

Comparative Energy Analysis Report



Prepared for
City of Torrance

Prepared by
The Energy Coalition

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

Date
January 7, 2021

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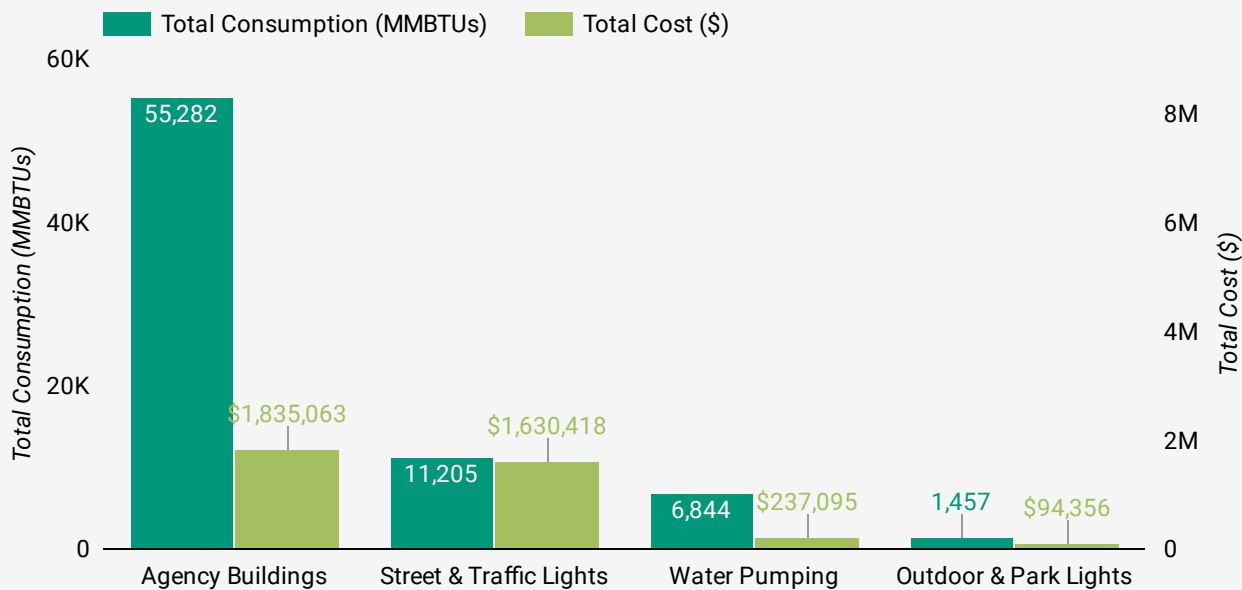
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Overview

This report summarizes energy consumption and energy cost by sector (Street & Traffic Lights, Agency Buildings, Water Pumping, and Outdoor & Park Lights) for the City of Torrance, referred to as "Agency" herein. This analysis uses energy billing data provided by the Utility and Agency to help identify opportunities for energy efficiency improvements across sectors. Once opportunities are identified, a more detailed screening of those facilities can be performed to further vet potential energy and cost-saving projects. This report was created by The Energy Coalition on behalf of the Southern California Regional Energy Network (www.socalren.org). Any questions about this report can be directed to your assigned Project Manager, Ken Gonzales at kengonzales@energycoalition.org.

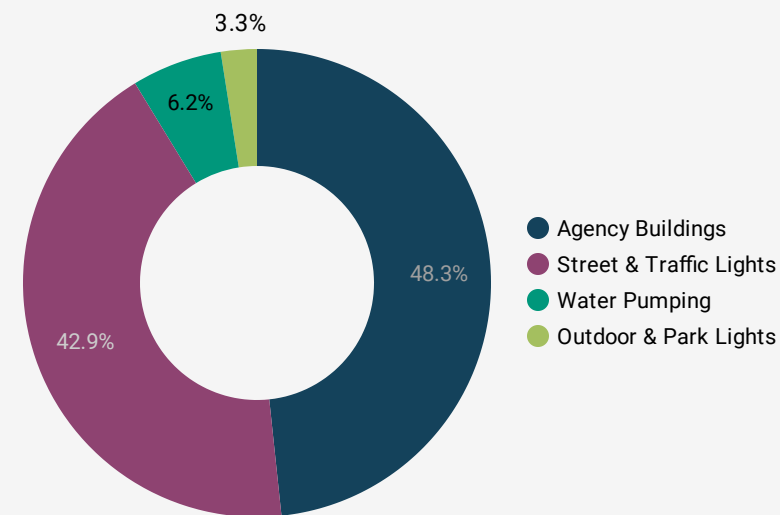
Total Energy Portfolio (Annual)

