

Comparative Energy Analysis Report

Prepared for
City of Chino Hills

Prepared by
The Energy Coalition

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

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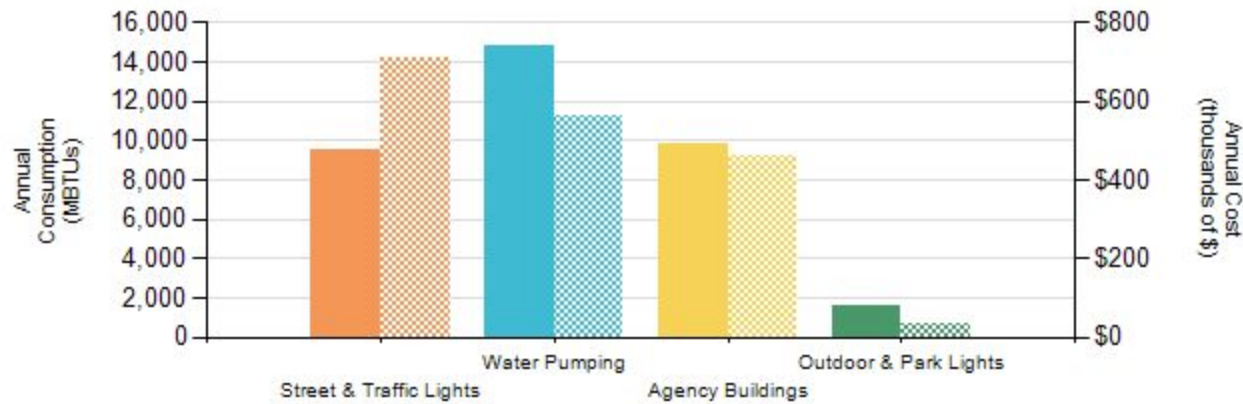
1. Overview

This report is intended to provide a framework for the Chino Hills, referred to as “Agency” herein, to identify inefficient facilities and infrastructure and prioritize further investigation and energy efficiency retrofit work. This analysis uses only total floor area and 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.com). Any questions about this report can be directed to your assigned Project Manager, Andrea Antony at aantony@energycoalition.org.

2. Total Energy Portfolio

Your Total Annual Energy Cost is **\$1,773,064**



Key: Solid color represents consumption, hashed color represents cost

Annual Energy Costs

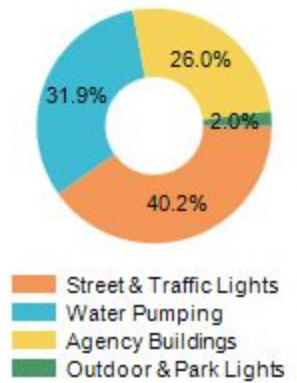


Table 1: Total Energy Portfolio (Annual)

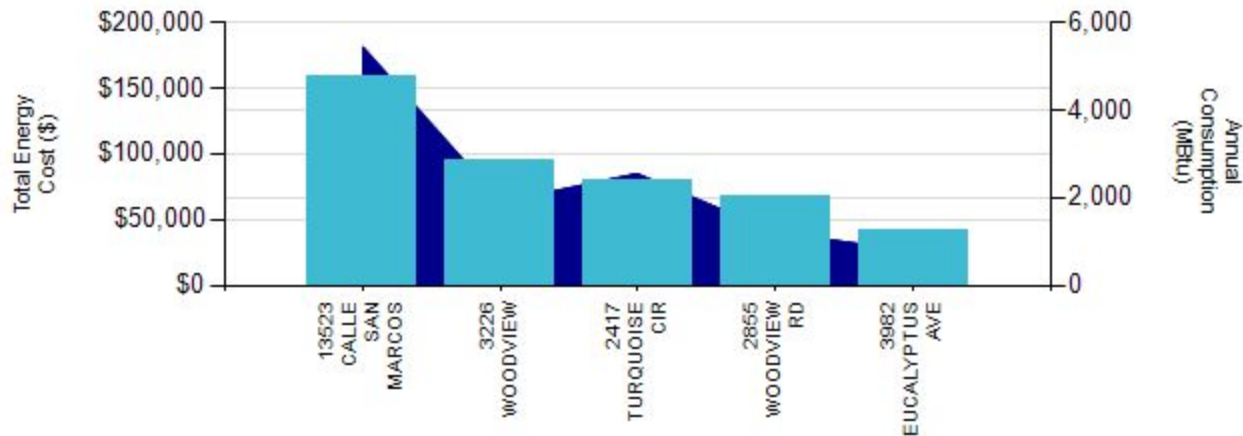
Agency Energy Use	Electric Consumption (kWh)	Electric Cost (\$)	Gas Consumption (therms)	Gas Cost (\$)	Total Energy Consumption (MBTUs)	Total Energy Cost (\$)	GHG Emissions (lbs CO2)
Street & Traffic Lights	2,780,255	\$712,377	0	\$0	9,480,671	\$712,377	1,437,392
Water Pumping	4,346,527	\$565,180	0	\$0	14,821,658	\$565,180	2,247,155
Agency Buildings	2,272,927	\$444,117	20,863	\$16,691	9,836,953	\$460,808	1,175,103
Outdoor & Park Lights	476,334	\$34,699	0	\$0	1,624,300	\$34,699	246,265



