

# Comparative Energy Analysis Report

## Comparative Energy Analysis

Prepared for  
City of Newport Beach

Prepared by  
The Energy Coalition on behalf of the  
Southern California Regional Energy Network (SoCalREN)

Date  
5/21/2018

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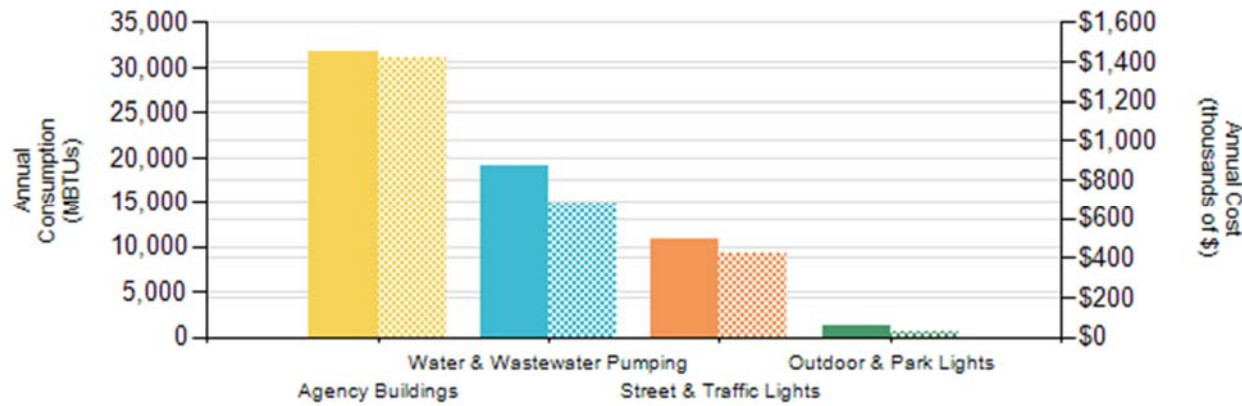
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## 1. Overview

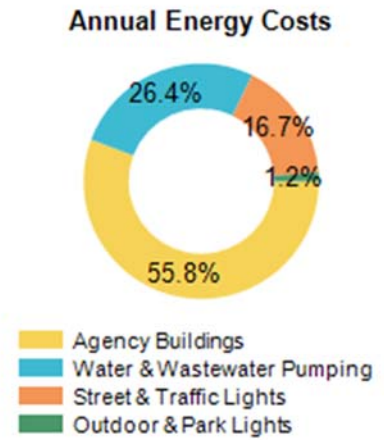
This report is intended to provide a framework for the City of Newport Beach, referred to as “Agency” herein, to identify inefficient facilities and prioritize further investigation and energy efficiency retrofit work. This analysis uses only total floor area and energy billing data provided by the Agency to 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 **\$2,554,487**



Key: Solid color represents consumption, hashed color represents cost



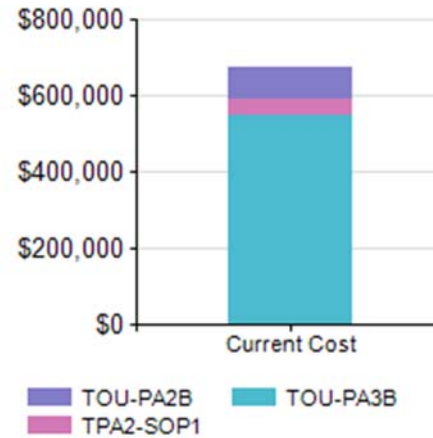
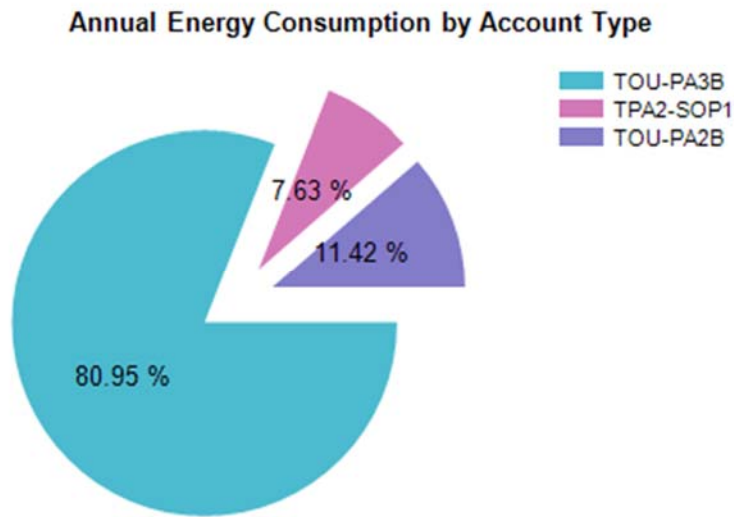
Agency Energy Use	Annual Electric Cost (\$)	Annual Electric Consumption (kWh)	Annual Electric Rate (\$/kWh)	Annual GHG Emissions (lbs CO <sub>2</sub> )
Agency Buildings	\$1,424,159.46	9,322,773	\$0.15	4,819,874
Pumping	\$673,565.09	5,589,752	\$0.12	2,889,902
Street & Traffic Lights	\$426,554.91	3,203,993	\$0.13	1,656,464
Outdoor & Park Lights	\$30,207.96	371,105	\$0.08	191,861

