Appendix K RESPONSE TO COMMENT ATTACHMENTS

K.1 2015 AND 2016 AER DAILY EMISSIONS

EQUIPMENT PROFILES FOR THE REPLACED EQUIPMENT
RULE 1306 EMISSION REDUCTIONS
GRAYSON POWER PLANT

YEAR	DEVICE DESCRIPTION	FUEL TYPE	FUEL USAGE (MMSCF)	OP. HOURS	OP. DAYS	AER EMISSIONS, LBS/YEAR					AER EMISSIONS, LBS/DAY				
						NO_X	CO	VOC	PM10	SO_X	NO_X	CO	VOC	PM10	SO_X
2015	BOILER UNIT 3	NG	81.12	1260	73	3,914.18	6,814.33	446.18	616.53	48.67	53.62	93.35	6.11	8.45	0.67
2015	BOILER UNIT 3	LFG	322.43			3,211.37	2,289.23	1,289.71	2,579.42	467.52	43.99	31.36	17.67	35.33	6.40
2015	BOILER UNIT 4	NG	172.40	1881	92	4,699.68	14,481.77	948.21	1,310.26	103.44	51.08	157.41	10.31	14.24	1.12
2015	BOILER UNIT 4	LFG	649.94			3,854.13	4,614.55	2,599.75	5,199.50	942.41	41.89	50.16	28.26	56.52	10.24
2015	BOILER UNIT 5	NG	692.64	5259	226	20,592.22	58,181.84	3,809.53	5,264.07	415.58	91.12	257.44	16.86	23.29	1.84
2015	BOILER UNIT 5	LFG	1,564.61			16,897.74	11,108.70	6,258.42	12,516.85	2,268.68	74.77	49.15	27.69	55.38	10.04
2015	GAS TURBINE UNIT 8A	NG	228.11	902	84	7,002.85	31,239.12	9,516.58	3,261.92	136.86	83.37	371.89	113.29	38.83	1.63
2015	GAS TURBINE UNIT 8BC	NG	101.88	211	50	3,823.41	30,930.57	4,250.27	1,456.83	61.13	76.47	618.61	85.01	29.14	1.22
2016	BOILER UNIT 3	NG	119.41	2015	97	3,886.67	10,030.10	656.73	907.49	71.64	40.07	103.40	6.77	9.36	0.74
2016	BOILER UNIT 3	LFG	421.87			3,434.05	2,995.30	1,687.49	3,374.98	611.72	35.40	30.88	17.40	34.79	6.31
2016	BOILER UNIT 4	NG	304.06	2766	118	9,805.81	25,540.70	1,672.31	2,310.83	182.43	83.10	216.45	14.17	19.58	1.55
2016	BOILER UNIT 4	LFG	904.81			8,668.05	6,424.13	3,619.23	7,238.46	1,311.97	73.46	54.44	30.67	61.34	11.12
2016	BOILER UNIT 5	NG	449.93	3826	134	13,902.78	37,793.95	2,474.60	3,419.45	269.96	103.75	282.04	18.47	25.52	2.01
2016	BOILER UNIT 5	LFG	1,368.83			12,292.05	9,718.66	5,475.30	10,950.60	1,984.80	91.73	72.53	40.86	81.72	14.81
2016	GAS TURBINE UNIT 8A	NG	43.77	175	29	1,502.92	5,026.09	1,825.92	625.85	26.26	51.82	173.31	62.96	21.58	0.91
2016	GAS TURBINE UNIT 8BC	NG	38.69	79	28	2,024.16	10,754.10	1,614.06	553.24	23.21	72.29	384.08	57.65	19.76	0.83

