



Comparative Energy Analysis Report

Prepared for

Palmdale

Prepared by

The Energy Coalition

On Behalf of

The Southern California Regional Energy Network Public Agency Project Delivery Programs

Date

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Table of Contents

1. Overview	3
2. Total Energy Portfolio	4
3. Water Pumping	5
4. Street & Traffic Lights	7
5. Building Summary	9
6. Outdoor & Park Lights	11
Appendix A - Annual Comparison	13
Appendix C - Methodology	15

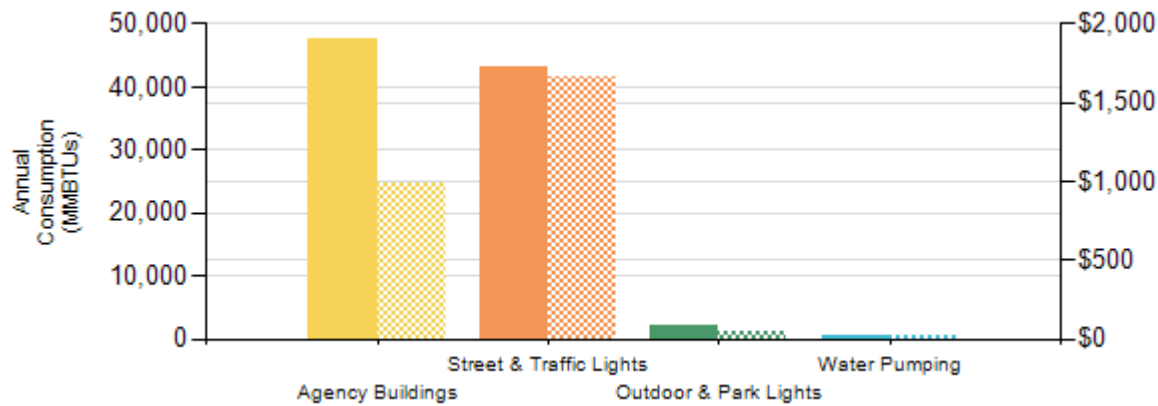
1. Overview

This report is intended to provide a framework for the City of Palmdale, referred to as “Agency” herein, to identify inefficient facilities and infrastructure and prioritize further investigation and energy efficiency retrofit work. This analysis uses only Southern California Edison and Southern California Gas 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). Any questions about this report can be directed to your assigned Project Manager, Nataliia Hamidi at nhamidi@energycoalition.org.

