

Comparative Energy Analysis Report

Prepared for
City of Murrieta

Prepared by
The Energy Coalition

On Behalf of
The SoCalREN Public Agency Program

Date

7/2/2018

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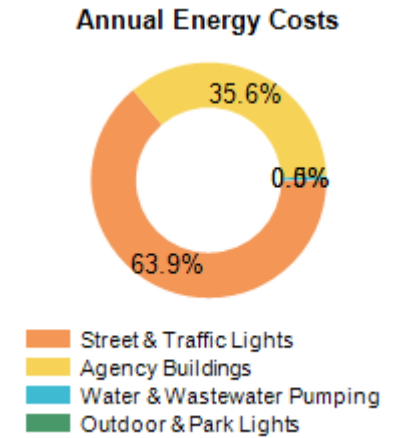
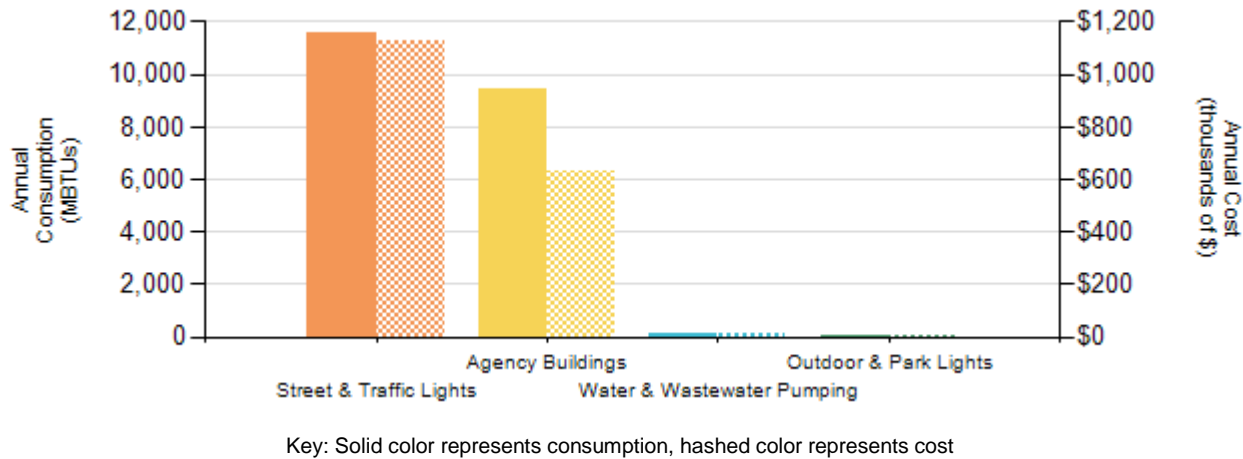
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1. Overview

This report is intended to provide a framework for the City of Murrieta, referred to as “Agency” herein, to identify inefficient facilities and prioritize further investigation and energy efficiency retrofit work. This analysis uses only 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 **\$1,769,410**