AVERAGE OF THE TWO YEARS EMISSIONS

DEVICE DESCRIPTION	FUEL TYPE	AER EMISSIONS AVERAGE LBS / DAY					POTENTIAL EMISSION REDUCTION, LBS/DAY				
		NO_X	CO	VOC	PM10	SO_X	NO_X	CO	VOC	PM10	SO_X
BOILER UNIT 3	NG	46.84	98.38	6.44	8.90	0.70	3.79	46.14	3.22	4.45	0.35
BOILER UNIT 3	LFG	39.70	31.12	17.53	35.06	6.36	8.42	15.56	8.77	17.53	3.18
BOILER UNIT 4	NG	67.09	186.93	12.24	16.91	1.34	7.2	87.67	6.12	8.46	0.67
BOILER UNIT 4	LFG	57.68	52.30	29.46	58.93	10.68	14.14	26.15	14.73	29.46	5.34
BOILER UNIT 5	NG	97.43	269.74	17.66	24.41	1.93	20.78	253.01	17.66	24.41	1.93
BOILER UNIT 5	LFG	83.25	60.84	34.28	68.55	12.43	32.91	60.84	34.28	68.55	12.43
GAS TURBINE UNIT 8A	NG	67.60	272.60	88.13	30.21	1.27	8.29	3.79	2.88	5.39	0.63
GAS TURBINE UNIT 8BC	NG	74.38	501.34	71.33	24.45	1.03	6.71	3.07	2.33	4.36	0.51
		533.97	1,473.25	277.07	267.42	35.74	102.24	496.23	89.99	162.61	25.04

NOTES:

The following usage factors pursuant to Rule 1305 are used:
- Usage factor is equal to 1 for equipment is operating for 180 days or more
- Usage factor is equal to 0.5 for equipment is operating between 30 days to 179 days

YEAR	DEVICE DESCRIPTION	BACT ADJUSTED EMISSIONS, LBS/YEAR					BACT ADJUSTED EMISSIONS, LBS/DAY					USAGE FACTOR	USAGE FACTOR ADJUSTED EMISSIONS, LBS/DAY				
		NO_X	CO	VOC	PM10	SO_X	NO_X	CO	VOC	PM10	SO_X		NO_X	CO	VOC	PM10	SO_X
2015	BOILER UNIT 3	524.87	6,391.68	446.18	616.53	48.67	7.19	87.56	6.11	8.45	0.67	0.5	3.59	43.78	3.06	4.22	0.33
2015	BOILER UNIT 3	1,238.12	2,289.23	1,289.71	2,579.42	467.52	16.96	31.36	17.67	35.33	6.40		8.48	15.68	8.83	17.67	3.20
2015	BOILER UNIT 4	1,115.44	13,583.55	948.21	1,310.26	103.44	12.12	147.65	10.31	14.24	1.12	0.5	6.06	73.82	5.15	7.12	0.56
2015	BOILER UNIT 4	2,495.76	4,614.55	2,599.75	5,199.50	942.41	27.13	50.16	28.26	56.52	10.24		13.56	25.08	14.13	28.26	5.12
2015	BOILER UNIT 5	4,481.39	54,573.18	3,809.53	5,264.07	415.58	19.83	241.47	16.86	23.29	1.84	1	19.83	241.47	16.86	23.29	1.84
2015	BOILER UNIT 5	6,008.09	11,108.70	6,258.42	12,516.85	2,268.68	26.58	49.15	27.69	55.38	10.04		26.58	49.15	27.69	55.38	10.04
2015	GAS TURBINE UNIT 8A	1,790.63	818.90	622.73	1,163.34	136.86	21.32	9.75	7.41	13.85	1.63	0.5	10.66	4.87	3.71	6.92	0.81
2015	GAS TURBINE UNIT 8BC	799.73	365.73	278.12	519.57	61.13	15.99	7.31	5.56	10.39	1.22	0.5	8.00	3.66	2.78	5.20	0.61
2016	BOILER UNIT 3	772.56	9,408.00	656.73	907.49	71.64	7.96	96.99	6.77	9.36	0.74	0.5	3.98	48.49	3.39	4.68	0.37
2016	BOILER UNIT 3	1,619.99	2,995.30	1,687.49	3,374.98	611.72	16.70	30.88	17.40	34.79	6.31		8.35	15.44	8.70	17.40	3.15
2016	BOILER UNIT 4	1,967.24	23,956.57	1,672.31	2,310.83	182.43	16.67	203.02	14.17	19.58	1.55	0.5	8.34	101.51	7.09	9.79	0.77
2016	BOILER UNIT 4	3,474.46	6,424.13	3,619.23	7,238.46	1,311.97	29.44	54.44	30.67	61.34	11.12		14.72	27.22	15.34	30.67	5.56
2016	BOILER UNIT 5	2,911.03	35,449.83	2,474.60	3,419.45	269.96	21.72	264.55	18.47	25.52	2.01	0.5	21.72	264.55	18.47	25.52	2.01
2016	BOILER UNIT 5	5,256.29	9,718.66	5,475.30	10,950.60	1,984.80	39.23	72.53	40.86	81.72	14.81		39.23	72.53	40.86	81.72	14.81
2016	GAS TURBINE UNIT 8A	343.56	157.12	119.48	223.21	26.26	11.85	5.42	4.12	7.70	0.91	0	5.92	2.71	2.06	3.85	0.45
2016	GAS TURBINE UNIT 8BC	303.70	138.89	105.62	197.31	23.21	10.85	4.96	3.77	7.05	0.83	0	5.42	2.48	1.89	3.52	0.41