Annual Total Energy Consumption & Cost by Building Type

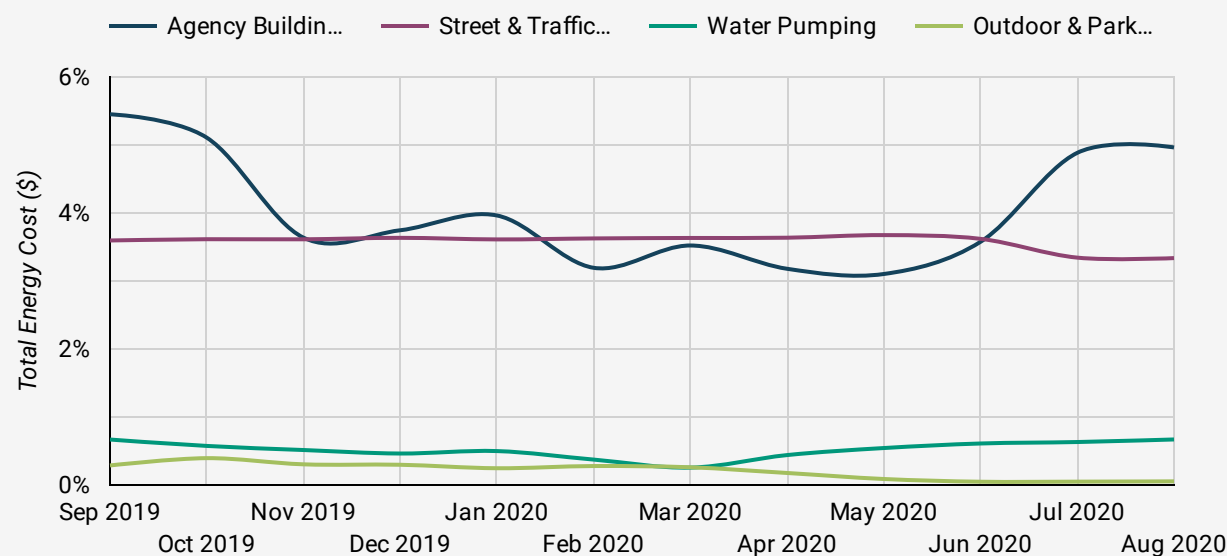


Total Energy Cost
\$3,796,887

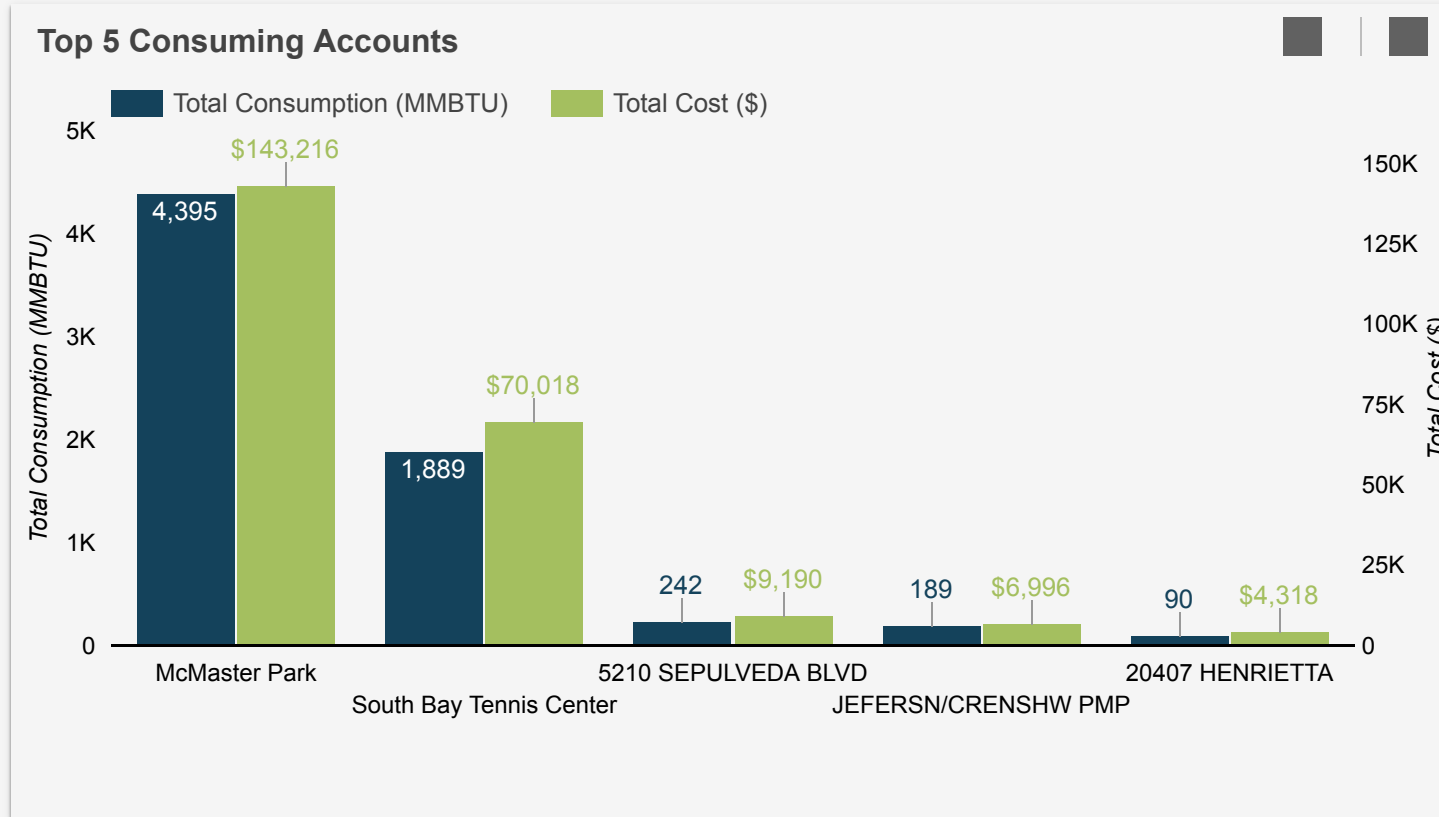
% of Total Annual Energy Cost by Agency Energy Use