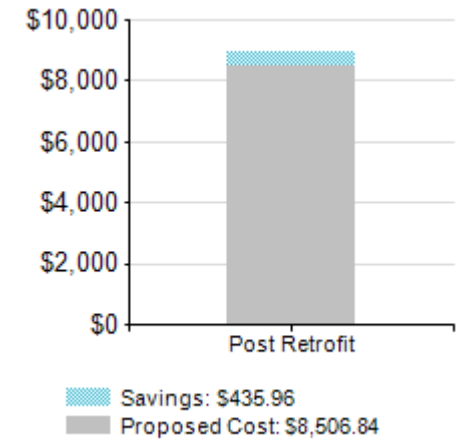
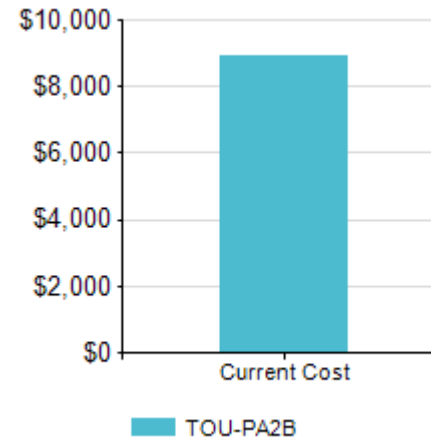
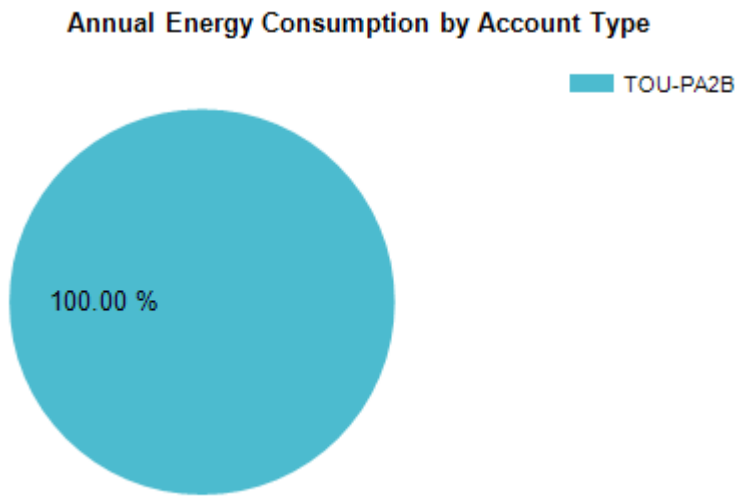
Agency Energy Use	Annual Electric Cost (\$)	Annual Electric Consumption (kWh)	Annual Electric Rate (\$/kWh)	Annual GHG Emissions (lbs CO ₂)
Pumping	\$8,942.80	33,208	\$0.27	17,168
Street & Traffic Lights	\$1,130,394.35	3,393,788	\$0.33	1,754,588
Agency Buildings	\$629,755.38	2,773,680	\$0.23	1,433,992
Outdoor & Park Lights	\$317.03	2,518	\$0.13	1,302

Table 1: Total Energy Portfolio

3. Pumping



Your Annual Energy Cost for Pumping is **\$8,943** and **0.5%** 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)

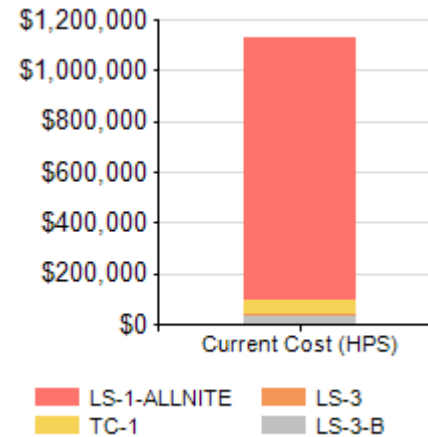
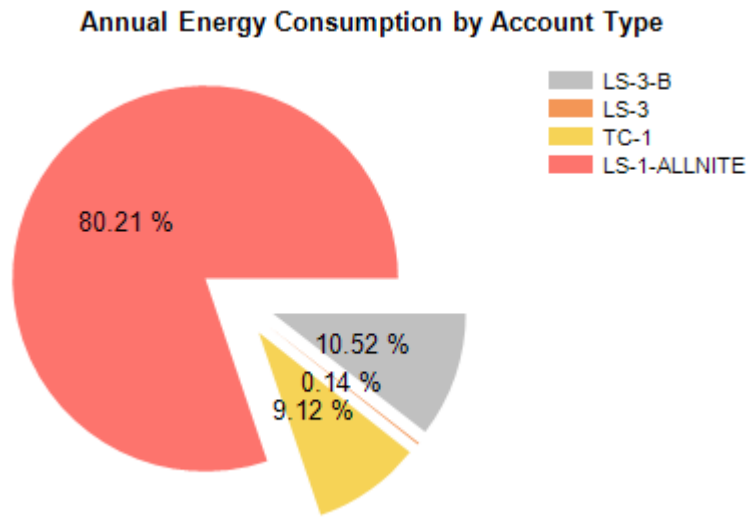
Site Name	Address	Tariff	Annual Electric Consumption (kWh)	Annual Electric Cost (\$)	Annual Electric Rate (\$/kWh)
Pumping	Various	TOU-PA2B	33,208	\$8,943	\$0.27

Table 2: Water & Wastewater Pumping

4. Street & Traffic Lights



Your Annual Energy Cost for Street & Traffic Lights is **\$1,130,394** and **63.9%** of the Total Cost.