K.2 NEW TURBINES EMISSIONS

OPERATION EMISSIONS NEW TURBINES - BEST ESTIMATED SCHEDULE
DAILY, MONTHLY, ANNUAL POTENTIAL EMISSIONS
GRAYSON POWER PLANT

Combined Cycle SGT-800 Gas Turbine - 40 min. startup; 8 min. shutdown

Pollutant	No. of Normal Operating Hours per Day	Normal Operating Hour Emission Rate	No. of Startups Per Day	lb / Startup (Cold, Warm)	lb / Startup (Hot)	No. of shutdowns per Day	Lb / Shutdown	No. of Maintenance Operating Hours per Day	Maintenance Operating Hour Emission Rate	Number of Normal Operating Hours Per Month	Number of Normal Operating Hours Per Year	Daily Maximum Emissions (Lbs)	Monthly Maximum Emissions (Lbs)	30-Day Average Emissions (lbs)	Annual PTE (Tons)
NOx	12.40	3.07	2	18.92	15.74	2	6.40	10	26.10	704	5496.0	349.71	2,377	79.23	9
CO	12.40	1.40	2	57.05	46.39	2	6.70	10	4.67	704	5496.0	191.55	1,359	45.29	5
VOC	12.40	1.07	2	6.91	7.02	2	2.90	10	1.07	704	5496.0	43.59	758	25.25	3
PM10/2.5	12.40	1.50	2	3.03	3.15	2	1.00	10	1.50	704	5496.0	41.65	994	33.13	4
SOx	12.40	0.28	2	0.14	0.17	2	0.02	10	0.28	704	5496.0	6.57	181	6.03	1

Monthly Op. hours:	720
Annual Op. hours:	5524
Monthly Operating Load	90%
Annual Operating Load	68%

Max. number of Startups/Shudtown per Day:	2
Max. hours of Startups/Shudtown per Day:	1.6
Max. number of Startups/Shutdowns per Month:	7
Max. hours of Startups/Shutdowns per Month:	6
Number of Cold/Warm Startup per Month:	5
Number of Hot Startup per Month:	2
Number of Startups/Shutdowns per Year:	23
Hours of Startups/Shutdowns per Year:	18
Number of Cold/Warm Startup per Year:	21
Number of Hot Startup per Year:	2
Hours of Maintenance (Daily, Monthly, Annually):	10

Fuel Input @75% Load, MMBtu/hr:	322
Fuel Input @75% Load, MMBtu/yr:	1,778,728

Emission Rate using 75% Data

COMBINED CYCLE (SCC-800) NOTES:
1) NOX, CO, and VOC emission during maintenance estimated based uncontrolled emissions provided by the manufacturer. PM and SOX emissions were estimated to be equal with emissions during normal hours.
2) Annual and Monthly operating hours are estimated and provided by Stantec.
3) The number of startups monthly and annually are estimated and provided by Stantec.
4) Monthly and annual startup emissions are calculated based on the number of cold/warm and hot startups per month since emissions during cold/warm startup are higher than during hot startup.

