



# Comparative Energy Analysis Report

Prepared for  
City of Alhambra

Prepared by  
The Energy Coalition

On Behalf of  
The Southern California Regional Energy Network Public Agency Project Delivery Programs

Date  
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## 1. Overview

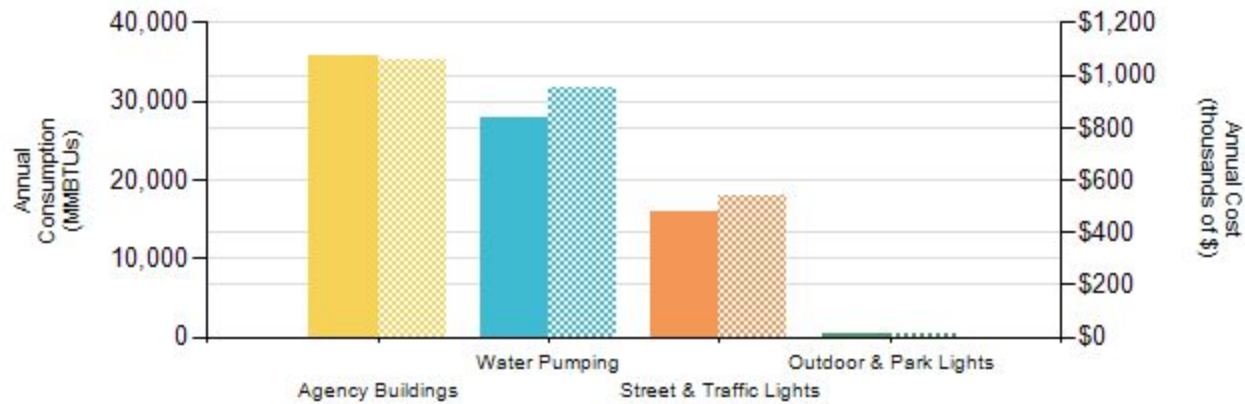
This report is intended to provide a framework for the City of Alhambra, referred to as “Agency” herein, to identify inefficient facilities and infrastructure and prioritize further investigation and energy efficiency retrofit work. This analysis uses only energy billing data provided by the Agency to analyze energy use across Agency assets, and to help identify opportunities for energy efficiency improvements. Many factors affect the energy use in different assets, including age, type of heating, ventilation, air conditioning (HVAC), and lighting equipment, facility occupancy and hours, plug loads, and climate. Once individual opportunities with the greatest potential for energy savings are identified, a more detailed screening of those facilities can be performed to identify the specific sources of the inefficiencies.

This report was created by The Energy Coalition on behalf of the Southern California Regional Network ([www.socalren.org](http://www.socalren.org)). Any questions about this report can be directed to your assigned Project Manager, Ken Gonzales at [kgonzales@energycoalition.org](mailto:kgonzales@energycoalition.org).

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## 2. Total Energy Portfolio

Your Total Annual Energy Cost is **\$2,581,344**



Key: Solid color represents consumption, hashed color represents cost

Annual Energy Costs

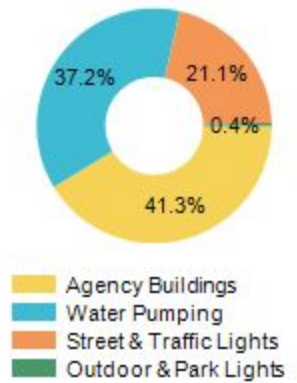


Table 1: Total Energy Portfolio (Annual)

