

Comparative Energy Analysis Report

Prepared for
The City of Yorba Linda

Prepared by
The Energy Coalition

on Behalf of the
Southern California Regional Energy Network
(SoCalREN)

Date
7/23/2018

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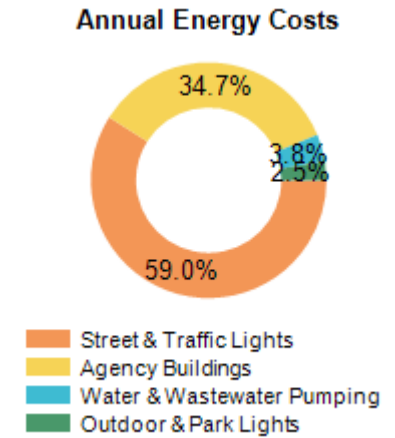
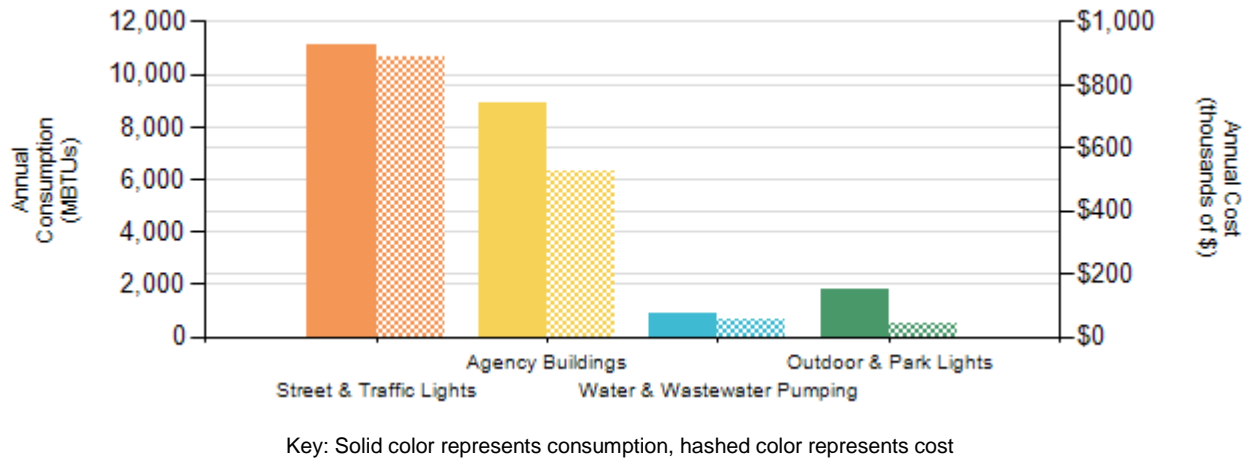
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1. Overview

This report is intended to provide a framework for the City of Yorba Linda, referred to as “Agency” herein, to identify inefficient facilities and prioritize further investigation and energy efficiency retrofit work. This analysis uses energy billing data provided by the Agency to provide an overview of energy use in Agency facilities and to help identify individual locations with the potential for energy efficiency improvements. Many factors affect the energy use in different facilities, including age, type of heating, ventilation, air conditioning (HVAC), and lighting equipment, facility occupancy and hours, plug loads, and climate. Once individual facilities 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. Further analysis can identify inefficient equipment, malfunctioning equipment, equipment not operating as designed, or suboptimal operational procedures.