OPERATION EMISSIONS NEW TURBINES - BEST ESTIMATED SCHEDULE
DAILY, MONTHLY, ANNUAL POTENTIAL EMISSIONS
GRAYSON POWER PLANT

Simple Cycle Trent 60 Gas Turbine - 30 minutes startup, 12 minutes shutdown

Pollutant	No. of Normal Operating Hours per Day	Normal Operating Hour Emission Rate	No. of Startups Per Day	lb / Startup	No. of shutdowns per Day	Lb / Shutdown	No. of Maintenance Operating Hours per Day	Maintenance Operating Hour Emission Rate	Number of Normal Operating Hours Per Month	Number of Normal Operating Hours Per Year	Daily Maximum Emissions (Lbs)	Monthly Maximum Emissions (Lbs)	30-Day Average Emissions (lbs)	Annual PTE (Tons)
NOx	11.90	3.87	3	20.00	3	6.30	10	75.81	122	458	883.05	2,650	88.35	6
CO	11.90	2.05	3	22.12	3	6.90	10	32.81	122	458	439.54	2,145	71.50	6
VOC	11.90	1.17	3	1.79	3	0.60	10	2.11	122	458	42.19	293	9.76	1
PM10/2.5	11.90	1.35	3	1.61	3	0.74	10	1.35	122	458	36.63	305	10.18	1
SOx	11.90	0.31	3	0.16	3	0.02	10	0.31	122	458	7.25	50	1.67	0.1

Monthly Op. hours:	170
Annual Op. hours:	720
Monthly Operating Load	100%
Annual Operating Load	77%

Max. number of Startups/Shudtown per Day:	3
Max. hours of Startups/Shudtown per Day:	2.10
Number of Startups/Shutdowns per Month:	54
Hours of Startups/Shutdowns per Month:	38
Number of Startups/Shutdowns per Year:	360
Hours of Startups/Shutdowns per Year:	252
Hours of Maintenance (Daily, Monthly, Annually):	10

Fuel Input @75% Load, MMBtu/hr:	450
Fuel Input @75% Load, MMBtu/yr:	324,000

SIMPLE CYCLE (TRENT) NOTES:
1) NOX, CO, and VOC emission during maintenance estimated based uncontrolled emissions provided by the manufacturer. PM and SOX emissions were estimated to be equal with emissions during normal hours.
2) Annual and Monthly operating hours are estimated and provided by Stantec.
3) The number of startups monthly and annually are estimated and provided by Stantec.
4) The maintenance hours are estimated.

Plant Wide Emissions (2 Combined Cycle and 2 Simple Cycle Gas Turbines)

Pollutant	Daily Maximum Emissions (Lbs)	Monthly Maximum Emissions (Lbs)	30-Day Average Emissions (lbs)	Annual PTE (Tons)
NOx	1285.52	10,055	335.16	29.7
CO	889.18	7,007	233.58	20.9
VOC	162.17	2,101	70.03	7.5
PM10/2.5	156.55	2,598	86.61	9.8
SOx	27.65	462	15.41	1.7

K.3 SKYLAR LETTER

SKYLAR
PROPERTIES LLC

January 8, 2018

Craig R. Kuennen
Business Transformation and Marketing Administrator
City of Glendale, CA / Glendale Water & Power Department
141 N. Glendale Ave., Level 4
Glendale, CA 91206

Craig,

Following the execution of our Exclusive Agreement dated September 22, 2015, Skylar Properties LLC ("Skylar") sought to determine the feasibility of developing a utility scale solar generation and energy storage facility ("Energy Project") on property owned by the City of Glendale, CA (the "City) in order to sell the power generated from such Energy Project to Glendale Water & Power. Within a few months after the commencement of this task, Skylar determined that there was insufficient contiguous land available within the City to pursue any economically viable Energy Project.

The analysis of a potential Enegy Project focused on the following options:

1. Conversion of the Scholl Canyon Landfill ("SCLF") to a solar generation field
2. A combination of a Waste to Energy facility with a solar facility at SCLF
3. Solar facilities at the Brand Park landfill and/or atop City owned Reservoirs
4. An analysis of parking roof decks and parking lots as well as rooftops of City owned buildings comprising over 2.3 million square feet of space deemed suitable for the construction of pedestal supported solar generation facilities

Regarding Options 1 & 2, the use of SCLF (and its potential expansion) as an active landfill would prohibit any use for an Energy Project. Additionally, even if a smaller footprint could be designed, the costs of a Waste-to-Energy facility was deemed too expensive to be a viable alternative and raised new environmental concerns. Regarding Option 3, the overall available space at the Brand Park Landfill and/or covered reservoir sites were only projected to yield less than 5 MW which would be cost prohibitive. Finally, Option 4 was deemed the most uneconomic of all alternatives as the lack of contiguous space coupled with necessary infrastructure upgrades would result in substantially higher costs than available wholesale prices for energy in the open market.