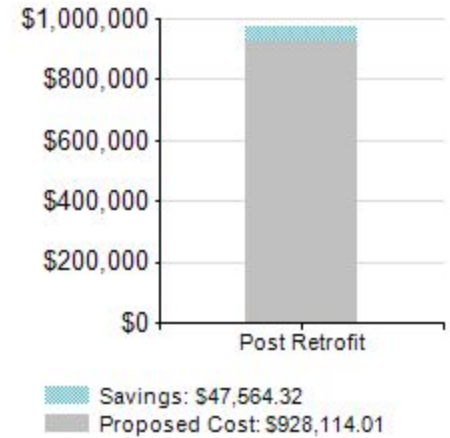
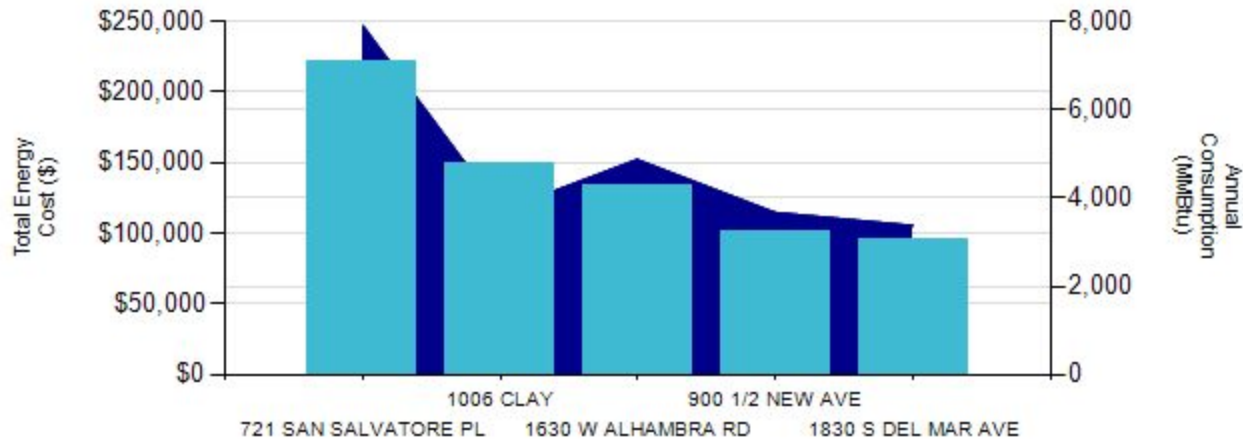
Agency Energy Use	Electric Consumption (kWh)	Electric Cost (\$)	Gas Consumption (therms)	Gas Cost (\$)	Total Energy Consumption (MMBTus)	Total Energy Cost (\$)	GHG Emissions (lbs CO2)
Agency Buildings	5,960,727	\$861,115	153,715	\$194,812	35,698	\$1,055,927	3,081,696
Water Pumping	8,158,354	\$975,678	0	\$0	27,820	\$951,901	4,217,869
Street & Traffic Lights	4,703,257	\$538,694	0	\$0	16,038	\$538,694	2,431,584
Outdoor & Park Lights	136,466	\$11,044	0	\$0	465	\$11,044	70,553



### 3. Water Pumping



Your Annual Energy Cost for Water Pumping is **\$975,678** and **37.8%** of the Total Cost.



Key: Displays the top 5 consuming pumping service accounts. Columns represent Cost, Area represents Consumption.

Table 2: Water Pumping (Annual)

Site Name	Address	Electric Consumption (kWh)	Electric Cost (\$)	Electric Rate (\$/kWh)
721 SAN SALVATORE PL	721 SAN SALVATORE PL	2,314,400	\$221,951	\$0.10
1006 CLAY	1006 CLAY	1,086,119	\$149,233	\$0.14
1630 W ALHAMBRA RD	1630 W ALHAMBRA RD	1,427,310	\$134,595	\$0.09
900 1/2 NEW AVE	900 1/2 NEW AVE	1,076,146	\$100,835	\$0.09

