



# Comparative Energy Analysis Report

Prepared for  
City of Lancaster

Prepared by  
The Energy Coalition

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

Date  
10/28/2019

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## 1. Overview

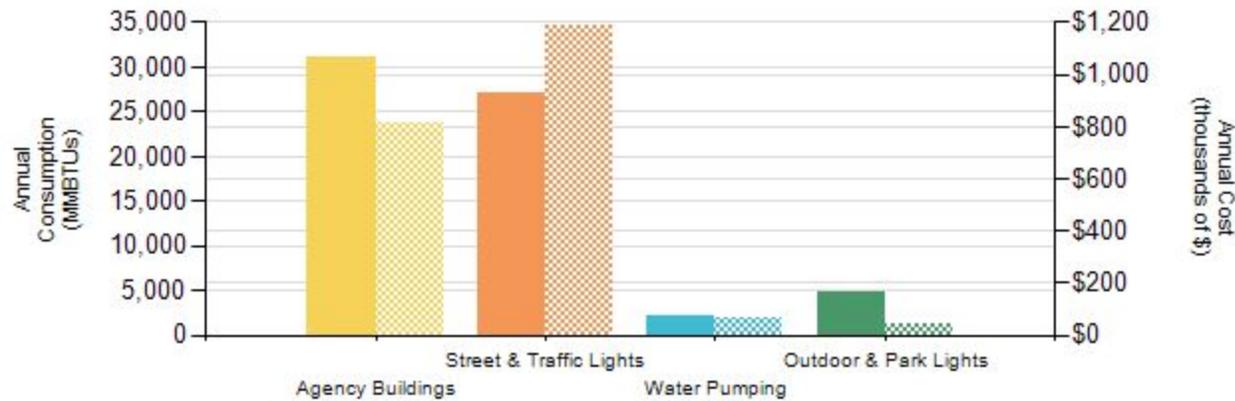
This report is intended to provide a framework for the City of Lancaster, referred to as “Agency” herein, to identify inefficient facilities and infrastructure and prioritize further investigation and energy efficiency retrofit work. This analysis uses only energy billing data provided by the Agency 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, Julie Castro, at [jcastro@energycoalition.org](mailto:jcastro@energycoalition.org).

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## 2. Total Energy Portfolio

Your Total Annual Energy Cost is **\$2,110,631**



Key: Solid color represents consumption, hashed color represents cost

Annual Energy Costs

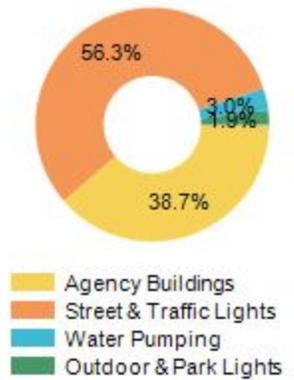


Table 1: Total Energy Portfolio (Annual)