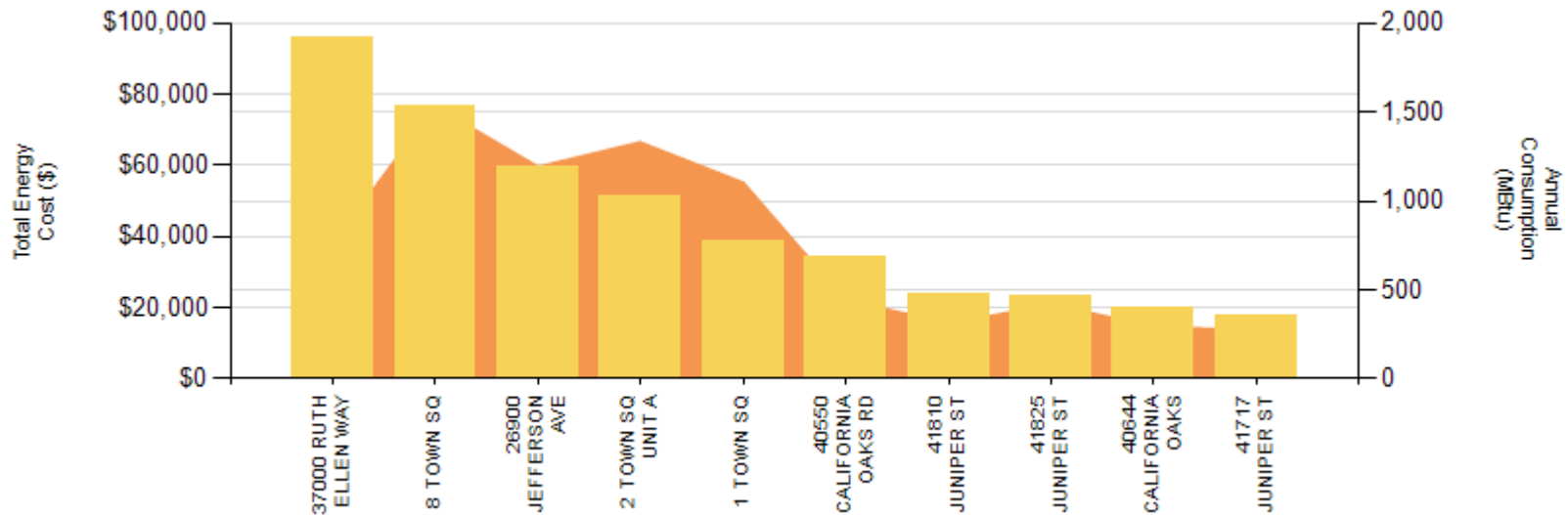
Tariff	Light Description	Annual Electric Consumption (kWh)	Annual Electric Cost (\$)
LS-1-ALLNITE	Street Lights (SCE Owned)	2,722,278	\$1,031,520
TC-1	Traffic Signal Lights (Agency Owned)	309,660	\$58,875
LS-3-B	Street Lights (Agency Owned – metered)	357,000	\$39,260
LS-3	Street Lights (Agency Owned – metered)	4,850	\$782

Table 3: Street & Traffic Lights



5. Building Summary

Your Annual Energy Cost for Buildings is **\$629,755** and **35.6%** 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)
LOS ALAMOS HILLS SPORTS PARK	37000 RUTH ELLEN WAY	223,939	\$95,846	\$0.43
MURRIETA PUBLIC LIBRARY	8 TOWN SQ	450,551	\$76,639	\$0.17
INDUSTRIAL COMPLEX/ UNKNOWN	26900 JEFFERSON AVE	350,350	\$59,770	\$0.17
MURRIETA POLICE DEPARTMENT	2 TOWN SQ UNIT A	390,791	\$51,545	\$0.13
MURRIETA CITY HALL	1 TOWN SQ	323,919	\$38,773	\$0.12
CALIFORNIA OAKS SPORT PARK	40550 CALIFORNIA OAKS RD	130,498	\$34,425	\$0.26
TOWN CENTER PARK	41810 JUNIPER ST	92,004	\$24,105	\$0.26
MURRIETA FIRE AND RESCUE	41825 JUNIPER ST	123,285	\$23,560	\$0.19
MURRIETA YOUTH CENTER	40644 CALIFORNIA OAKS	87,272	\$20,116	\$0.23
MURRIETA SENIOR CENTER	41717 JUNIPER ST	79,999	\$17,656	\$0.22