3. Water Pumping



Your Annual Energy Cost for Water Pumping is **\$565,180** and **31.9%** of the Total Cost.



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

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)

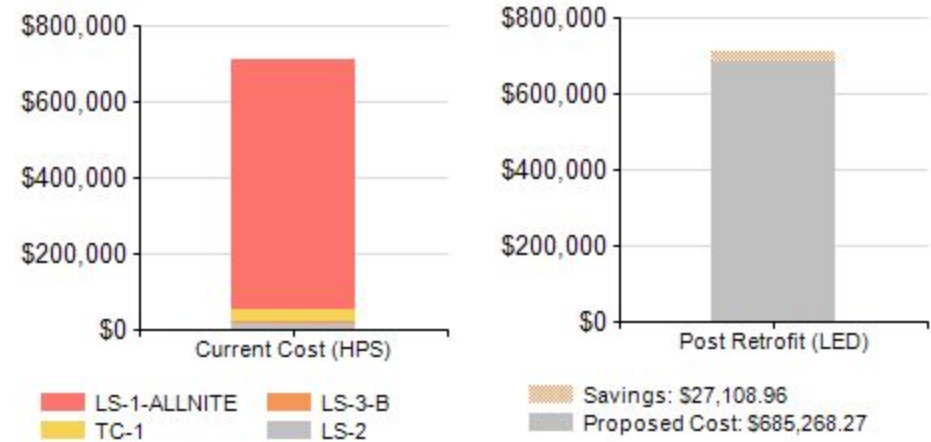
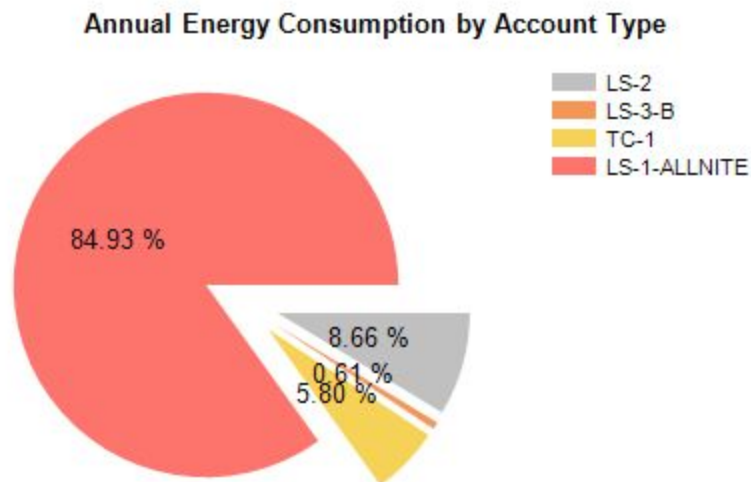
Table 2: Water Pumping (Annual)

Site Name	Address	Electric Consumption (kWh)	Electric Cost (\$)	Electric Rate (\$/kWh)
13523 CALLE SAN MARCOS	13523 CALLE SAN MARCOS	1,591,873	\$158,391	\$0.10
3226 WOODVIEW	3226 WOODVIEW	555,479	\$95,209	\$0.17
2417 TURQUOISE CIR	2417 TURQUOISE CIR	745,610	\$80,078	\$0.11
2855 WOODVIEW RD	2855 WOODVIEW RD	354,776	\$67,762	\$0.19
3982 EUCALYPTUS AVE	3982 EUCALYPTUS AVE	226,185	\$41,663	\$0.18

4. Street & Traffic Lights



Your Annual Energy Cost for Street & Traffic Lights is **\$712,377** and **40.2%** 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)