Monthly Cost by Energy Use



| Agency Energy Use | Electric Consumption (kWh) | Electric Cost | Gas Consumption (Therms) | Gas Cost | Total Energy Consumption (MMBTU) | Total Energy Cost | Energy Cost % of Total | GHG Emissions (lbs CO2) |
|-------------------------|----------------------------|----------------|--------------------------|------------------|----------------------------------|-------------------|------------------------|-------------------------|
| Agency Buildings | 9.9M | \$1.66M | 216.1K | \$170.68K | 55.3K | 48.33% | 48% | 12.1M |
| Street & Traffic Lights | 3.3M | \$1.63M | 0 | \$0 | 11.1K | 42.94% | 43% | 3.1M |
| Water Pumping | 2M | \$237.09K | 0 | \$0 | 6.9K | 6.24% | 6% | 1.9M |
| Outdoor & Park Lights | 423.9K | \$94.36K | 0 | \$0 | 1.4K | 2.49% | 2% | 408.2K |
| Grand total | 15.6M | \$3.63M | 216.1K | \$170.68K | 74.7K | 100% | 100% | 17.6M |



Total Pumping Energy Cost
\$237.09K

Post-Retrofit Cost Savings
\$11.56K

Post-Retrofit Energy Cost
\$225.53K

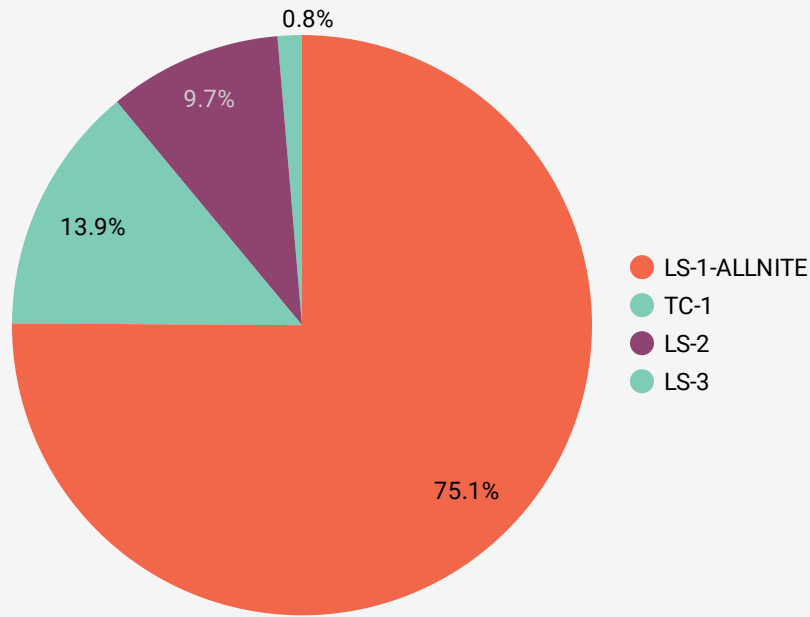
Assumption - 65% of all pumps need to be upgraded. Those pumps will reduce consumption by 7.5% kWh post-retrofit.