In conclusion, as much as we would have liked to conclude otherwise, none of the alternatives analyzed in late 2015 indicated an economically viable opportunity to build solar at scale within the City's boundaries. Please let me know if you have any further questions.

Kind Regards,

Gerald Balboa
COO
Skylar Properties LLC

6501 Red Hook Plaza, #201 St. Thomas, USVI 00802
ph:713-341-7942 fax:713-583-9869

K.4 NAVIGANT MEMORANDUM

NAVIGANT

Memorandum

To: Glendale Water & Power

From: Navigant Consulting, Inc.

Date: January 30, 2017

Re: 2016 CMUA Energy Efficiency Potential Forecasting Study

Introduction

This memo provides Glendale Water & Power with the results of the California Municipal Utilities Association (CMUA) Energy Efficiency Potential Forecasting Study conducted in 2016 by Navigant Consulting, Inc. (Navigant). The results described here are specific to the Glendale service territory.

Summary of Potential

Navigant used their Electric Resource Assessment Model (ELRAM) to estimate achievable energy and demand savings over a 10 year forecast period. The modeling team forecasted these savings using two modeling steps:

1. **Base Case Run.** This modeling run includes no changes or adjustments to Glendale's current portfolio of energy efficiency programs.
2. **Final Run.** This modeling run uses Glendale's chosen adjustments—if any—to various features within the model to illustrate increased energy savings goals. This run may be the same as the Base Case Run if the utility chose not to make adjustments to current portfolio offerings.[1]

Glendale chose to call their Base Case Run as Final and made no adjustments to modeling scenarios.

[1] Utilities are often already doing everything they can within their energy efficiency budgets and have no plans to increase current program offerings.

Figure 1 shows the net incremental market potential achievable for each sector across the forecast period, as well as the percent of forecasted sales for each year for the Final Run.

Figure 1. Net Incremental Market Potential by Sector (MWh) and Percent of Sales – FINAL RUN