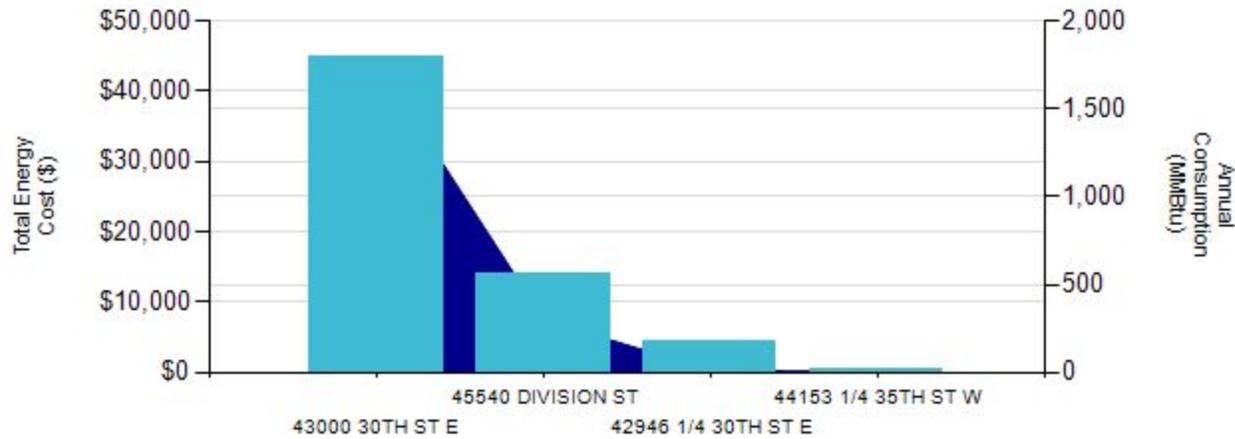
Agency Energy Use	Electric Consumption (kWh)	Electric Cost (\$)	Gas Consumption (therms)	Gas Cost (\$)	Total Energy Consumption (MMBTus)	Total Energy Cost (\$)	GHG Emissions (lbs CO2)
Street & Traffic Lights	7,968,849	\$1,188,973	0	\$0	27,174	\$1,188,973	4,119,895
Agency Buildings	5,964,932	\$736,828	110,774	\$79,824	31,084	\$816,653	3,083,870
Water Pumping	606,727	\$63,938	0	\$0	2,069	\$63,938	313,678
Outdoor & Park Lights	1,438,466	\$41,067	0	\$0	4,905	\$41,067	743,687



### 3. Water Pumping



Your Annual Energy Cost for Water Pumping is **\$63,938** and **3.0%** 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)
43000 30TH ST E	43000 30TH ST E	516,932	\$44,921	\$0.09
45540 DIVISION ST	45540 DIVISION ST	86,700	\$13,985	\$0.16
42946 1/4 30TH ST E	42946 1/4 30TH ST E	3,031	\$4,516	\$1.49
44153 1/4 35TH ST W	44153 1/4 35TH ST W	64	\$515	\$8.05

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

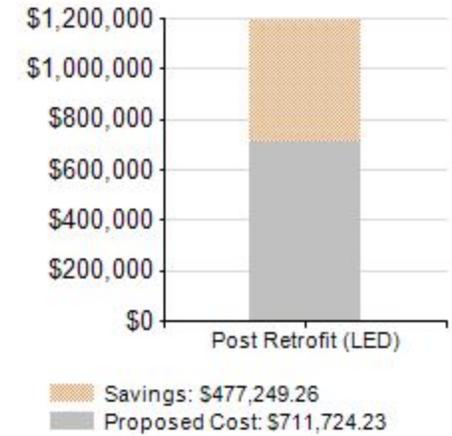
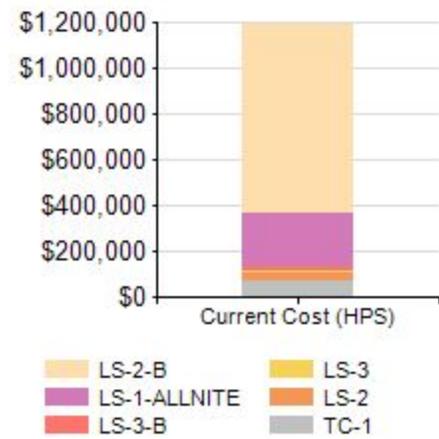
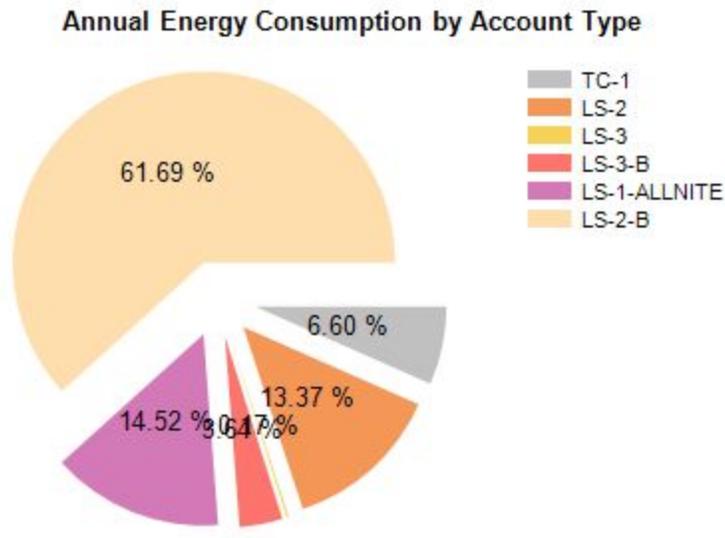
**Calculation** - projected savings are 7.5% of 65% of the total PA consumption (for ALL pump accounts)