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

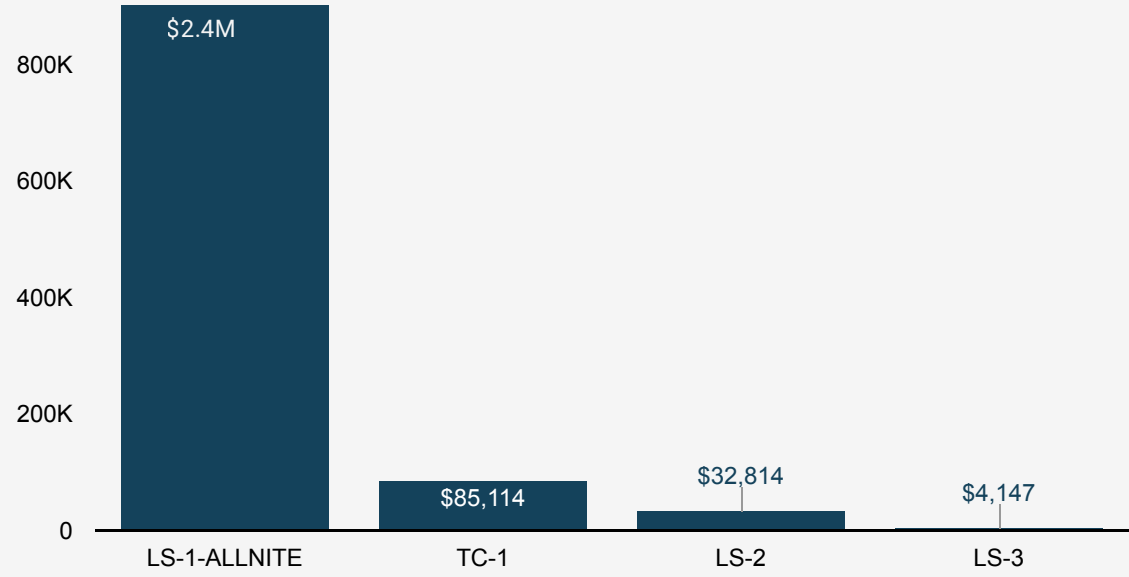
| Site Name | Service Street Address | Electric Consumption (kWh) | Electric Cost | Electric Rate (\$/kWh) |
|-------------------------|---------------------------------|----------------------------|------------------|------------------------|
| McMaster Park | 17537 YUKON AVE TORRANCE | 1.3M | \$143.22K | \$0.11 |
| South Bay Tennis Center | 25924 ROLLING HILLS RD TORRANCE | 553.2K | \$70.02K | \$0.13 |
| 5210 SEPULVEDA BLVD | 5210 SEPULVEDA BLVD TORRANCE | 71.2K | \$9.19K | \$0.13 |
| JEFERSN/CRENSHW PMP | JEFERSN/CRENSHW PMP TORRANCE | 55.3K | \$7K | \$0.13 |
| 20407 HENRIETTA | 20407 HENRIETTA TORRANCE | 26.5K | \$4.32K | \$0.16 |
| Grand total | | 2M | \$237.09K | \$0.12 |

Street & Traffic Lights

% of Annual Energy Cost by Account Type



Total Annual Energy Cost by Account Type



Total Street & Traffic Lights Energy Cost

\$1.63M

Post-Retrofit Cost Savings

\$61.02K

Post-Retrofit Energy Cost

\$1.57M

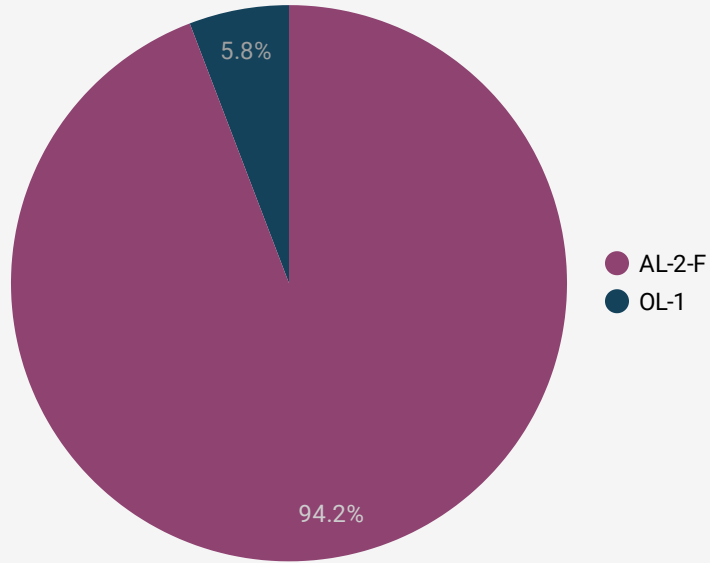
| Current Rate | Rate Description | Electric Consumption (kWh) ▾ | Electric Cost | Electric Rate (\$/kWh) |
|--------------------|------------------------------------------|------------------------------|----------------|------------------------|
| LS-1-ALLNITE | Street Lights (SCE Owned) | 2.4M | 92.51% | \$0.62 |
| TC-1 | Traffic Signal Lights (Agency Owned) | 451.2K | 5.22% | \$0.19 |
| LS-2 | Street Lights (Agency Owned - unmetered) | 314.1K | 2.01% | \$0.10 |
| LS-3 | Street Lights (Agency Owned - metered) | 44K | 0.25% | \$0.09 |
| Grand total | | 3.3M | 100.00% | \$0.50 |

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.



