification of the Curtailment Event. Contract expires May 31, 2022.

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PowerDirect is a dispatchable and interruptible commercial automated demand response program. Available load reduction estimated at 20 MW by June 1, based on current rate of program enrollment and customer-system readiness. The target dispatch price for June 2019 will be set from the forward prices determined in May 2019. Each month, the Energy Trading team and the PowerDirect program manager will review the forward prices projected for the following month and set a “Strike Price” at which the PowerDirect AutoDR program will be included in the resource mix.

Program details:

- Dispatch season June 1 – September 30.
- Dispatch window 2 pm to 6 pm
- Maximum of 12 dispatches per season for event durations of over 2 hours.
- Maximum of 3 consecutive days of event durations over two hours in a 14-day period.
- No limit on consecutive day dispatches of 2 hours or less in duration.
- The intent is to allow the program to operate between 40 and 60 hours per year, consistent with program parameters.

Temperature Dependent Rate is a non-dispatchable demand response program with two participants. Participant 1 typically nets 9 MW of load reduction when they respond. Participant 2 nets 6.5 MW of load reduction when they respond.

Renewable and Distributed Generation Program Impacts

SMUD does not run any traditional renewable or distributed generation programs. There is an established interconnection process, but there is no incentive-based program. In the place of tradition programs, we have the following community solar and green energy programs. Values for these programs are based upon real solar generators and purchases of renewable energy credits.

SolarSharesSM: SMUD offers commercial customers a community solar product where the participant signs an agreement with SMUD for us to provide solar power for up to 20 years. This product provides an alternative to net energy metering (NEM) or site located solar (e.g. rooftop solar) giving customers many of the same benefits as behind-the-meter generation. We retire all renewable energy credits (RECs) on behalf of our participants. This program is Green-e certified by the Center for Resource Solutions (CRS)^[1].

Commercial Greenergy[®]: SMUD offers a traditional utility green pricing product called Greenergy, which is Green-e certified by the Center for Resource Solutions (CRS). The program gives participants the opportunity to receive a blend of renewables from a power content label that is their own, and customers can make renewable and environmental claims in their external and corporate marketing. We offer Partner and

^[1] <https://resource-solutions.org/>

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Partner Plus products to all customers and for large commercial customers we offer the option of tailored Power Content. We retire all RECs on behalf of our participants.

Residential Greenergy®: SMUD offers a traditional utility green pricing product called Greenergy to its residential customers. The program gives participants the opportunity to receive a blend of renewables from a power content label that is their own. We retire all RECs on behalf of our participants. This program is Green-e certified by the Center for Resource Solutions (CRS).