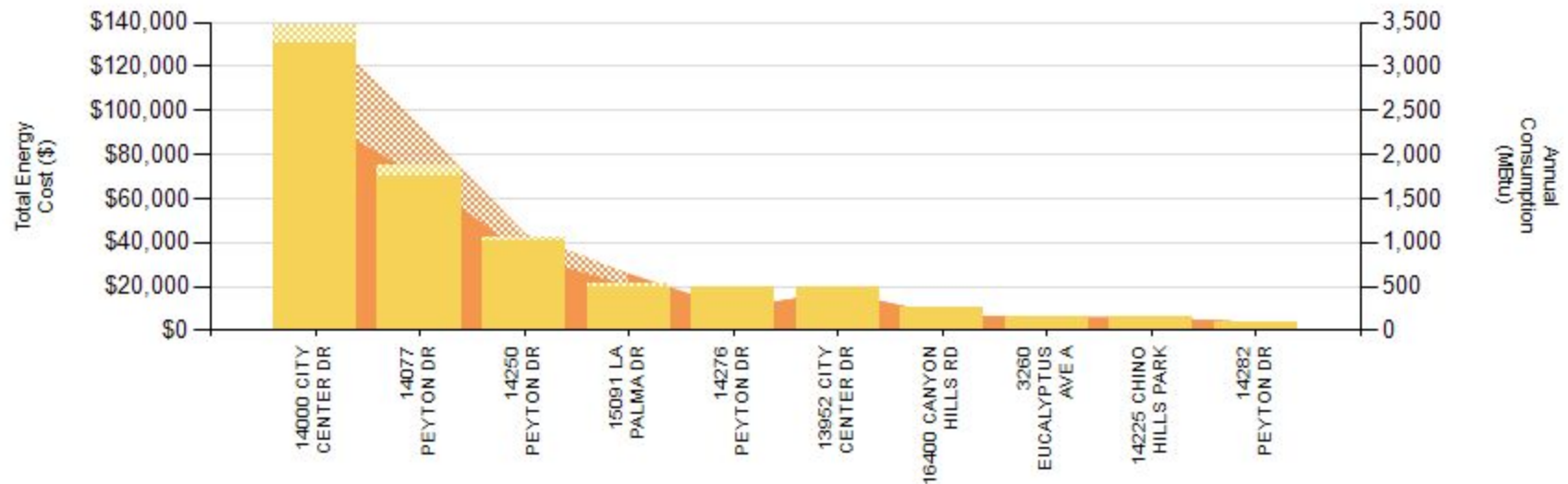
Tariff	Tariff Description	Electric Consumption (kWh)	Electric Cost (\$)	Electric Rate (\$/kWh)

LS-1-ALLNITE	Street Lights (SCE Owned)	2,361,223	\$658,159	0.28
TC-1	Traffic Signal Lights (Agency Owned)	161,391	\$30,920	0.19
LS-2	Street Lights (Agency Owned - unmetered)	240,698	\$21,010	0.09
LS-3-B	Street Lights (Agency Owned - metered)	16,943	\$2,288	0.14

5. Building Summary



Your Annual Energy Cost for Buildings is **\$460,808** and **26.0%** 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)
CHINO HILLS CITY HALL	14000 CITY CENTER DR	706,501	\$130,491	\$0.18	10,889	\$7,980	\$0.73

CHINO HILLS POLICE STATION	14077 PEYTON DR	512,567	\$70,222	\$0.14	5,739	\$4,520	\$0.79
CHINO HILLS COMMUNITY CENTER	14250 PEYTON DR	249,516	\$40,222	\$0.16	2,425	\$2,200	\$0.91
CHINO HILLS PUBLIC WORKS DEPT	15091 LA PALMA DR	146,336	\$19,682	\$0.13	1,417	\$1,459	\$1.03
14276 PEYTON DR	14276 PEYTON DR	71,999	\$19,836	\$0.28	0	\$0	N/A
CHARGEPOINT CHARGING STATION	13952 CITY CENTER DR	126,873	\$19,627	\$0.15	0	\$0	N/A
16400 CANYON HILLS RD	16400 CANYON HILLS RD	50,255	\$10,458	\$0.21	0	\$0	N/A
3260 EUCALYPTUS AVE A	3260 EUCALYPTUS AVE A	41,530	\$6,479	\$0.16	0	\$0	N/A
ENGLISH SPRINGS PARK	14225 CHINO HILLS PARK	41,201	\$6,028	\$0.15	0	\$0	N/A
SAN BERNARDINO SHERIFF'S DEPT	14282 PEYTON DR	24,794	\$3,898	\$0.16	0	\$0	N/A