2. Total Energy Portfolio

Your Total Annual Energy Cost is **\$1,508,779**



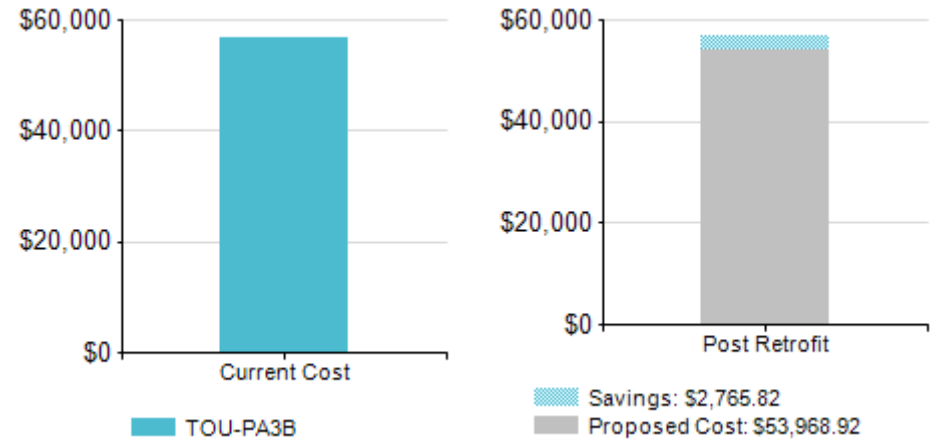
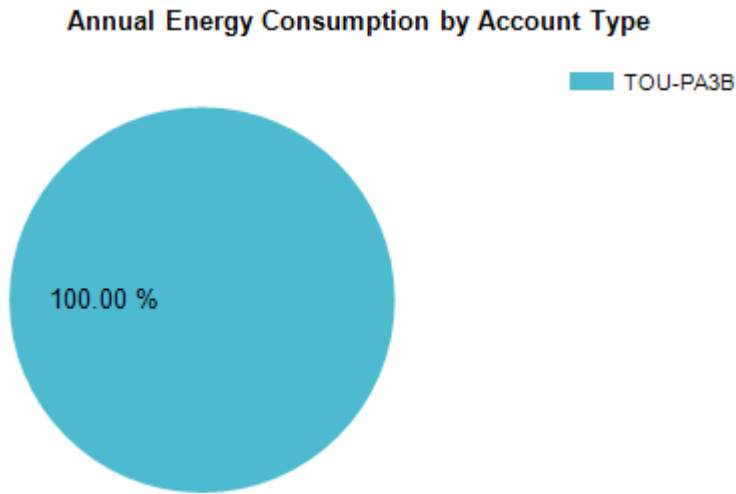
Agency Energy Use	Annual Electric Cost (\$)	Annual Electric Consumption (kWh)	Annual Electric Rate (\$/kWh)	Annual GHG Emissions (lbs CO2)
Street & Traffic Lights	\$889,881.39	3,261,631	\$0.27	1,686,263
Agency Buildings	\$523,707.30	2,616,655	\$0.20	1,352,811
Pumping	\$56,734.74	262,539	\$0.22	135,733
Outdoor & Park Lights	\$38,455.73	518,271	\$0.07	267,946

Table 1: Total Energy Portfolio

3. Pumping



Your Annual Energy Cost for Pumping is **\$56,735** and **3.8%** of the Total Cost.



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)

Site Name	Address	Tariff	Annual Electric Consumption (kWh)	Annual Electric Cost (\$)	Annual Electric Rate (\$/kWh)
Pumping	Various	TOU-PA3B	262,539	\$56,735	\$0.22

Table 2: Pumping



4. Street & Traffic Lights

Your Annual Energy Cost for Street & Traffic Lights is **\$889,881** and **59.0%** of the Total Cost.