2. Total Energy Portfolio

Your Total Annual Energy Cost is **\$2,716,310**



Key: Solid color represents consumption, hashed color represents cost

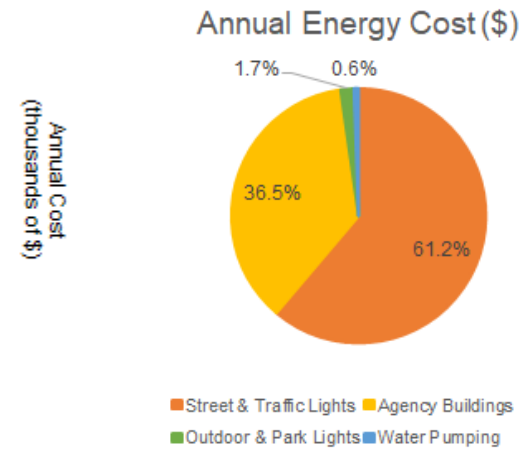


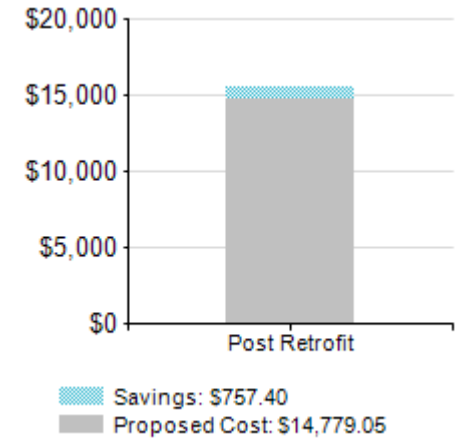
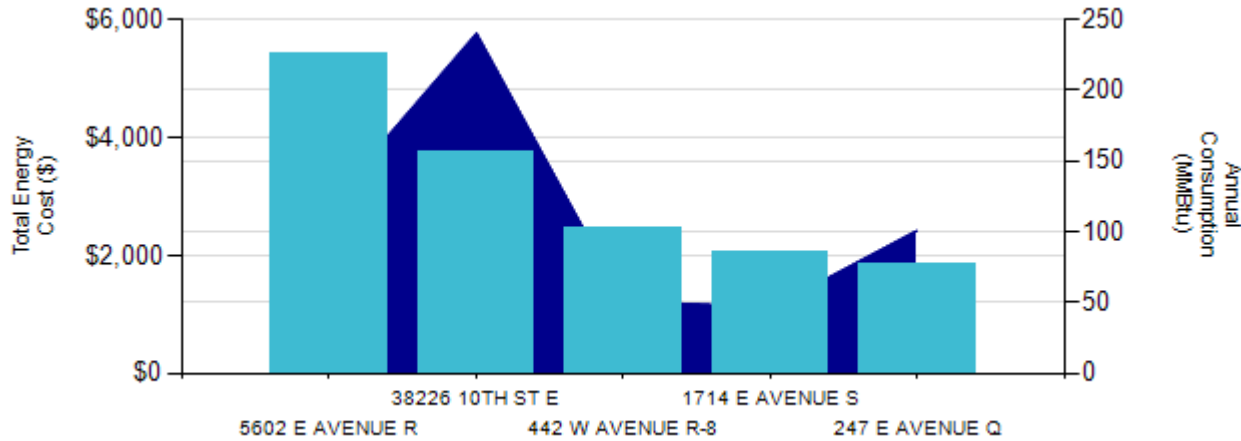
Table 1: Total Energy Portfolio (Annual)

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	12,658,123	\$1,662,484	0	\$0	43,190	\$1,662,484	6,544,250
Agency Buildings	4,292,280	\$736,950	329,259	\$255,617	47,571	\$992,567	2,219,109
Outdoor & Park Lights	584,605	\$45,722	0	\$0	1,995	\$45,722	302,241
Water Pumping	163,472	\$15,536	0	\$0	558	\$15,536	84,515



3. Water Pumping

Your Annual Energy Cost for Water Pumping is **\$15,536** and **0.6%** 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)
Los Angeles County Fire Dept. Station 93	5602 E AVENUE R	34,869	\$5,426	\$0.16
Melville J. Courson Park	38226 10TH ST E	70,371	\$3,744	\$0.05
442 W AVENUE R-8	442 W AVENUE R-8	15,198	\$2,470	\$0.16
1714 E AVENUE S	1714 E AVENUE S	13,495	\$2,051	\$0.15
247 E AVENUE Q	247 E AVENUE Q	29,539	\$1,846	\$0.06

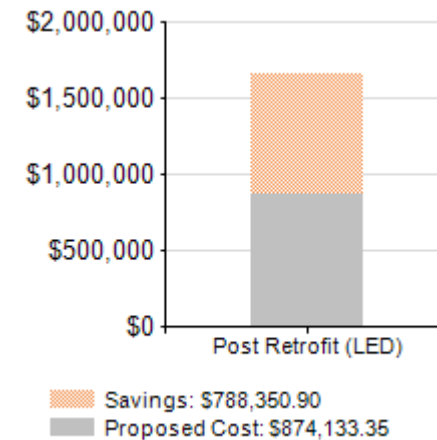
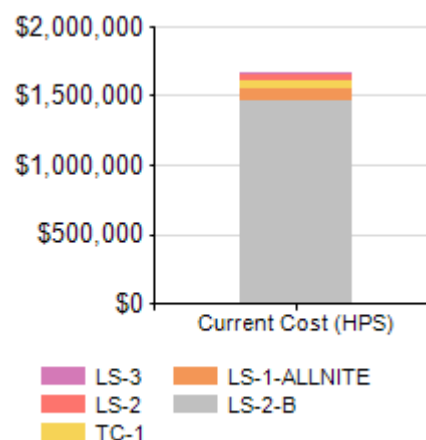
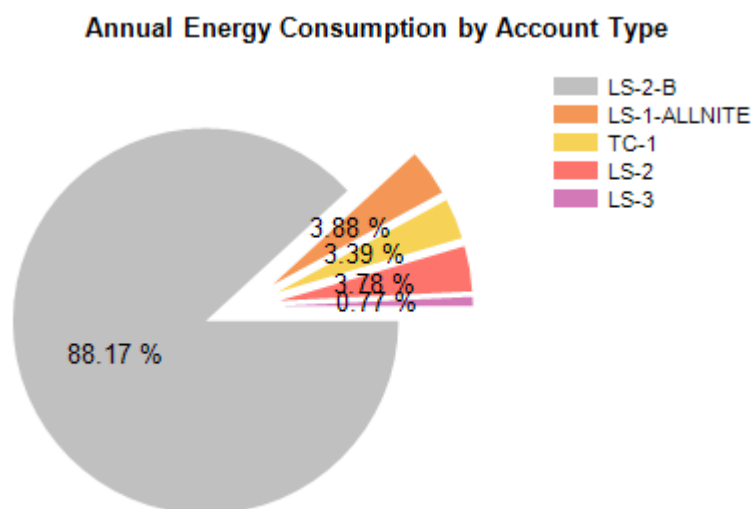
Assumption - 65% of all pumps need to be upgraded. Those pumps will reduce consumption by 7.5% kWh post retrofit.