**Assumption** - 65% of all pumps need to be upgraded. Those pumps will reduce consumption by 7.5% kWh post retrofit.

**Calculation** - projected savings are 7.5% of 65% of the total PA consumption (for ALL pump accounts)

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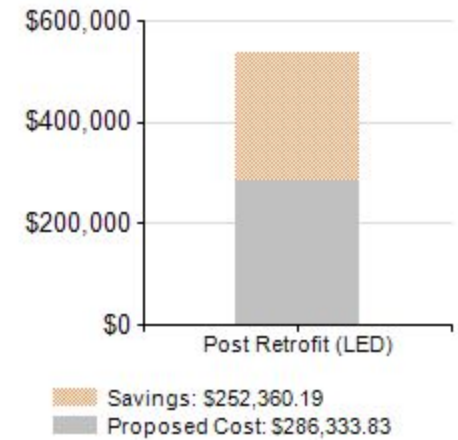
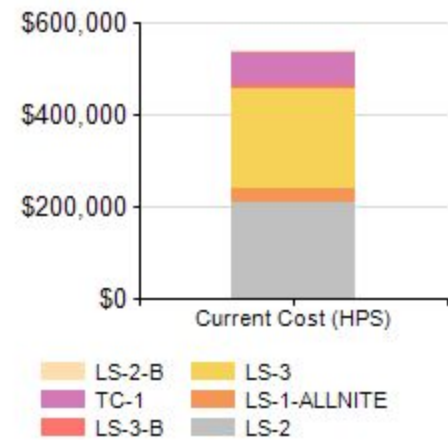
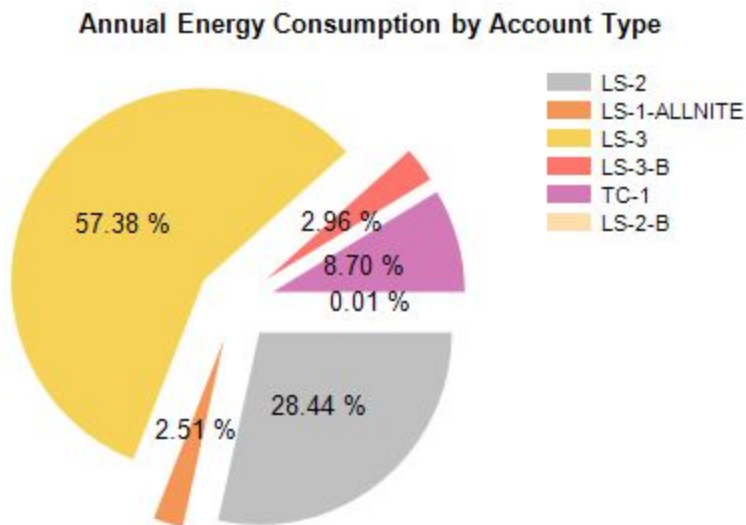
1830 S DEL MAR AVE	1830 S DEL MAR AVE	988,497	\$95,983	\$0.10
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## 4. Street & Traffic Lights



Your Annual Energy Cost for Street & Traffic Lights is **\$538,694** and **20.9%** of the Total Cost.



**Assumption** -agencies can save 50% on annual street & traffic light kWh consumption by converting HPS to LED.

**Calculation** – projected savings are 50% of the total kWh consumption of agency owned street and traffic lights (TC-1, LS-2, and LS-3). LS-1 street lights are not included in projected savings.

Table 3: Street & Traffic Lights (Annual)

Tariff	Tariff Description	Electric Consumption (kWh)	Electric Cost (\$)	Electric Rate (\$/kWh)
LS-3	Street Lights (Agency Owned - metered)	2,698,663	\$213,942	0.08
LS-2	Street Lights (Agency Owned - unmetered)	1,337,669	\$207,071	0.15



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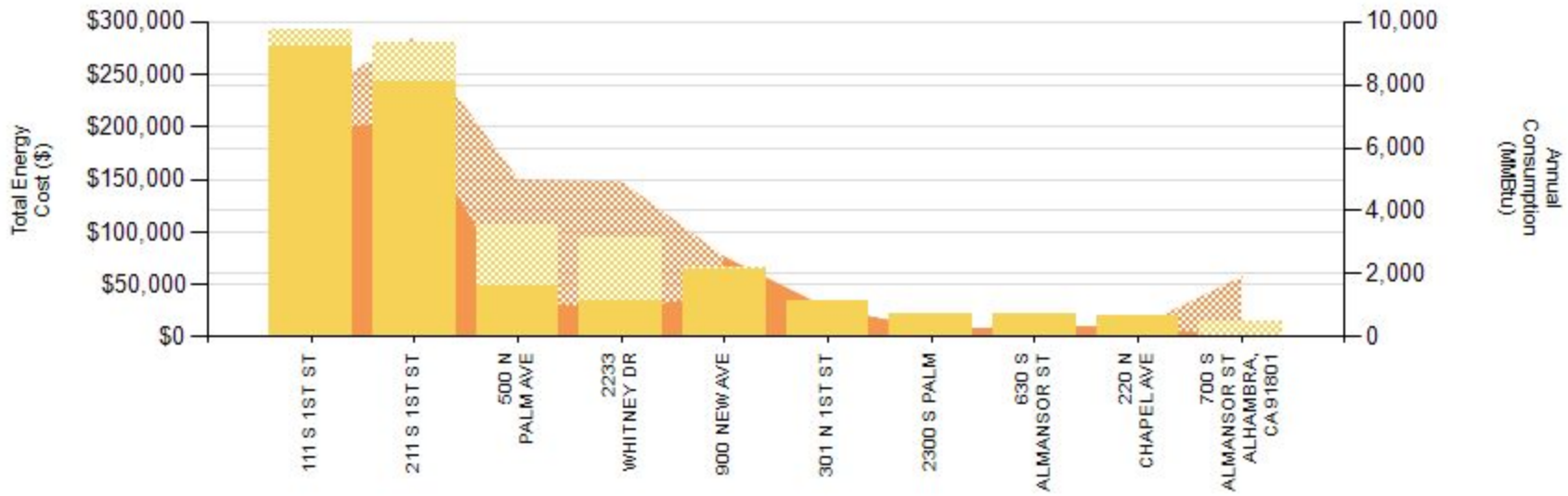
TC-1	Traffic Signal Lights (Agency Owned)	409,214	\$73,334	0.18
LS-1-ALLNITE	Street Lights (SCE Owned)	118,046	\$33,974	0.29
LS-3-B	Street Lights (Agency Owned - metered)	139,317	\$10,318	0.07
LS-2-B	Street Lights (Agency Owned - unmetered)	348	\$55	0.16