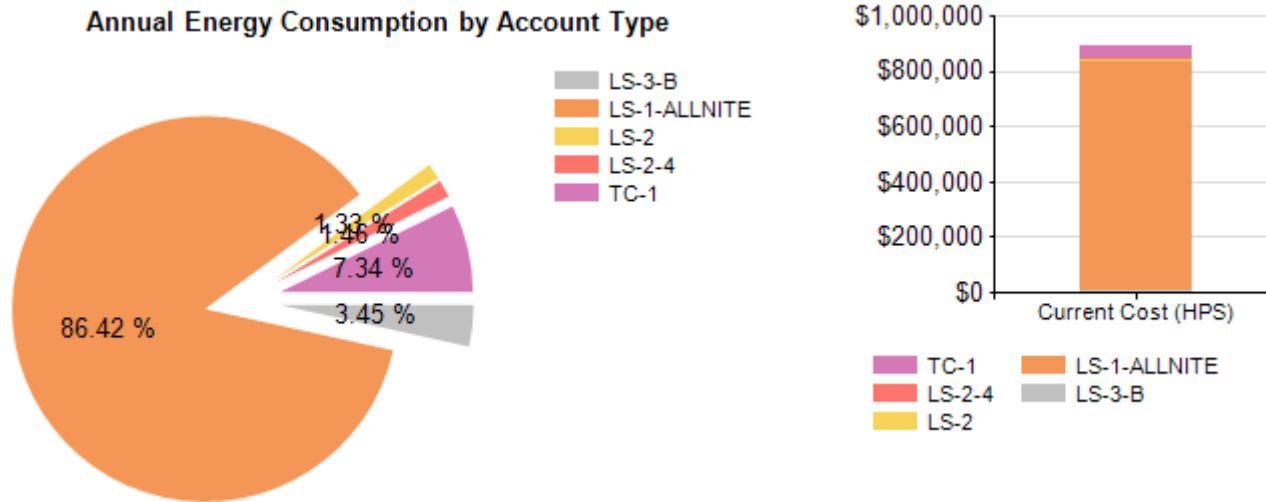


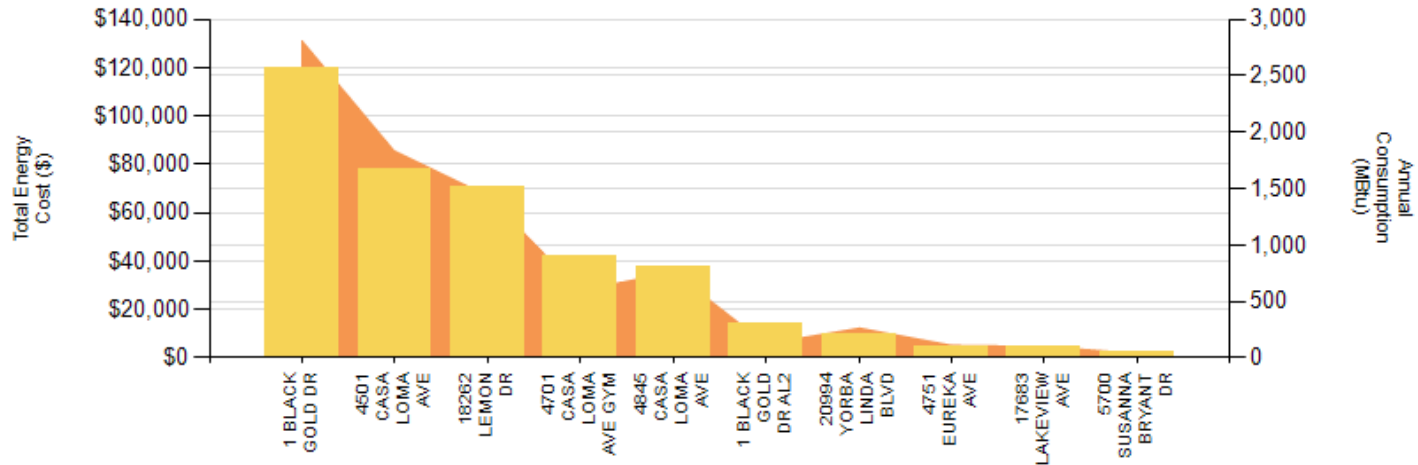
Table 3: Street & Traffic Lights

Tariff Type	Light Description	Annual Electric Consumption (kWh)	Annual Electric Cost (\$)
LS-1-ALLNITE	Street Lights (SCE Owned)	2,818,804	\$826,817
TC-1	Street Lights (Agency Owned)	239,484	\$43,209
LS-3-B	Street Lights (Agency Owned)	112,430	\$11,417
LS-2-4	Street Lights (Agency Owned)	47,570	\$4,386
LS-2	Street Lights (Agency Owned)	43,343	\$3,834



5. Building Summary

Your Annual Energy Cost for Buildings is **\$523,707** and **34.7%** of the Total Cost.