## 4. Street & Traffic Lights



Your Annual Energy Cost for Street & Traffic Lights is **\$1,188,973** and **56.3%** 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-2-B	Street Lights (Agency Owned - unmetered)	4,916,358	\$825,377	0.17

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LS-1-ALLNITE	Street Lights (SCE Owned)	1,157,453	\$234,475	0.20
TC-1	Traffic Signal Lights (Agency Owned)	526,034	\$70,346	0.13
LS-2	Street Lights (Agency Owned - unmetered)	1,065,543	\$45,446	0.04
LS-3-B	Street Lights (Agency Owned - metered)	290,116	\$12,065	0.04
LS-3	Street Lights (Agency Owned - metered)	13,345	\$1,264	0.09

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CITY HALL	44933 FERN AVE	1,609,628	\$139,289	\$0.09	0	\$0	\$0.00	NO
JETHAWKS STADIUM	2400 W AVENUE I	948,277	\$123,937	\$0.13	0	\$0	\$0.00	NO
PERFORMING ARTS CENTER	750 W LANCASTER BLVD	736,049	\$81,486	\$0.11	0	\$0	\$0.00	NO
SGT OWEN MEMORIAL PARK	43011 10TH ST	579,508	\$78,411	\$0.14	3,190	\$2,918	\$0.91	NO
EASTSIDE POOL	45045 5TH ST	234,519	\$18,785	\$0.08	51,550	\$34,302	\$0.67	YES
CITY FACILITY	46008 7TH ST	263,880	\$15,094	\$0.06	39,092	\$28,228	\$0.72	NO
MUSEUM OF ART & HISTORY	665 W LANCASTER BLVD	302,980	\$28,268	\$0.09	3,408	\$3,028	\$0.89	NO
JANE REYNOLDS PARK	715 W AVENUE J	195,653	\$15,476	\$0.08	0	\$0	\$0.00	NO
HIGHER EDUCATION	45356 DIVISION ST	145,528	\$14,684	\$0.10	0	\$0	\$0.00	YES
WHIT CARTER PARK	45635 SIERRA HWY	88,449	\$10,870	\$0.12	0	\$0	\$0.00	NO

## 6. Outdoor & Park Lights



Your Annual Energy Cost for Outdoor & Park Lights is **\$41,067** and **1.9%** 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	1,437,494	\$40,829	\$0.03

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Area Lighting	Various	OL-1	972	\$238	\$0.24
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## Appendix A – IOU and Solar Breakdown



Table 6: IOU and Solar Breakdown

Site Name	Address	Total Electric Consumption (kWh)	Total Electric Cost (\$)	Solar Electric Consumption (kWh)	Solar Electric Cost (\$)	IOU Electric Consumption (kWh)	IOU Electric Cost (\$)
JETHAWKS STADIUM	2400 W AVENUE I	948,277	\$123,937	636,315	\$63,632	311,962	\$60,305
SGT OWEN MEMORIAL PARK	43011 10TH ST	579,508	\$78,411	229,169	\$22,917	350,339	\$55,494
PERFORMING ARTS CTR	750 W LANCASTER BLVD	736,049	\$81,486	359,356	\$35,936	376,693	\$45,550
CITY HALL	44933 FERN AVE	1,609,628	\$139,289	998,249	\$99,829	611,379	\$39,460
MAINTENANCE YARD*	44900 DIVISION ST	1,844,435	\$171,459	573,156	\$57,316	1,271,279	\$114,143

