Comparative Energy Analysis Report

Prepared for
Port of Long Beach

Prepared by
The Energy Coalition

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

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**Southern California Regional Energy Network**
1. **Overview**

This report is intended to provide a framework for the Port of Long Beach, referred to as “Agency” herein, to identify inefficient facilities and infrastructure and prioritize further investigation and energy efficiency retrofit work. This analysis uses only 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, Shawn Thompson, at sthompson@energycoalition.org.
2. Total Energy Portfolio

Your Total Annual Energy Cost is $994,351

Table 1: Total Energy Portfolio (Annual)

<table>
<thead>
<tr>
<th>Agency Energy Use</th>
<th>Electric Consumption (kWh)</th>
<th>Electric Cost ($)</th>
<th>Total Energy Consumption (MMBtus)</th>
<th>Total Energy Cost ($)</th>
<th>GHG Emissions (lbs CO2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Pumping</td>
<td>927,446</td>
<td>$147,582</td>
<td>3,164</td>
<td>$147,582</td>
<td>479,490</td>
</tr>
<tr>
<td>Street &amp; Traffic Lights</td>
<td>579,783</td>
<td>$50,561</td>
<td>1,978</td>
<td>$50,561</td>
<td>299,748</td>
</tr>
<tr>
<td>Outdoor Lights</td>
<td>64,918</td>
<td>$5,082</td>
<td>222</td>
<td>$5,082</td>
<td>33,563</td>
</tr>
</tbody>
</table>
3. Water Pumping

Your Annual Energy Cost for Water Pumping is $147,582 and 14.8% 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)

Table 2: Water Pumping (Annual)

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Address</th>
<th>Electric Consumption (kWh)</th>
<th>Electric Cost ($)</th>
<th>Electric Rate ($/kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIER A WAY</td>
<td>PIER A WAY</td>
<td>757,357</td>
<td>$88,232</td>
<td>$0.12</td>
</tr>
<tr>
<td>SEWAGE TREATMENT FACILITY</td>
<td>2801 W OCEAN BLVD</td>
<td>43,636</td>
<td>$21,779</td>
<td>$0.50</td>
</tr>
<tr>
<td>WATER/1ST</td>
<td>WATER/1ST</td>
<td>16,704</td>
<td>$7,422</td>
<td>$0.44</td>
</tr>
<tr>
<td>SEWAGE TREATMENT FACILITY</td>
<td>2385 PIER T AVE</td>
<td>41,036</td>
<td>$6,213</td>
<td>$0.15</td>
</tr>
<tr>
<td>2080 W EDISON WAY</td>
<td>2080 W EDISON WAY</td>
<td>14,939</td>
<td>$5,838</td>
<td>$0.39</td>
</tr>
</tbody>
</table>
4. Street & Traffic Lights

Your Annual Energy Cost for Street & Traffic Lights is $50,561 and 5.1% 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)

<table>
<thead>
<tr>
<th>Tariff</th>
<th>Tariff Description</th>
<th>Electric Consumption (kWh)</th>
<th>Electric Cost ($)</th>
<th>Electric Rate ($/kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS-3</td>
<td>Street Lights (Agency Owned - metered)</td>
<td>556,487</td>
<td>$45,801</td>
<td>0.08</td>
</tr>
<tr>
<td>LS-1-ALLNITE</td>
<td>Street Lights (SCE Owned)</td>
<td>14,688</td>
<td>$3,043</td>
<td>0.21</td>
</tr>
<tr>
<td>TC-1</td>
<td>Traffic Signal Lights (Agency Owned)</td>
<td>8,608</td>
<td>$1,716</td>
<td>0.20</td>
</tr>
</tbody>
</table>
5. Building Summary

Your Annual Energy Cost for Buildings is $791,127 and 79.6% of the Total Cost.

Table 4: Building Summary (Annual)

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Address</th>
<th>Electric Consumption (kWh)</th>
<th>Electric Cost ($)</th>
<th>Electric Rate ($/kWh)</th>
<th>Disadvantaged Community (Yes or No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADMINISTRATION BUILDING</td>
<td>415 W OCEAN BLVD</td>
<td>1,556,890</td>
<td>$269,199</td>
<td>$0.18</td>
<td>Y</td>
</tr>
<tr>
<td>JOINT COMMAND AND CONTROL CENTER</td>
<td>1249 PIER F AVE</td>
<td>1,524,659</td>
<td>$183,111</td>
<td>$0.12</td>
<td>Y</td>
</tr>
<tr>
<td>MAINTENANCE FACILITY</td>
<td>725 HARBOR PLAZA</td>
<td>948,633</td>
<td>$134,968</td>
<td>$0.14</td>
<td>Y</td>
</tr>
<tr>
<td>CRESCENT TERMINAL</td>
<td>PIER F BERTH 206/7</td>
<td>292,631</td>
<td>$55,109</td>
<td>$0.19</td>
<td>Y</td>
</tr>
<tr>
<td>WEYERHAEUSER COMPANY</td>
<td>280 PIER T AVE</td>
<td>196,855</td>
<td>$31,320</td>
<td>$0.16</td>
<td>Y</td>
</tr>
<tr>
<td>OLD ADMINISTRATION BUILDING</td>
<td>ADMINISTRATION BLDG</td>
<td>161,815</td>
<td>$22,039</td>
<td>$0.14</td>
<td>N/A</td>
</tr>
<tr>
<td>NON-RESIDENTIAL BUILDING OPERATION</td>
<td>914 HARBOR PLAZA</td>
<td>121,480</td>
<td>$18,210</td>
<td>$0.15</td>
<td>Y</td>
</tr>
<tr>
<td>POLICE PROTECTION</td>
<td>1401 W 9TH ST</td>
<td>55,987</td>
<td>$9,600</td>
<td>$0.17</td>
<td>Y</td>
</tr>
<tr>
<td>PORT &amp; HARBOR OPERATIONS</td>
<td>PIER D BERTH D47-D49</td>
<td>62,221</td>
<td>$9,377</td>
<td>$0.15</td>
<td>Y</td>
</tr>
<tr>
<td>354 S HARBOR SCENIC DR</td>
<td>354 S HARBOR SCENIC DR</td>
<td>29,987</td>
<td>$8,597</td>
<td>$0.29</td>
<td>Y</td>
</tr>
</tbody>
</table>
6. Outdoor Lights

Your Annual Energy Cost for Outdoor Lights is $5,082 and 0.5% of the Total Cost.

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

Calculation – projected savings are 50% of the total kWh consumption of outdoor lights.

Table 5: Outdoor Lights (Annual)

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Tariff</th>
<th>Electric Consumption (kWh)</th>
<th>Electric Cost ($)</th>
<th>Electric Rate ($/kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area Lighting</td>
<td>Various</td>
<td>AL-2-F</td>
<td>64,918</td>
<td>$5,082</td>
<td>$0.08</td>
</tr>
</tbody>
</table>
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.
- 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
- Analysis period for electricity were based on usage during period January 1, 2019 – December 31, 2019.
- 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 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 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 Lights

- Outdoor 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.

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

- 4801 AIRPORT PLAZA – Service Account #39782428
- 108 N HARBOR SCENIC DR – Service Account #815797
- 1171 PIER F AVE – Service Account #47825729
Endnotes


[3] Based on SoCalREN previous project estimates.