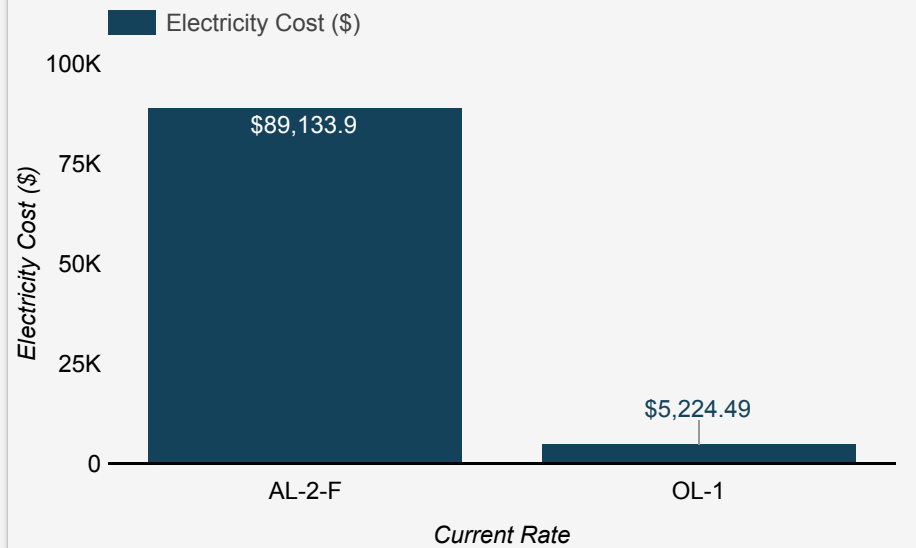
% of Annual Energy Cost by Account Type



Total Outdoor & Park Lights Energy Cost

\$94,358

Total Annual Energy Cost by Account Type



Post-Retrofit Cost Savings

\$47.18K

Post-Retrofit Energy Cost

\$47.18K

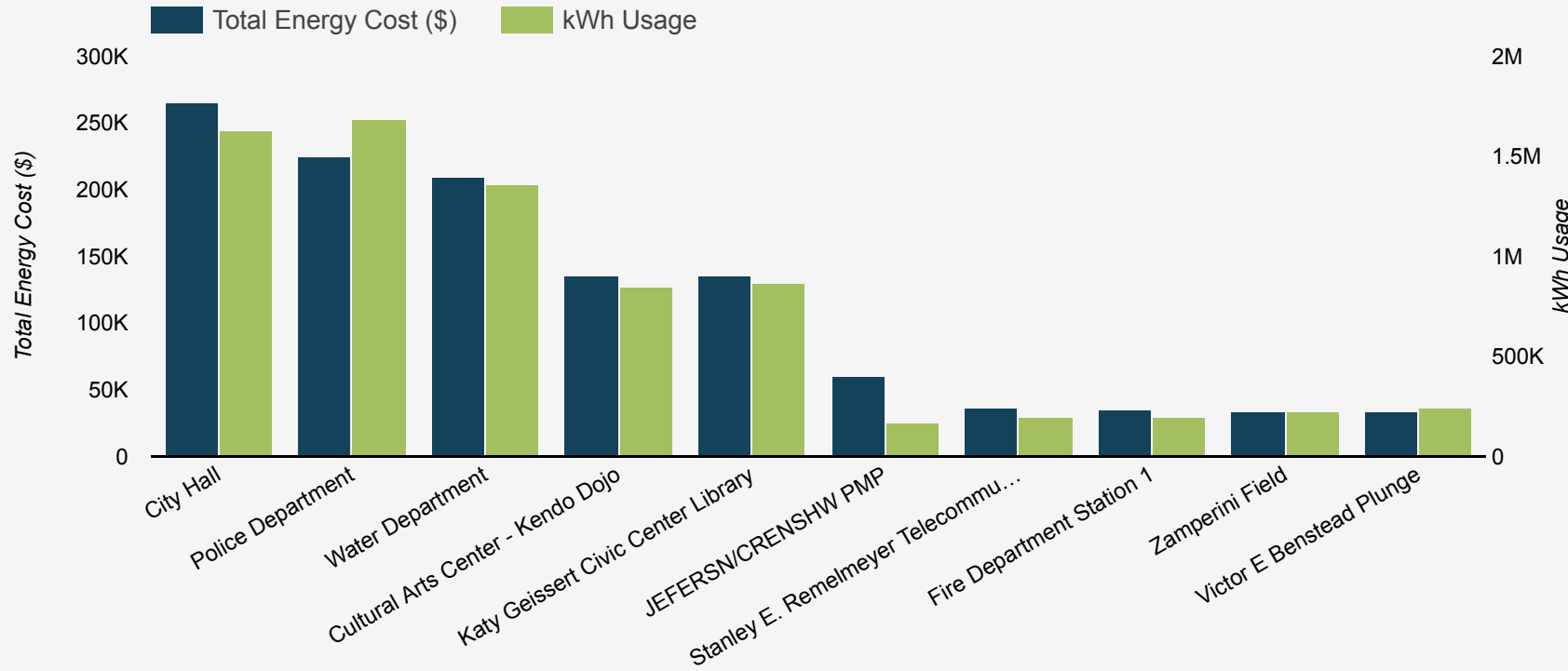
Assumption - agencies can save 50% on annual outdoor & park light kWh consumption by converting HPS to LED.