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 **\$1,662,484** and **61.2%** 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)	11,160,854	\$1,459,670	0.13
LS-1-ALLNITE	Street Lights (SCE Owned)	491,733	\$85,782	0.17
TC-1	Traffic Signal Lights (Agency Owned)	429,645	\$68,341	0.16
LS-2	Street Lights (Agency Owned - unmetered)	477,984	\$42,670	0.09
LS-3	Street Lights (Agency Owned - metered)	97,907	\$6,021	0.06

5. Building Summary



Your Annual Energy Cost for Buildings is **\$992,567** and **36.5%** of the Total Cost.

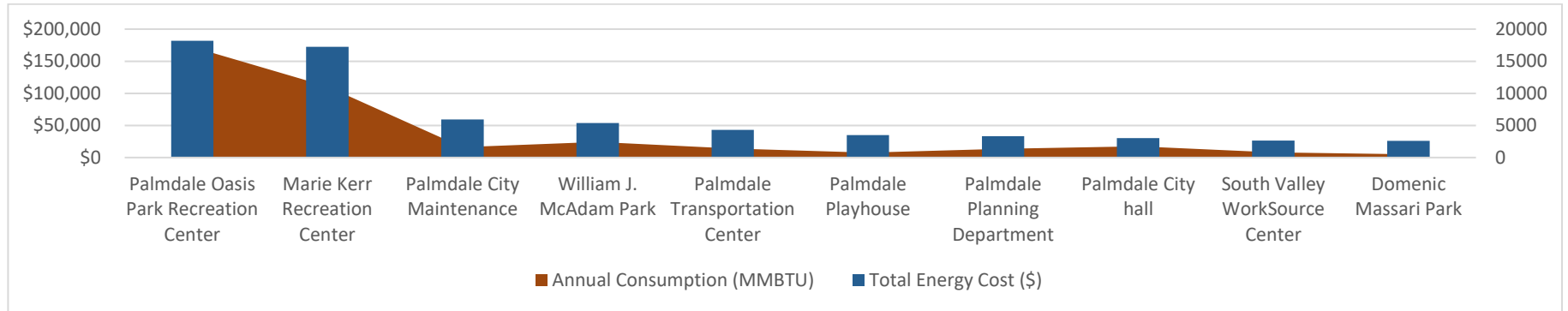


Table 4: Building Summary (Annual)