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## 5. Building Summary



Your Annual Energy Cost for Buildings is **\$1,055,927** and **40.9%** of the Total Cost.



Key: Displays the top 10 consuming Buildings. Yellow columns represent Cost, Orange area represents Consumption. Electricity is the solid shade, Natural Gas is the hashed shade.

Table 4: Building Summary (Annual)

Site Name	Address	Electric Consumption (kWh)	Electric Cost (\$)	Electric Rate (\$/kWh)	Gas Consumption (therms)	Gas Cost (\$)	Gas Rate (\$/therm)	Disadvantaged Community (Yes or No)
CITY HALL	111 S 1ST ST	1,913,127	\$276,638	\$0.14	12,069	\$16,196	\$1.34	YES
POLICE DEPARTMENT	211 S 1ST ST	2,015,943	\$243,039	\$0.12	26,060	\$36,594	\$1.40	YES



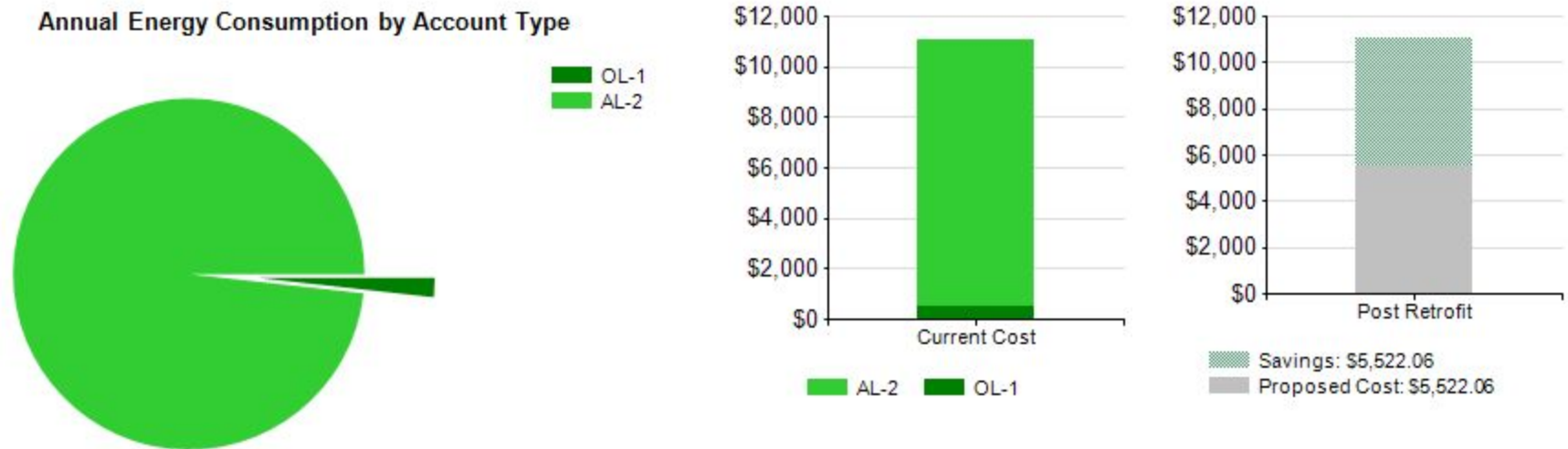
ALHAMBRA PARK	500 N PALM AVE	324,505	\$48,526	\$0.15	38,782	\$57,542	\$1.48	YES
GRANADA POOL	2233 WHITNEY DR	256,261	\$34,160	\$0.13	40,318	\$60,175	\$1.49	NO
CITY YARD	900 NEW AVE	388,165	\$63,771	\$0.16	12,069	\$2,695	\$0.22	YES
FIRE STATION #71	301 N 1ST ST	261,925	\$34,862	\$0.13	0	\$0	\$0.00	YES
GRANADA PARK	2300 S PALM	68,532	\$21,958	\$0.32	0	\$0	\$0.00	NO
GOLF COURSE	630 S ALMANSOR ST	89,486	\$21,146	\$0.24	0	\$0	\$0.00	YES
CHAPEL/MAIN	220 N CHAPEL AVE	90,047	\$19,681	\$0.22	0	\$0	\$0.00	YES
ALMANSOR COURT	700 S ALMANSOR ST	0	\$0	\$0.00	19,046	\$14,981	\$0.79	YES