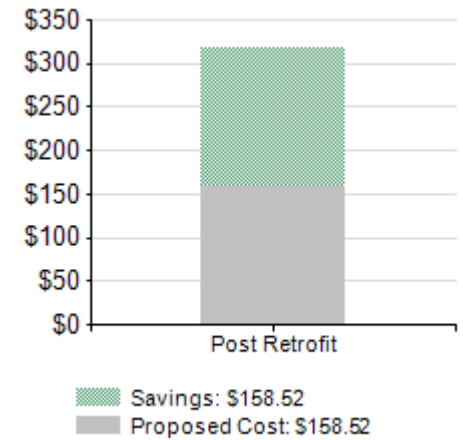
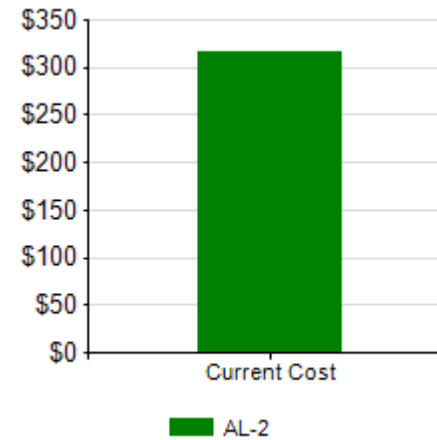
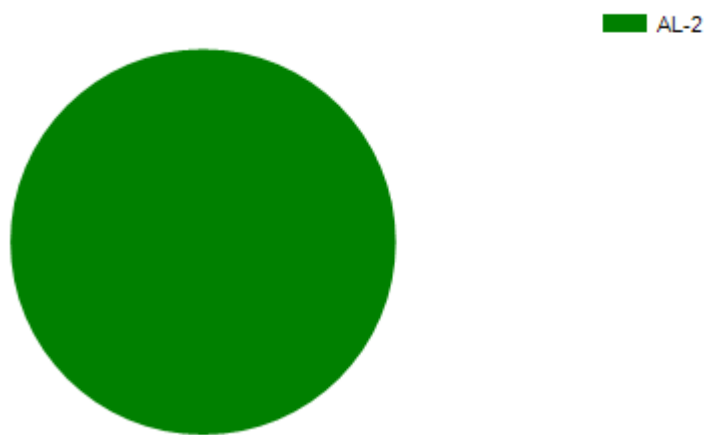
Table 4: Building Summary

6. Outdoor & Park Lights



Your Annual Energy Cost for Outdoor & Park Lights is **\$317** and **0.0%** 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	Annual Electric Consumption (kWh)	Annual Electric Cost (\$)	Annual Electric Rate (\$/kWh)
Area Lighting	Various	AL-2	2,518	\$317	\$0.13

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 April 30, 2017 – April 30 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}.

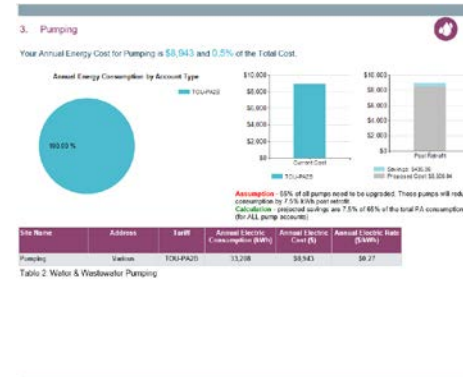
2. Total Energy Portfolio

- 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



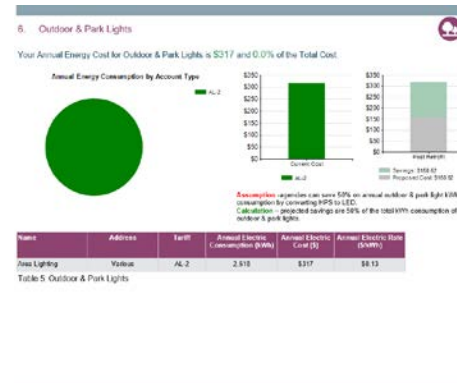
3. Pumping

- Pump data represents an analysis of the top five highest energy consuming pumping SCE service accounts annual energy costs, annual energy cost, annual energy consumption (kWh), GHG Emissions, and total annual energy costs based on MBtus.
- 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 consumption³.



6. Outdoor & Park Lights

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



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

Tariff	Meter Number
LS-1	47440549
LS-3	25832048, 40852380
Traffic Control	37095841, 31713599

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.