Calculation - projected savings are 50% of the total kWh consumption of outdoor & park lights.

| Building Name | Current Rate | kWh Consumption ▾ | Electric Cost | Electric Rate (\$/kWh) |
|---------------|--------------------|-------------------|-----------------|------------------------|
| Area Lighting | AL-2-F | 399.3K | \$89.13K | \$0.22 |
| Area Lighting | OL-1 | 24.6K | \$5.22K | \$0.21 |
| | Grand total | 423.9K | \$94.36K | \$0.22 |

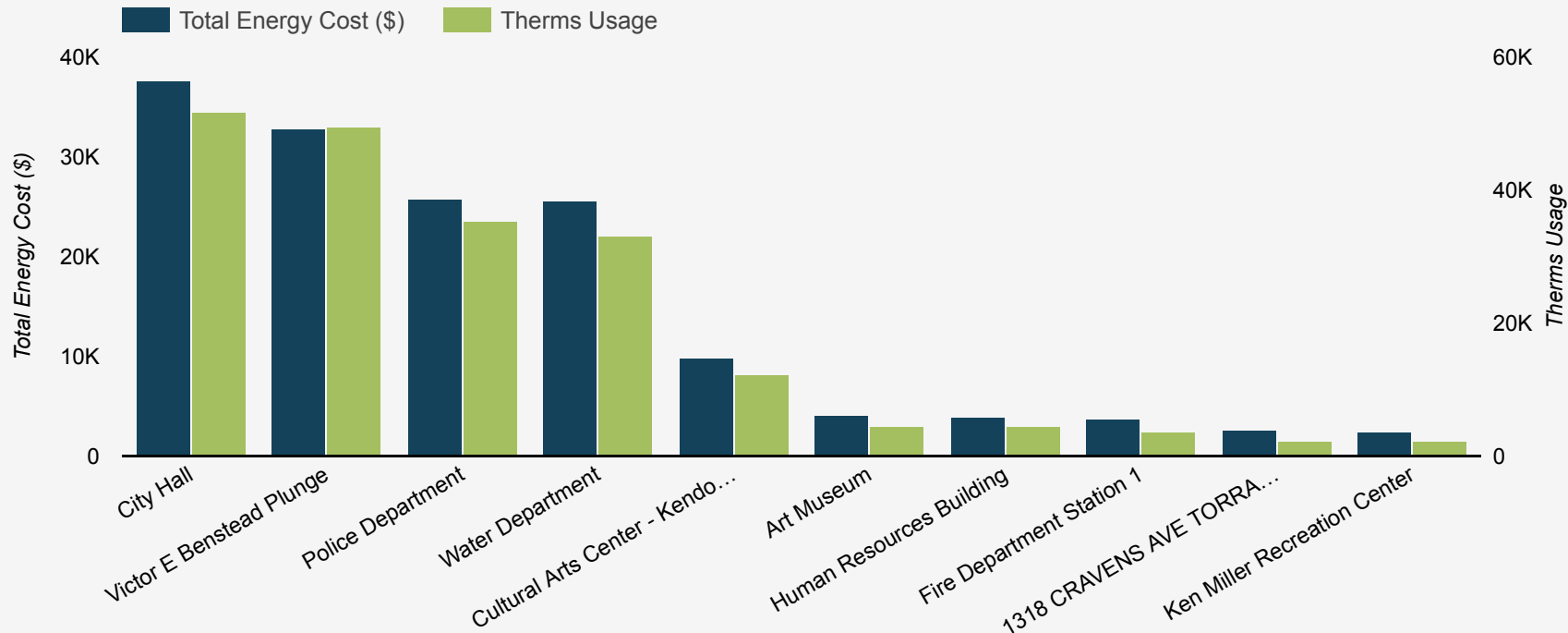


Total Annual Electric Cost and Consumption by Site



Total Annual Energy Cost for Buildings
\$1,835,046

Total Annual Natural Gas Cost and Consumption by Site



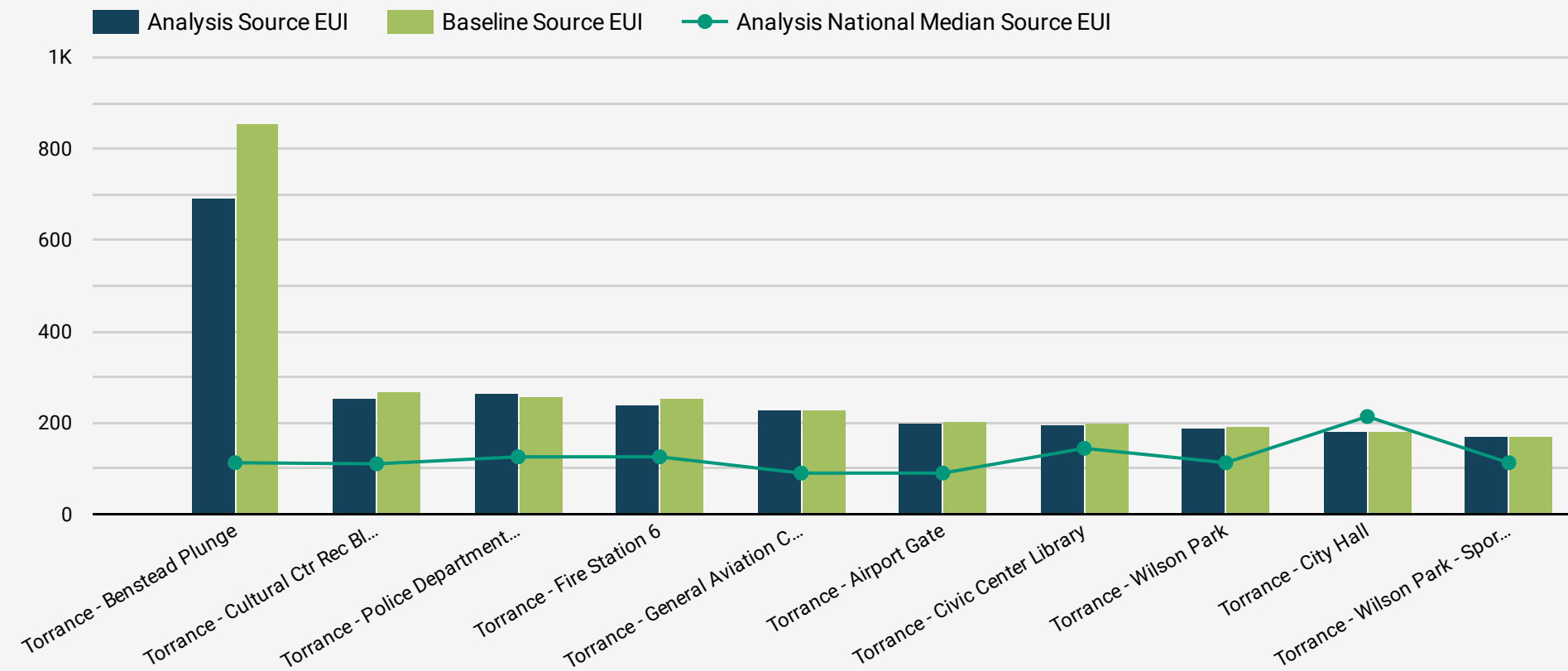
Agency Buildings (Cont'd)