\*IOU Electric bills paid by Antelope Valley Union High School District

## Appendix B – Methodology

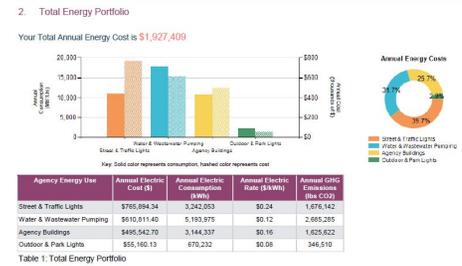
### 1. Data Sources

- 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>
- Analysis period for electricity and gas results were based on usage during period November 1, 2017 – October 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].

### 2. Total Energy Portfolio

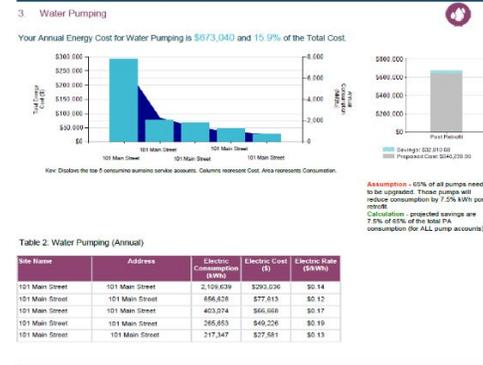
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- Total Energy Portfolio data represents an analysis of each agency facility type annual energy costs, annual energy consumption (kWh and therms), GHG Emissions and total annual energy costs for agency facility types based on MMBtus.
- The following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



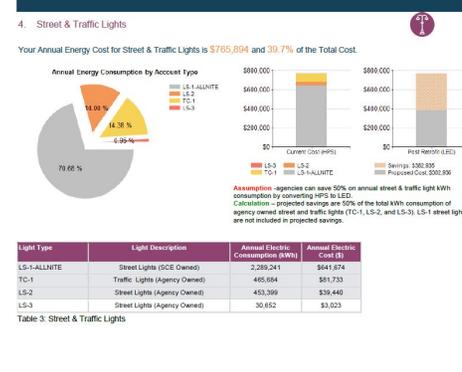
### 3. Water Pumping

- 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].



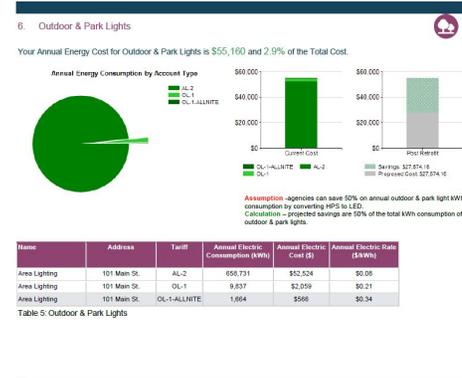
## 5. Building Summary

- 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:

Tariff Type	Meter Number
Building	44423464, 43047178, 46285108, 46673306, 47279093, 47040260, 47562295, 35516211, 47904479, 42555567, 45670018, 46814383, 46285110, 45669986, 49118882, 46285118, 515007, 42312816, 46285120, 43047213, 49118912, 43047219, 42555582, 42555589
LS-1	8583723, 1875562, 1875563, 23230908, 23111115, 1875561, 22978405
TC-1	3843723, 1171648

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## Endnotes

[1] Corporate Responsibility Report. (2015). In Southern California Edison. Retrieved from [https://www.sce.com/wps/wcm/connect/c0fcee5-e04a-4287-8301-8e66e3e5fbac/2014\\_Corporate+Responsibility+Report\\_FINAL+single-page.pdf?MOD=AJPERES&ContentCache=NONE](https://www.sce.com/wps/wcm/connect/c0fcee5-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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