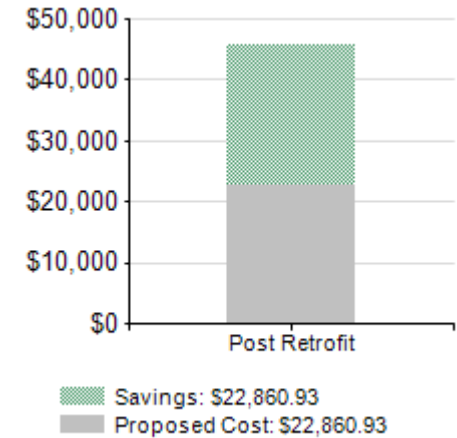
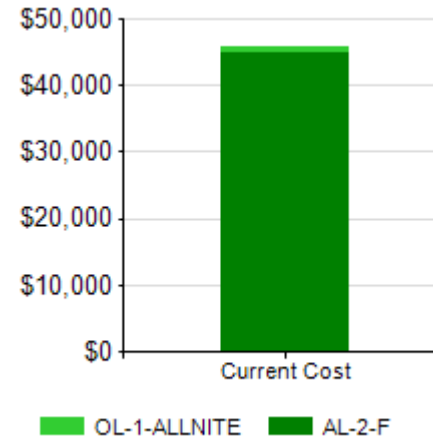
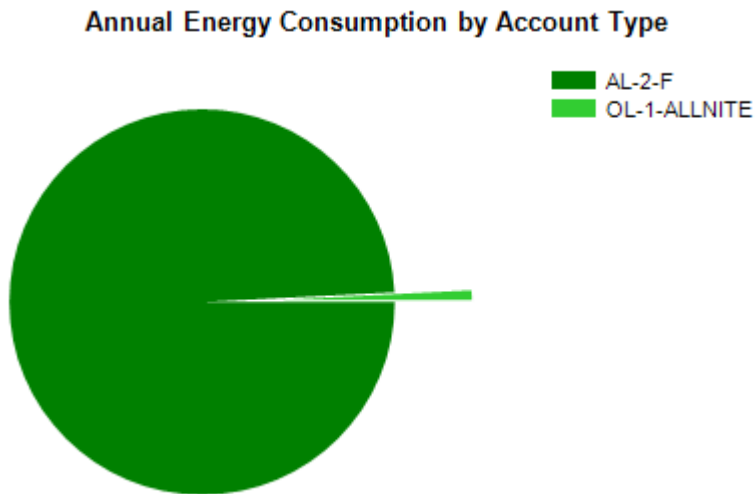
Site Name	Address	Electric Consumption (kWh)	Electric Cost (\$)	Electric Rate (\$/kWh)	Gas Consumption (therms)	Gas Cost (\$)	Gas Rate (\$/therm)
Palmdale Oasis Park Recreation Center	3850 E AVENUE S	485,264	\$75,526	\$0.14	155,759	\$106,566	\$0.68
Marie Kerr Recreation Center	2723 W RANCHO VISTA BLVD	496,642	\$103,855	\$0.24	93,552	\$68,642	\$0.73
Palmdale City Maintenance	39110 3RD ST E	347,436	\$54,557	\$0.17	4,523	\$4,592	\$1.02
William J. McAdam Park	38115 30TH ST E	146,476	\$37,357	\$0.26	19,151	\$16,496	\$0.86
Palmdale Transportation Center	39000 CLOCK TOWER PLAZA DR E	237,172	\$37,377	\$0.18	5,926	\$5,678	\$0.96
Palmdale Playhouse	38334 10TH ST E	145,211	\$32,464	\$0.22	2,603	\$2,710	\$1.04
Palmdale Planning Department	38250 SIERRA HWY	251,441	\$28,475	\$0.11	4,957	\$4,831	\$0.97
Palmdale City hall	38300 SIERRA HWY	405,937	\$26,173	\$0.06	3,717	\$4,132	\$1.11
South Valley WorkSource Center	38510 SIERRA HWY	129,475	\$23,063	\$0.18	3,466	\$3,512	\$1.01
Domenic Massari Park	37716 55TH ST E	145,552	\$25,834	\$0.18	0	\$0.00	\$0.00

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.

6. Outdoor & Park Lights



Your Annual Energy Cost for Outdoor & Park Lights is **\$45,722** and **1.7%** of the Total Cost.