| Building Summary | | | | | | | | | |
|------------------|-------------------------------------------------|---------------------------------|-------------------------|-----------------|---------------|------------------------|-----------------|----------|---------------------|
| | Site Name | Address | Disadvantaged Community | kWh Consumption | Electric Cost | Electric Rate (\$/kWh) | Gas Consumption | Gas Cost | Gas Rate (\$/therm) |
| 1. | City Hall | 3031 TORRANCE BLVD TORRANCE | no | 1.6M | \$265.15K | \$0.16 | 51.6K | \$37.57K | \$0.73 |
| 2. | Police Department | 3300 CIVIC CENTER DR N TORRANCE | no | 1.7M | \$225.12K | \$0.13 | 35.2K | \$25.78K | \$0.73 |
| 3. | Water Department | 20500 MADRONA AVE TORRANCE | no | 1.4M | \$209.22K | \$0.15 | 32.9K | \$25.49K | \$0.77 |
| 4. | Victor E Benstead Plunge | 3331 TORRANCE BLVD TORRANCE | no | 242.7K | \$33.34K | \$0.14 | 49.6K | \$32.73K | \$0.66 |
| 5. | Cultural Arts Center - Kendo Dojo | 3340 CIVIC CENTER DR N TORRANCE | no | 850.4K | \$135.47K | \$0.16 | 12.2K | \$9.77K | \$0.8 |
| 6. | Katy Geissert Civic Center Library | 3301 TORRANCE BLVD TORRANCE | no | 868.9K | \$135.42K | \$0.16 | 0 | \$0 | null |
| 7. | Fire Department Station 1 | 1701 CRENSHAW BLVD TORRANCE | yes | 198.6K | \$34.75K | \$0.18 | 3.7K | \$3.66K | \$0.98 |
| 8. | Zamperini Field | 3301 AIRPORT DR TORRANCE | no | 225.6K | \$33.97K | \$0.15 | 1.2K | \$1.39K | \$1.16 |
| 9. | Stanley E. Remelmeyer Telecommunications Center | 3350 CIVIC CENTER DR N TORRANCE | no | 196.8K | \$36.64K | \$0.19 | 1.4K | \$1.62K | \$1.16 |
| 10. | Human Resources Building | 3231 TORRANCE BLVD TORRANCE | no | 104.6K | \$21.61K | \$0.21 | 4.4K | \$3.96K | \$0.9 |