Table 1: Total Energy Portfolio

### 3. Pumping



Your Annual Energy Cost for Pumping is **\$673,565** and **26.4%** 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)

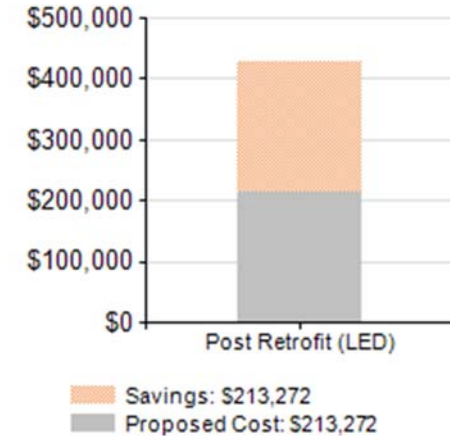
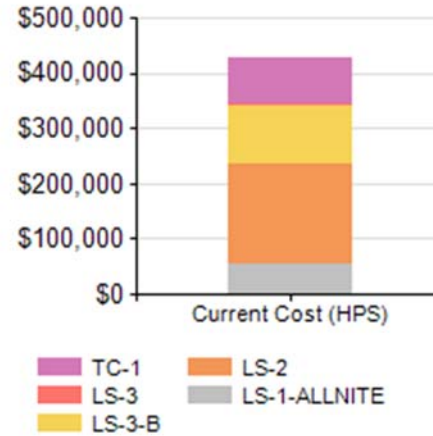
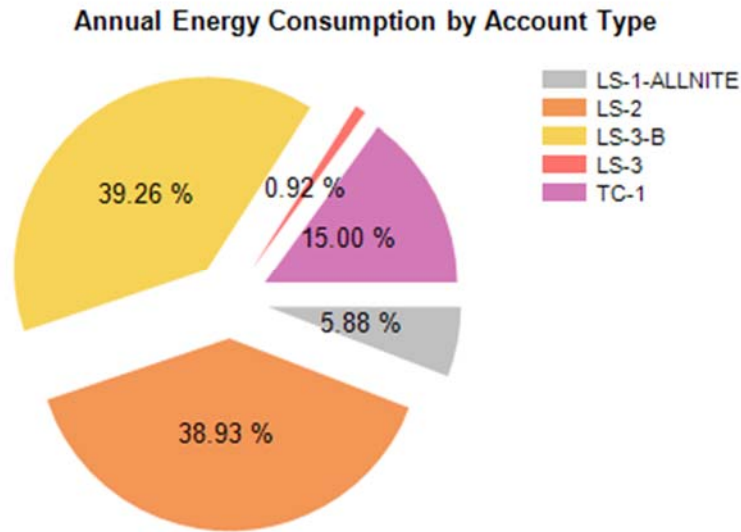
Site Name	Address	Tariff Type	Annual Electric Consumption (kWh)	Annual Electric Cost (\$)	Annual Electric Rate (\$/kWh)
Pumping	Various	TOU-PA3B	4,500,263	\$548,132	\$0.12
Pumping	Various	TOU-PA2B	634,620	\$85,637	\$0.13
Pumping	VARIOUS	TPA2-SOP1	424,118	\$40,241	\$0.09