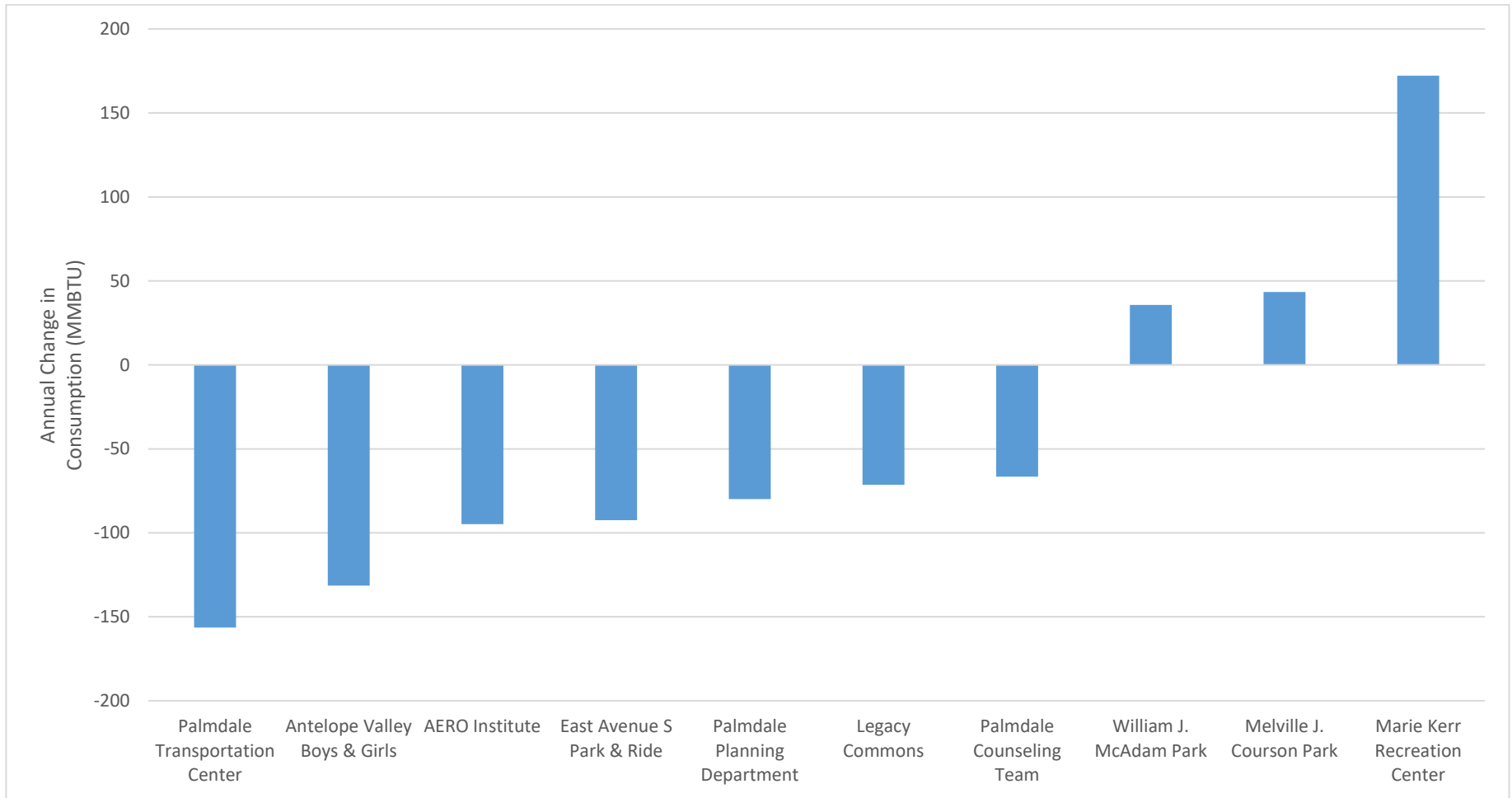
Assumption -agencies can save 50% on annual outdoor & park light kWh consumption by converting HPS to LED.

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-F	579,898	\$44,833	\$0.08
Area Lighting	Various	OL-1-ALLNITE	4,707	\$889	\$0.19

Appendix A - Annual Comparison



Key: Displays Buildings with the top 10 absolute change in MMBtu from baseline period to analysis period. Electricity is the solid yellow shade, Natural Gas is the hashed yellow shade.

Table 6: Annual Comparison

Site Name	Address	Prior Year Electric Consumption (kWh)	Current Year Electric Consumption (kWh)	Annual Change in Electricity	Prior Year Gas Consumption (therms)	Current Year Gas Consumption (therms)	Annual Change in Gas	Annual Change in Energy MMBtus
Marie Kerr Recreation Center	2723 W RANCHO VISTA BLVD	472,038	496,642	4.95%	67,704	93,552	38.18%	9.35%
Palmdale Transportation Center	39000 CLOCK TOWER PLAZA DR E	283,893	237,172	-19.70%	5,031	5,926	17.79%	-15.86%
Antelope Valley Boys & Girls	815 E AVENUE Q6	189,591	151,436	-25.20%	1,512	1,177	-22.16%	-20.14%
AERO Institute	38256 SIERRA HWY	68,390	40,449	-69.08%	634	799	26.03%	-40.24%
East Avenue S Park & Ride	212 E AVENUE S	63,787	36,694	-73.83%	0	0	N/A	-42.47%
Palmdale Planning Department	38250 SIERRA HWY	275,979	251,441	-9.76%	3,854	4,957	28.62%	-8.37%
Legacy Commons	930 E AVENUE Q9	209,520	189,295	-10.68%	3,610	2,886	-20.06%	-9.83%
Palmdale Counseling Team	700 E PALMDALE BLVD	103,650	83,729	-23.79%	772	1,199	55.31%	-18.67%
Melville J. Courson Park	38233 11TH ST E	13,905	26,629	47.78%	54	46	-14.81%	91.10%
William J. McAdam Park	38115 30TH ST E	143,330	146,476	2.15%	11,839	19,151	61.76%	6.74%