## 6. Outdoor & Park Lights



Your Annual Energy Cost for Outdoor & Park Lights is \$11,044 and 0.4% of the Total Cost.



**Assumption** -agencies can save 50% on annual outdoor & park light kWh consumption by converting HPS to LED.

**Calculation** – projected savings are 50% of the total kWh consumption of outdoor & park lights.

Table 5: Outdoor & Park Lights (Annual)

Name	Address	Tariff	Electric Consumption (kWh)	Electric Cost (\$)	Electric Rate (\$/kWh)
Area Lighting	Various	AL-2	134,078	\$10,510	\$0.08
Area Lighting	Various	OL-1	2,388	\$534	\$0.22



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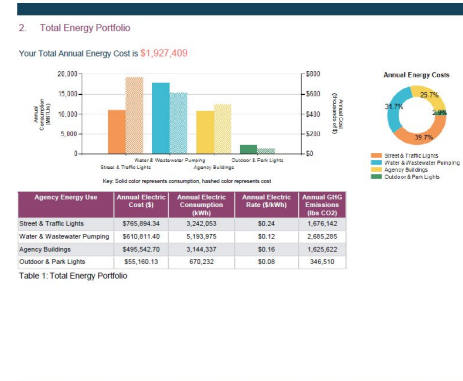
## Appendix A - Methodology

### 1. Data Sources

- Building information, energy usage and cost data used in this analysis were derived from utility consumption billing data provided by agency staff.
  - Utility consumption billing data used in this analysis were derived from SCG gas tariffs and SCE electric tariffs
  - For more information about the utility tariffs included in this analysis refer to:
    - SCG Gas Tariffs: [For more information about Southern California Gas tariffs](https://www.socalgas.com/regulatory/tariffs/tariffs-rates.shtml); <https://www.socalgas.com/regulatory/tariffs/tariffs-rates.shtml>
    - SCE Electric Tariff: [For more information about Southern California Edison tariffs](https://www.sce.com/wps/portal/home/regulatory/tariff-books/rates-pricing-choices); <https://www.sce.com/wps/portal/home/regulatory/tariff-books/rates-pricing-choices>
  - All electricity and gas results were based on usage during period January 1, 2018 – December 31, 2018.
  - In some cases, multiple meters were associated with a single facility or asset type. For such facilities, to generate estimates of facility-wide energy use, energy usage and cost values were aggregated by summing energy usage and cost values for each day in the analysis period.
- GHG emissions data used in this analysis were calculated using the conversion: 517 lb CO<sub>2</sub>/MWh + 11.91 lbs CO<sub>2</sub>/therm [1,2].
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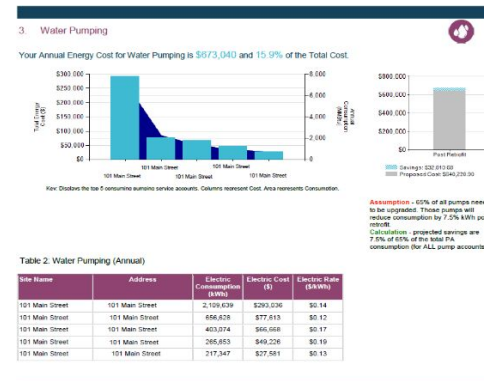
## 2. Total Energy Portfolio