Table 2: Water & Wastewater Pumping



## 4. Street & Traffic Lights

Your Annual Energy Cost for Street & Traffic Lights is **\$426,555** and **16.7%** 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 street and traffic lights (TC-1, LS-1, LS-2, and LS-3)

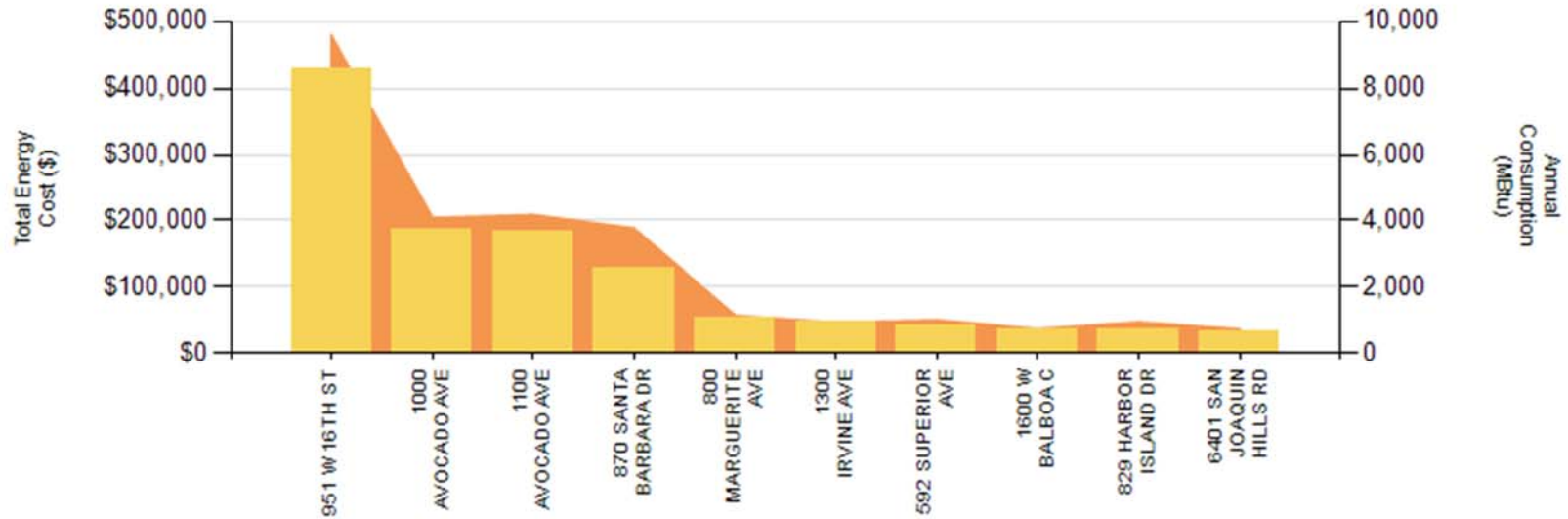
Table 3: Street & Traffic Lights

Tariff Type	Light Description	Annual Electric Consumption (kWh)	Annual Electric Cost (\$)
LS-2	Street Lights (Agency Owned)	1,247,389	\$182,210
LS-3-B	Other	1,257,835	\$105,094
TC-1	Street Lights (Agency Owned)	480,696	\$83,759
LS-1-ALLNITE	Other	188,454	\$53,210
LS-3	Street Lights (Agency Owned)	29,620	\$2,272



## 5. Building Summary

Your Annual Energy Cost for Buildings is **\$1,424,159** and **55.8%** of the Total Cost.



Key: Displays the top 10 consuming Buildings. Columns represent Cost, Area represents Consumption.