Key: Displays the top 10 consuming Buildings. Columns represent Cost, Area represents Consumption.

Name	Address	Annual Electric Consumption (kWh)	Annual Electric Cost (\$)	Annual Electric Rate (\$/kWh)
Black Gold Golf Club Clubhouse	1 BLACK GOLD DR	823,932	\$120,212	\$0.15
Yorba Linda Community Center	4501 CASA LOMA AVE	538,349	\$77,953	\$0.14
Yorba Linda Public Library	18262 LEMON DR	420,565	\$70,445	\$0.17
Thomas Lasorda Jr Field House	4701 CASA LOMA AVE GYM	175,333	\$42,150	\$0.24
Yorba Linda Parks and Recreation	4845 CASA LOMA AVE	223,078	\$37,767	\$0.17
Black Gold Golf Club Range Lights (GS)	1 BLACK GOLD DR AL2	36,554	\$14,080	\$0.39
Police Services Facility	20994 YORBA LINDA BLVD	77,509	\$9,565	\$0.12
Maintenance Facility	4751 EUREKA AVE	32,688	\$4,825	\$0.15
Black Gold Maintenance Department	17683 LAKEVIEW AVE	29,653	\$4,653	\$0.16
Susanna Bixby Bryant Museum and Botanical Garden	5700 SUSANNA BRYANT DR	11,634	\$2,699	\$0.23

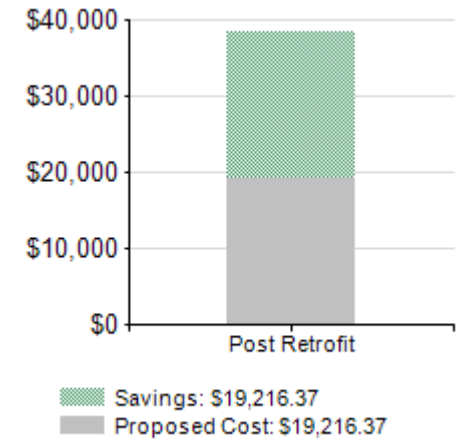
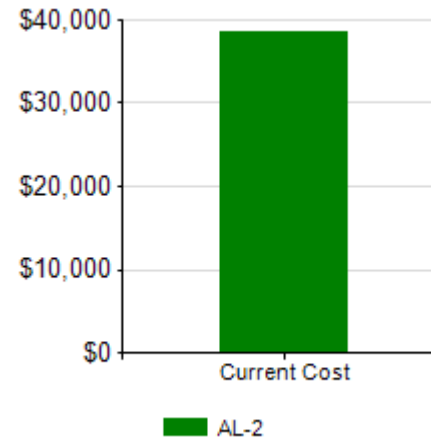
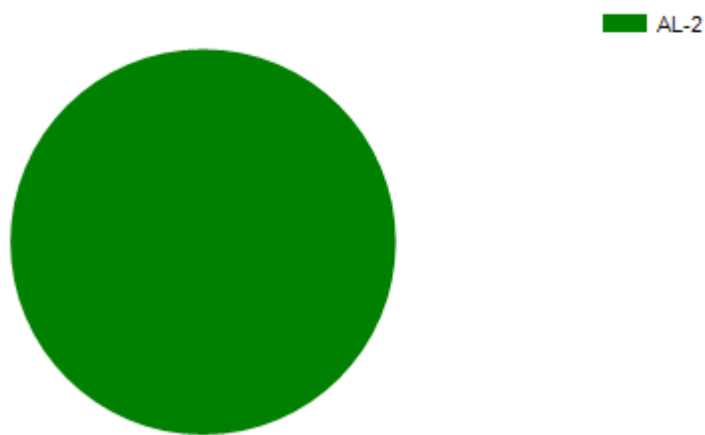
Table 4: Building Summary

6. Outdoor & Park Lights



Your Annual Energy Cost for Outdoor & Park Lights is **\$38,456** and **2.5%** of the Total Cost.

Annual Energy Consumption by Account Type



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.