- Total Energy Portfolio data represents an analysis of each agency facility type annual energy costs, annual energy consumption (kWh and therms), GHG Emissions and total annual energy costs for agency facility types based on MMBtus.
- The following agency assets are included in the Total Energy Portfolio:
  - Water Pumping
  - Street & Traffic Lights
  - Buildings
  - Outdoor & Parks Lights



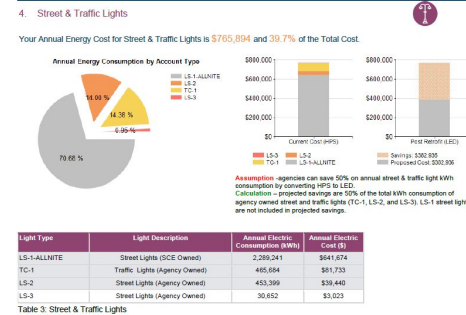
## 3. Water Pumping

- Water pumping data represents an analysis of the top five highest energy consuming water and wastewater pumping SCE and SCG service accounts annual energy costs, annual energy consumption (kWh and therms) and total annual energy costs.
- Water pump conversion data used in this analysis is derived on the assumption that 65% of all existing pumps need to be upgraded. Of the 65% of pumps requiring upgrades, it is assumed that the pumps will save 7.5% of their annual kWh consumption [3].



## 4. Street & Traffic Lights

- Street & traffic light data represents an analysis of annual energy costs and annual energy consumption (kWh) per SCE street & traffic light tariff type.
- Annual cost savings reflects only agency owned street lights in the analysis; assumed cost savings conversion is based on converting HPS to LED agency owned traffic and street lights [3].
- On average, agencies can save 50% on annual kWh consumption by converting HPS to LED, which also results in cost savings [3].



## 5. Building Summary

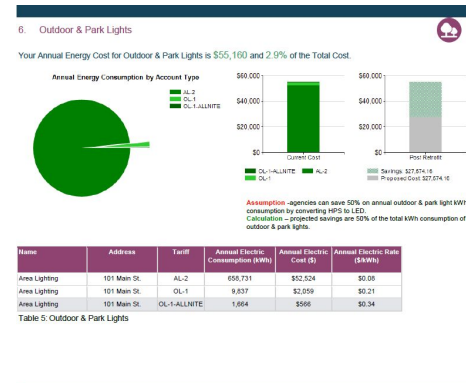
- Building summary data is weather normalized and includes the following metrics for the top ten highest energy-consuming agency buildings' (total annual energy costs): annual energy costs and annual energy consumption (kWh and therms).





## 6. Outdoor & Park Lights

- Outdoor & park lights data represents an analysis of annual energy costs, annual energy consumption (kWh) and total annual energy costs per SCE outdoor and park lighting tariff type.



Certain properties did not have energy usage data for the range of the analysis period and were excluded:

Address	Service Account #
201 E Bay State St	3713002
2588 W Commonwealth	9976072
2500 W Commonwealth	10090910

Certain properties could not be matched to gas or electricity usage data and were excluded:

Address	Service Account #
146 Palm Ave	49098504
2030 W Commonwealth	393937
210 N Chapel Ave	10478
230 E Main St	444076

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37 E Main St	429225513
600 Front St	10439
200 W Hellman Ave	943170643 (gas account)

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## Endnotes

[1] Corporate Responsibility Report. (2015). In Southern California Edison. Retrieved from [https://www.sce.com/wps/wcm/connect/c0fcee55-e04a-4287-8301-8e66e3e5fbac/2014\\_Corporate+Responsibility+Report\\_FINAL+single-page.pdf?MOD=AJPERES&ContentCache=NONE](https://www.sce.com/wps/wcm/connect/c0fcee55-e04a-4287-8301-8e66e3e5fbac/2014_Corporate+Responsibility+Report_FINAL+single-page.pdf?MOD=AJPERES&ContentCache=NONE)

[2] Adams, L.S., Nicols, M.D., Goldstene, J. N. (2008). Climate Change Scoping Plan. In California Air Resources Board. Retrieved from [https://www.arb.ca.gov/cc/scopingplan/document/appendices\\_volume2.pdf](https://www.arb.ca.gov/cc/scopingplan/document/appendices_volume2.pdf)

[3] Based on SoCalREN previous project estimates.

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