6. Outdoor & Park Lights



Your Annual Energy Cost for Outdoor & Park Lights is **\$34,699** and **2.0%** 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	464,307	\$33,822	\$0.07
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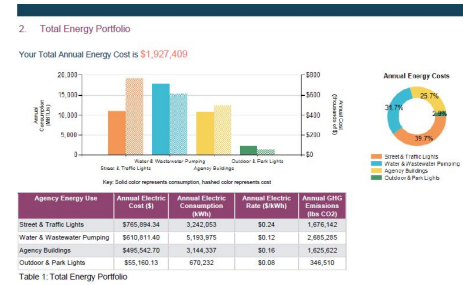
Appendix A - Methodology

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 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 CO₂/MWh + 11.91 lbs CO₂/therm [1,2].

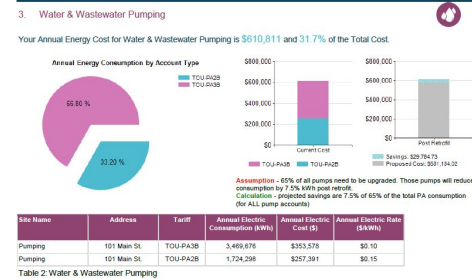
2. Total Energy Portfolio

- Total Energy Portfolio data represents an analysis of each agency facility type annual energy costs, annual energy consumption (kWh), 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:
 - Water Pumping
 - Street & Traffic Lights
 - Buildings
 - Outdoor & Parks Lights



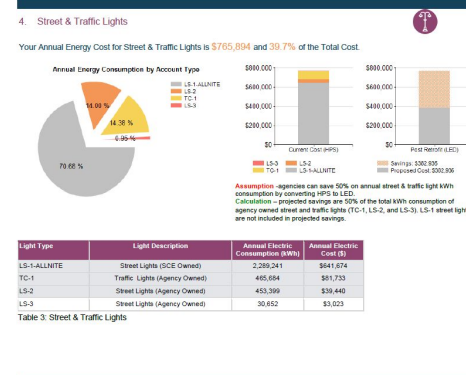
3. Water Pumping

- Water pumping data represents an analysis of the top five highest energy consuming water and wastewater pumping SCE service accounts annual energy costs, 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 consumption [3].



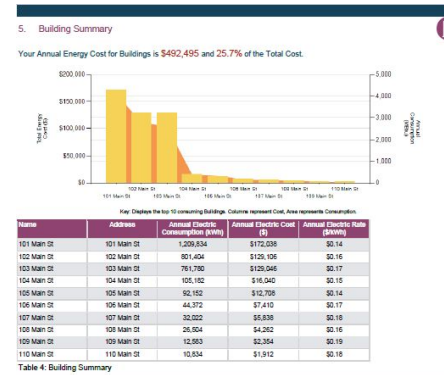
4. Street & Traffic Lights

- Street & traffic light data represents an analysis of annual energy costs, 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].



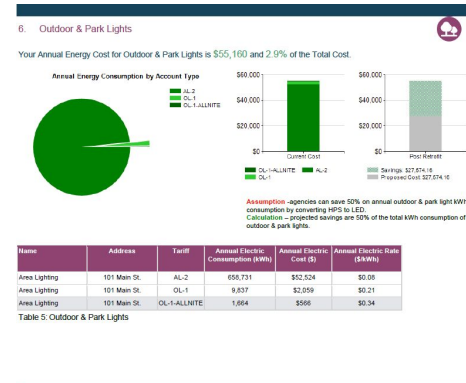
5. Building Summary

- Building summary data represents an analysis of the top ten highest energy consuming agency buildings annual energy costs, annual energy 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 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 energy usage data for the range of the analysis period and were excluded:

Tariff Type	Service Account Number	Gas or Electric Account
Building	21896530, 2157254, 2157255, 10508289, 22690557, 2361679, 41503420, 46906667, 2345577, 12294287	Electric
Pumping	9655129, 2412540	Electric
Traffic Control	Traffic Control 9460306, 2205632	Electric

Certain properties did not have associated energy usage data and were excluded:

Tariff Type	Service Account Number	Gas or Electric Account
Building	5470731, 15926049, 10530655, 10657649, 2345581, 2483033, 3952252, 1657804, 21927554, 2337144, 2345582, 2345583	Electric
Pumping	2361880	Electric
Traffic Control	10455689	Electric



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

[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.
