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Form 6. Incremental Demand-Side Program Methodology

I. Efficiency Program Impacts

The City of Anaheim, Public Utilities Department's (APU), along with other members within the California Municipal Utilities Association, contracted with Navigant Consulting, Inc. (Navigant) to identify all potentially achievable cost-effective electricity efficiency savings and establish annual targets for energy efficiency savings for 2018 – 2027. The final report entitled "Energy Efficiency in California's Public Power Sector" was published and submitted to the CEC in 2017. Anaheim City Council adopted APU's ten-year energy saving goal in March 2017, based on study results from the Navigant Report. The Reports can be accessed at the following location: http://www.ncpa.com/wp-content/uploads/2015/02/2017_POU_EE_Reportv2.pdf

APU's energy saving goal, along with its impact to Energy Demand, are summarized in the following Table:

Target with Codes and Standards														
	2018	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Avg. 10 Yr.**
kWh	1.15%	1.15%	1.09%	1.06%	1.04%	1.00%	0.95%	0.91%	0.86%	0.80%	0.80%	0.80%	0.80%	1.00%
kW	1.11%	1.12%	1.13%	1.15%	1.19%	1.14%	1.15%	1.13%	1.09%	1.04%	1.04%	1.04%	1.04%	1.13%

The customer class forecast located in Form 1 includes the estimated reduced consumption from current programs. APU applies the estimated consumption reduction to the Base Energy Demand Forecast. In addition to energy efficiency estimates, APU adjusts the Base Energy Demand Forecast for other anticipated changes to load such as installation of solar and other distributed generation, planned construction projects, transportation electrification, demand response programs, and programs for low income and disadvantaged communities. The final forecast becomes the Adjusted Energy Demand Forecast. For more detailed information, refer to Form 4.

Further, uncommitted impacts from energy efficiency programs are included in the Energy Demand forecast reported in Form 1.2; they are considered Additional Achievable Energy Efficiency. These estimates are calculated as target percentage multiplied by the Retail Electricity Sales Forecast. The AAEE estimates are also included in form S-1.

II. Demand Response Program Impacts

APU operates two demand-side management programs, including the Voluntary Load Reduction Program which is designed for large commercial, industrial, institutional, and municipal customers, and the myPower Savings Program, which is designed for residential customers.

The Voluntary Load Reduction Program is a program designed that calls upon eligible customers to voluntary reduce their load during CAISO Stage 3 Alerts. A CAISO State 3 Alert is called when electric generation falls below 3% of reserves. APU assumes normal weather conditions in the demand forecast and does not expect CAISO Stage 3 Alerts in its forecast. Therefore, the energy saving forecast is zero and the impact of this program is not incorporated into the calculation of the demand or peak forecast. The forecast listed in Form 3.4 is the total eligible MW of the program participates whom may voluntarily reduce load upon a CAISO Stage 3 Alert.

The myPower Savings Program is a pilot residential demand response program in which residential customers voluntarily reduce consumption during high demand times identified by APU. The pilot residential demand response program generated 794 kWh savings in summer 2017 and 738kWh savings in summer 2018. It is considered negligible to APU's total energy demand at this time and is therefore not included in the demand or peak forecast at this time. Estimated adjustments for demand response reductions will be calculated when future program expansion demonstrates greater impact to the total energy demand. The forecast listed in Form 3.4 is the based upon historical savings.

For more information regarding these programs, refer to Form 4.

III. Renewable and Distributed Generation Program Impacts

As discussed in Form 4, historical behind-the-meter distributed generation information is obtained from Senate Bill 1 City permit applications, and also reported on the 1304(b) report. This includes micro turbine, fuel cell, and photovoltaic (PV) installations. Short-term PV installation growth is estimated using system size data listed on the resident's permit application. Long-term PV installation growth is estimated using a linear trend of historical installation totals. APU estimates to have 34 MW of installed PV capacity in 2019, and 75 MW by 2030. This forecast is detailed under the table "Installed Capacity (MW)" on Form 1.7a.

To estimate PV generation, APU collects hourly solar generation data from the power production meter installed at the Anaheim Convention Center located at 800 W. Katella Ave. Anaheim, California. The annual capacity factor is calculated by the following formula:

Total Generation / Capacity = Capacity Factor

This annual capacity factor is used as a 'proxy capacity factor' which can be applied to all installed solar PV to estimate total PV generation. For example, in 2018, the historical annual proxy capacity factor was 18%. This capacity factor can estimate the total PV generation for 2018 using the following formula:

0.18 x 30MW installed capacity x 8760 hours in a year = 48GWh

The annual capacity factor for each year was calculated and applied to the respective installed capacity each year to estimate the historical PV generation. The historical annual average of 18% is used as the capacity factor to estimate the PV generation forecast reported under the table "Energy (GWh)" on Form 1.7a.

The Coincident Peak Demand Impact is estimated by applying the calculated capacity factor of the Anaheim Convention Center PV system at the time of APU peak load to the total installed solar capacity. For example, the APU peak load in 2018 was 554 and occurred on July 6 on hour ending 16. The total Convention Center generation on that day and hour was 1,100 KWh, which equates to a 52% capacity factor using the following formula:

Total Generation / Capacity = Capacity Factor
1,100 / 2,100 = 15.6MW

This proxy capacity factor is then applied to the installed PV capacity in 2018 to determine an estimated peak impact of nearly 16MW by using the following formula:

0.52 x 30MW installed capacity = 15.6MW

This methodology was conducted for each year to estimate historical coincident peak impact. The historical annual average of 54% was used to generate the estimated peak impact forecasts are detailed in the table "Coincident Peak Demand Impact (MW)" on Form 1.7a. Table 1 below details the capacity factors used for the calculations to develop generation and coincident peak data reported in Form 1.7.

Table 1. Convention Center Capacity Factors

	2015	2016	2017	2018	Average
Annual Capacity Factor	18%	18%	18%	18%	18%
Coincident Peak Capacity Factor	59%	60%	42%	52%	54%

APU is not aware of any customer installed battery storage however does have Thermal Energy Storage. Historical data for these units is collected from City permits and reported on the 1304(b) report. Because these units are stable generation units, generation is estimated using the same formulas above but a 95% capacity factor:

Total installed capacity x 95% x 8670 hours in year = Estimated Generation

Thermal Energy Storage systems are peak shifters, meaning energy consumption is shifted from peak to off peak. To calculate the impact on coincident peak, the same methodology is applied, the impact to peak is the amount of generation the unit is capable of, 95% of the unit's capacity.

Total installed capacity x 95% = Estimated Peak Impact

APU does not develop a forecast for energy storage at this time, however the historical data is detailed on Form 1.7a, 1.7b and 1.7c.