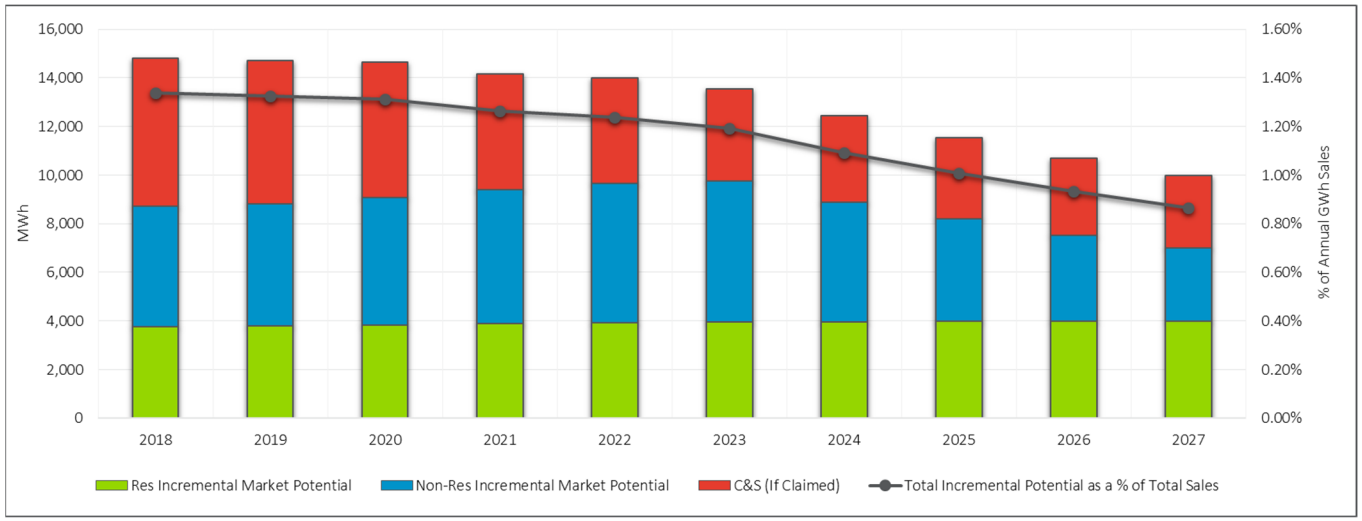

Table 1. Inputs to Figure 1

10 Year Energy Goals (Net MWh)										
ALL Sectors (MWh)	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Total Incremental Market Potential	14,801	14,723	14,634	14,160	13,998	13,528	12,447	11,534	10,682	9,966
Res Incremental Market Potential	3,778	3,809	3,841	3,878	3,928	3,957	3,967	3,986	3,990	3,993
Non-Res Incremental Market Potential	4,952	5,000	5,228	5,507	5,727	5,797	4,927	4,202	3,543	3,007
C&S (If Claimed)	6,070	5,914	5,565	4,774	4,343	3,774	3,553	3,346	3,150	2,966
Total Incremental Potential as a % of Total Sales	1.34%	1.33%	1.31%	1.26%	1.24%	1.19%	1.09%	1.01%	0.93%	0.87%
Res Incremental Potential as a % of Res Sales	0.95%	0.96%	0.96%	0.96%	0.97%	0.97%	0.97%	0.97%	0.97%	0.97%
Non-Res Incremental Potential as a % of Non-Res Sales	0.69%	0.70%	0.73%	0.76%	0.78%	0.79%	0.67%	0.57%	0.48%	0.41%
10 Year Demand Goals (kW)										
ALL Sectors (kW)	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Total Incremental Market Potential	5,392	5,640	6,125	6,831	7,549	6,891	6,832	6,697	6,529	6,362
Res Incremental Market Potential	156	162	167	170	170	170	169	168	167	166
Non-Res Incremental Market Potential	3,694	3,953	4,497	5,310	6,097	5,522	5,513	5,428	5,307	5,186
C&S (If Claimed)	1,542	1,526	1,461	1,351	1,282	1,200	1,149	1,101	1,055	1,010

Source: Navigant 2016

At a glance, Glendale's results include:

- A 2018-2027 average annual target of 1.16% of forecasted retail sales
- Net savings targets
- Only codes and standards (C&S) that are currently in place today, and not future C&S such as updates to Title 24
- A mix of existing condition and code baselines for modeled measures, as well as a "dual baseline" function that can use the existing condition for a portion of the remaining useful life, and the code baseline for the remaining useful life

Top Energy Saving Measures

Navigant's model displays a list of the top 50 measures generating savings for the forecast period. These measures can help inform future program design efforts as Glendale begins to allocate program dollars in new directions. Table 2 shows the top 10 energy saving measures for the first year of the forecast period and Table 3 shows the top 10 measures for year 2030 to use as a comparison.[2]

Table 2. Top 10 Energy Saving Measures for 2017

Rank	Top Ten Measures – 2017	2017 - Energy Savings (MWh)	2017 - Demand Savings (KW)	Energy % of Total	Demand % of Total
1	Food - Efficient MachDr Equipment	356	23.3	6.9%	0.6%
2	Com-Retail - LED fixture: 33W, 3500 lumens	340	83.7	6.6%	2.2%
3	Food - Efficient Lighting Equipment	257	26.5	5.0%	0.7%
4	Com-Education - LED fixture: 33W, 3500 lumens	198	26.0	3.8%	0.7%
5	Com-Office - LED fixture: 33W, 3500 lumens	195	78.2	3.8%	2.0%
6	Com-Grocery - LED downlight, screw-in lamp, 1-3W, interior Average 2 Watts	171	30.2	3.3%	0.8%
7	Other Industrial - Efficient MachDr Equipment	138	21.3	2.7%	0.5%
8	Com-Restaurant - LED downlight, screw-in lamp, 1-3W, interior Average 2 Watts	128	32.5	2.5%	0.8%
9	Com-Retail - LED downlight, screw-in lamp, 1-3W, interior Average 2 Watts	127	31.2	2.5%	0.8%
10	Com-Retail - LED downlight fixture, 9-15W, interior Average 9 Watts	119	29.2	2.3%	0.8%