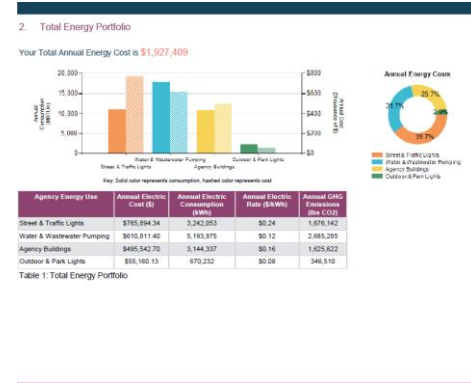
Appendix C - Methodology

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 February 1, 2019 – January 31, 2020.
- 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 CO₂/MWh + 11.91 lbs CO₂/therm [1,2].

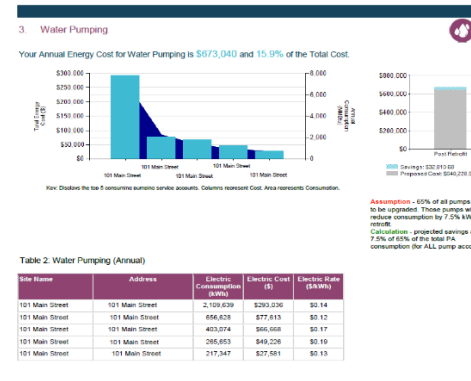
2. Total Energy Portfolio

- Total Energy Portfolio data represents an analysis of each agency facility type annual energy costs, annual energy 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



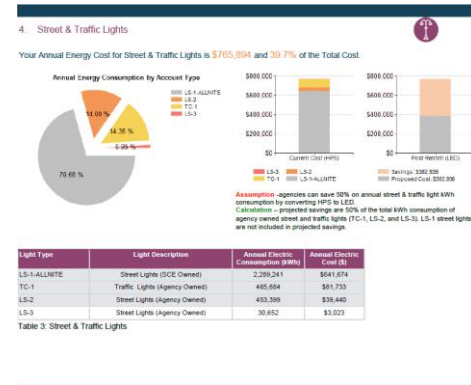
3. Water Pumping

- 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].



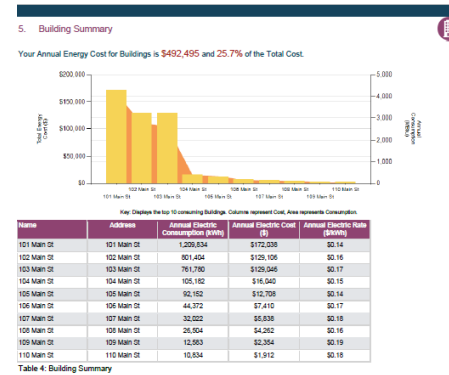
4. Street & Traffic Lights

- 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).



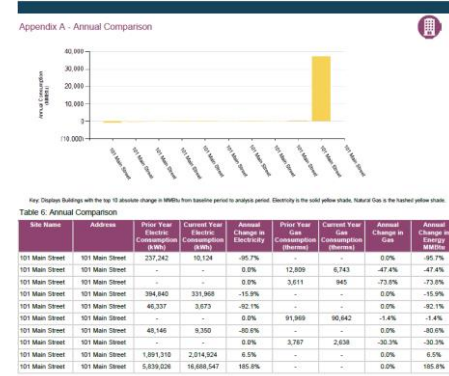
6. Outdoor & Park Lights

- 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.



Appendix A - Annual Comparison

- Annual comparison data is weather normalized and includes the following metrics for the agency buildings with the greatest change (absolute value) in annual energy consumption (MMBtu) from baseline period to analysis period: annual energy costs, annual energy consumption (kWh and therms).
- Baseline period for electricity and gas results were based on usage during February 1, 2019 – January 31, 2020.
- Analysis period for electricity and gas results were based on usage during February 1, 2019 – January 31, 2020.



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

- Electric
- Gas

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

- Electric
- Gas

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.