| Annual Energy Consumption Comparison | | | | | | | | | |
|--------------------------------------|-------------------------------------------------|---------------------------------|-----------------|----------|-----------------|----------|-------|----------|--|
| | Site Name | Address | kWh Consumption | % Δ | Gas Consumption | % Δ | MMBTU | % Δ | |
| 1. | City Hall | 3031 TORRANCE BLVD TORRANCE | 1.6M | 8.2% ↑ | 51.6K | -18.3% ↓ | 10.7K | -6.4% ↓ | |
| 2. | Police Department | 3300 CIVIC CENTER DR N TORRANCE | 1.7M | 0.2% ↑ | 35.2K | 10.6% ↑ | 9.3K | 3.9% ↑ | |
| 3. | Water Department | 20500 MADRONA AVE TORRANCE | 1.4M | 5.7% ↑ | 32.9K | -0.3% ↓ | 7.9K | 3.1% ↑ | |
| 4. | Victor E Benstead Plunge | 3331 TORRANCE BLVD TORRANCE | 242.7K | -5.7% ↓ | 49.6K | -42.2% ↓ | 5.8K | -38.9% ↓ | |
| 5. | Cultural Arts Center - Kendo Dojo | 3340 CIVIC CENTER DR N TORRANCE | 850.4K | -10.3% ↓ | 12.2K | -8.9% ↓ | 4.1K | -9.9% ↓ | |
| 6. | Katy Geissert Civic Center Library | 3301 TORRANCE BLVD TORRANCE | 868.9K | -11.3% ↓ | 0 | - | 3K | -11.3% ↓ | |
| 7. | Fire Department Station 1 | 1701 CRENSHAW BLVD TORRANCE | 198.6K | -2.9% ↓ | 3.7K | 19.2% ↑ | 1.1K | 4.0% ↑ | |
| 8. | Zamperini Field | 3301 AIRPORT DR TORRANCE | 225.6K | 1.0% ↑ | 1.2K | -35.3% ↓ | 889 | -6.0% ↓ | |
| 9. | Stanley E. Remelmeyer Telecommunications Center | 3350 CIVIC CENTER DR N TORRANCE | 196.8K | -1.2% ↓ | 1.4K | -15.6% ↓ | 811.9 | -4.1% ↓ | |
| 10. | Human Resources Building | 3231 TORRANCE BLVD TORRANCE | 104.6K | -17.5% ↓ | 4.4K | -6.8% ↓ | 798.2 | -11.9% ↓ | |



Top 10 Source EUI Properties



Portfolio Average Source EUI

Change in Average Source EUI

-3

Analysis Source EUI

91

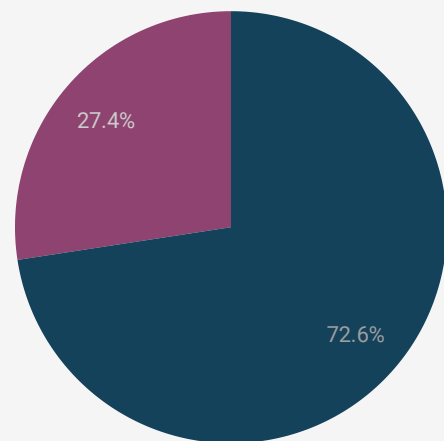
Baseline Average Source EUI

94

Properties Included:

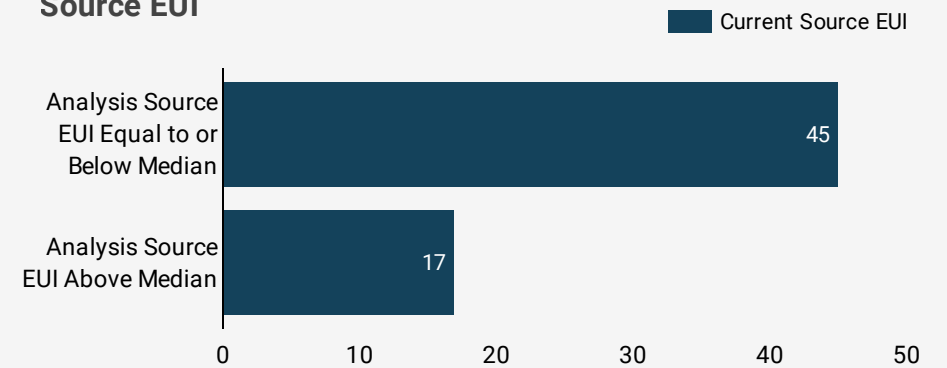
62

Share of Properties Above/Below National Median Source EUI



- Analysis Source EUI Equal to or Below Median
- Analysis Source EUI Above Median

Number of Properties Above/Below National Median Source EUI



* Please note that data in this section comes directly from Energy Star Portfolio Manager and may therefore vary from data reflected elsewhere in the report.

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 and SCG gas tariffs.
 - For more information about the utility tariffs included in this analysis refer to:
 - SCG Gas Tariffs
 - SCE Electric Tariffs
 - Analysis period for electricity and gas results were based on usage during period September 2019 - September 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].
 - Any surcharges on your utility billing are excluded from this report

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 MMBTUs.
- The following agency assets are included in the Total Energy Portfolio:
 - Water Pumping
 - Street & Traffic Lights
 - Buildings
 - Outdoor & Parks Lights

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 MMBTUs.
- 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].

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 HOPS 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].

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 MMBTUs per SCE outdoor and park lighting tariff type.
- On average, agencies can save 50% on annual kWh consumption by converting HPS to LED, which also results in cost savings [3].

Agency Buildings

- Building summary data 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).
- Annual comparison data 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 September 1, 2018 – August 31, 2019.
- Analysis period for electricity and gas results were based on usage during September 1, 2019 – August 31, 2020.

Energy Star Portfolio Manager® - Energy Use Intensity

- Data is derived from Energy Star Portfolio Manager®
- Data includes kBtu/ft² for the top 10 highest source Energy Use Intensity (EUI) facilities for the analysis year
- Baseline period for source EUI results were based on usage during April 2018 - March 2019.
- Analysis period for source EUI results were based on usage during April 2019 - March 2020.

End Notes

[1] Corporate Responsibility Report. (2015). In Southern California Edison. Retrieved from https://www.sce.com/wps/wcm/connect/c0fceed5-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.