Source: Navigant 2016

Table 3. Top 10 Energy Saving Measures for 2030

Rank	Top Ten Measures – 2030	2030 - Energy Savings (MWh)	2030 - Demand Savings (KW)	Energy % of Total	Demand % of Total
1	Res-Single Family - Shade Tree	83	0.0	6.7%	0.0%
2	Res-Single Family - Variable Speed Pool Pump	63	0.0	5.0%	0.0%
3	Res-Multi Family - CEE Tier III Refrigerator (from 30$ to 35% more efficient)	46	0.0	3.7%	0.0%
4	Res-Single Family - Solar Attic Fan (1,000 CFM)	32	36.9	2.6%	0.8%
5	Res-Multi Family - Split System AC Tuneup/Recharge	32	42.9	2.6%	0.9%
6	Com-Office - LED T8 Tube Replacement Average Fixture Wattage 59.65	32	12.8	2.6%	0.3%
7	Com-Education - LED T8 Tube Replacement Average Fixture Wattage 59.65	32	4.2	2.5%	0.1%
8	Res-Single Family - Split System AC Tuneup/Recharge	29	27.8	2.3%	0.6%
9	Com-Office - Window Film	26	14.9	2.1%	0.3%
10	Com-Warehouse - Cool Roof	26	22.7	2.1%	0.5%

Source: Navigant 2016

[2] See the ELRAM Output Viewer workbook for the full list of top 50 measures.

Other Features

Navigant worked with Glendale to provide a number of other ELRAM modeling features described in more detail in the Output Viewer workbook. Among others these include:

- **Cumulative Savings.** Savings shown cumulating over the forecast period.
- **Electric Vehicles (EVs) and Photovoltaics (PV).** Forecast of EV and PV usage and generation over the 10 year study period. The modeling team based these projections on the EV/PV assumptions defined in the 2016 California Energy Commission (CEC) Integrated Energy Policy Report for each planning area in California. The team matched each POU to the nearest planning area and prorated the forecasts based on the POU's electric sales by sector.
- **Interactive Charts.** The tabs titled Potential by Sector, Potential by Program, and Potential by End-Use include interactive charts where users can filter the potential savings results in a number of informative ways.

Comparison to 2014-2023 10-Year EE Potential Study

The model currently used to develop the 10-year EE potential goals is similar to the one used to develop the 2014-2023 potential goals, with the following key differences:

- **Improved Calibration** – for calibration purposes, the model now spreads historical program savings across end-use categories at the program level, using actual savings per end-use category/program as identified in E3. The prior model did not calibrate to the program level.
- **Updated Measure Impact/Cost Information** – the modeling team has significantly improved the measure level inputs using the Technical Reference Manual (TRM) recently developed by the POUs, as well as the most recent CPUC database of available measures with impacts and costs at the climate zone level.
- **Measure Impacts Include C&S Effects** – the new ELRAM includes the most recent (C&S) impacts to measure savings, but does not include future or planned C&S impacts not currently adopted.
- **Increased Decision Type Flexibility and Existing Baseline Changes** – the model structure now allows for dual baseline measures (early retirement). This function uses the existing condition baseline for a specified portion of the useful life of a measure, and the code baseline for the remaining portion of the useful life.
- **Expanded Building Types** – ELRAM provides model results at the building type level for both the residential and commercial segments. The prior model only provided a rolled up commercial sector result.
- **Behavioral Programs Included** – ELRAM now includes optional Behavioral Programs for the residential, commercial, and industrial sectors. The earlier model did not.

These changes have the opportunity to either increase or decrease the utility's 10-year goal as compared to the previous study. Measure selection, program additions, and most importantly, the calibration targets determine the change.

The years 2018-2023 overlap between the two 10-year study periods. Glendale's current 10-year goals are about 132% of the goals established in the prior study. The primary reason for the higher goals is the claim of C&S savings.