Name	Address	Tariff Type	Annual Electric Consumption (kWh)	Annual Electric Cost (\$)	Annual Electric Rate (\$/kWh)
Area Lighting	Various	AL-2	518,271	\$38,433	\$0.07

Table 5: Outdoor & Park Lights

Appendix A - Methodology

1. Data Sources

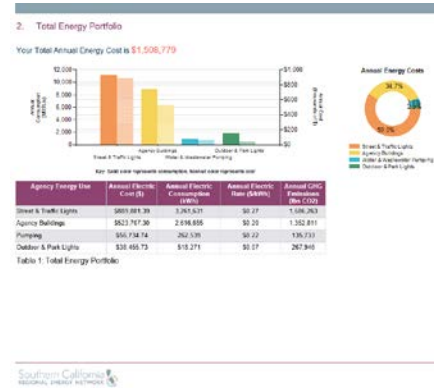
- Building information, energy usage and cost data used in this analysis were derived from: Utility consumption billing data provided by agency staff.
- Utility consumption billing data used in this analysis were derived from SCE electric tariffs
- For more information about the utility tariffs included in this analysis refer to:
 - 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 results were based on usage during period June 1, 2017– May 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 and energy intensity, energy usage and cost values were aggregated by summing the average daily 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 CO₂/MWh + 11.91 lbs CO₂/therm [1,2].

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

Tariff Type	Service Account #
LS-2	43259495, 30952015
LS-3	17457459
Traffic Control	1214286, 28421190

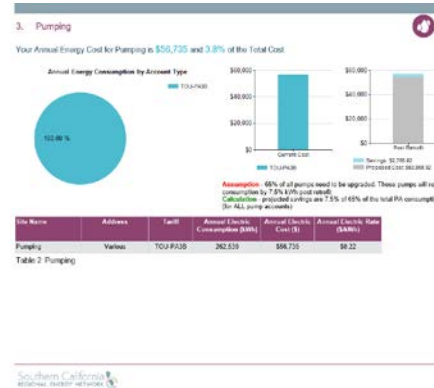
2. Total Energy Portfolio

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



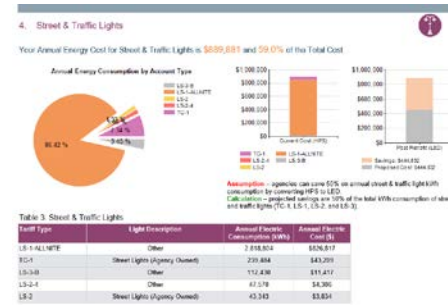
3. Pumping

- Pumping represents an analysis of annual energy costs, annual energy cost, annual energy consumption (kWh), GHG Emissions, and total annual energy costs based on MBtus by utility tariff type.
- 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, annual energy cost, annual energy consumption (kWh), GHG Emissions 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].



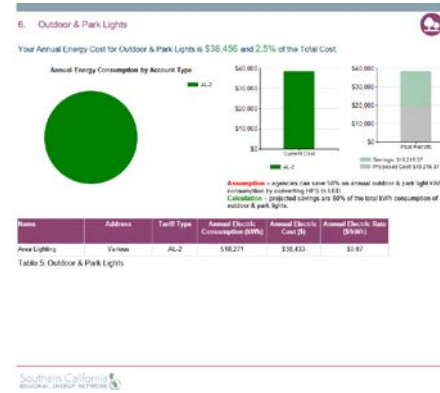
5. Building Summary

- Building summary data represents an analysis of the top ten highest energy consuming agency buildings annual energy costs, annual energy cost, annual energy consumption (kWh), GHG Emissions, and total annual energy costs based on MBtus.



6. Outdoor & Park Lights

- Outdoor & park lights data represents an analysis of annual energy costs, annual electric cost, annual energy consumption (kWh), GHG Emissions, and total annual energy costs based on MBtus per SCE outdoor and park lighting tariff type



Endnotes

[1] Corporate Responsibility Report. (2015). In Southern California Edison. Retrieved from https://www.sce.com/wps/wcm/connect/c0fceef5-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

[3] Based on SoCalREN previous project estimates.