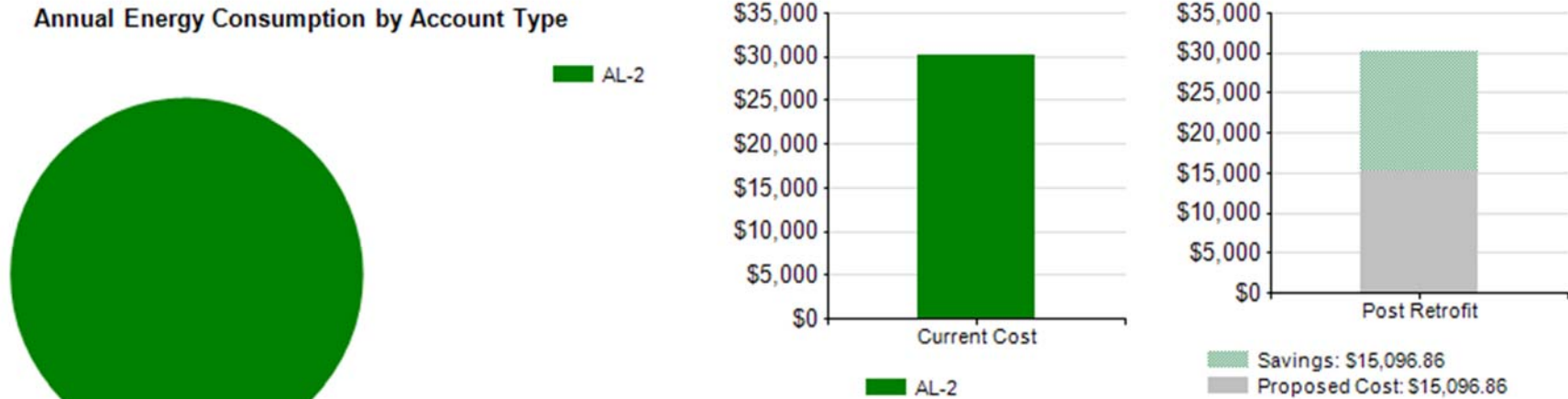
Name	Address	Annual Electric Consumption (kWh)	Annual Electric Cost (\$)	Annual Electric Rate (\$/kWh)
Utilities Yard/Booster Station	951 W 16TH ST	2,816,229	\$428,912	\$0.15
Public Library	1000 AVOCADO AVE	1,199,036	\$188,009	\$0.16
1100 AVOCADO AVE	1100 AVOCADO AVE	1,225,941	\$182,665	\$0.15
Police Department	870 SANTA BARBARA DR	1,107,286	\$129,110	\$0.12
Recreation & Senior Services	800 MARGUERITE AVE	338,300	\$53,654	\$0.16
Mariners Library	1300 IRVINE AVE	278,013	\$47,373	\$0.17
General Services Department	592 SUPERIOR AVE	299,329	\$42,145	\$0.14
Marina Park Community Center	1600 W BALBOA C	219,970	\$37,901	\$0.17
Balboa Yacht Basin	829 HARBOR ISLAND DR	281,809	\$35,931	\$0.13
Newport Coast Comm. Center	6401 SAN JOAQUIN HILLS RD	217,455	\$34,032	\$0.16

Table 4: Building Summary

## 6. Outdoor & Park Lights



Your Annual Energy Cost for Outdoor & Park Lights is **\$30,208** and **1.2%** 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.

Name	Address	Tariff Type	Annual Electric Consumption (kWh)	Annual Electric Cost (\$)	Annual Electric Rate (\$/kWh)
Area Lighting	Various	AL-2	371,105	\$30,194	\$0.08

Table 5: Outdoor & Park Lights



## Appendix A - Methodology

### 1. Data Sources

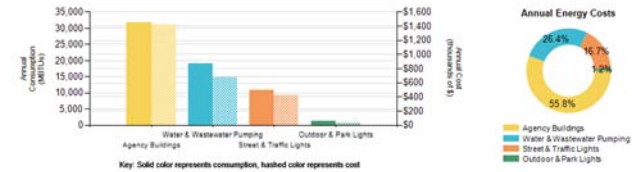
- Building information, energy usage and cost data used in this analysis were derived from: utility consumption billing data provided by agency staff.
- Utility consumption billing data used in this analysis were derived from SCE electric tariffs.
- For more information about the utility tariffs included 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 December 31, 2016 – December 31, 2017.
- 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 CO<sub>2</sub>/MWh + 11.91 lbs CO<sub>2</sub>/therm<sup>1,2</sup>.

## 2. Total Energy Portfolio

- Total Energy Portfolio data represents an analysis of each agency facility type annual energy costs, annual electric cost, annual electric consumption (kWh), 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

### 2. Total Energy Portfolio

Your Total Annual Energy Cost is **\$2,554,487**



Agency Energy Use	Annual Electric Cost (\$)	Annual Electric Consumption (kWh)	Annual Electric Rate (\$/kWh)	Annual GHG Emissions (lbs CO2)
Agency Buildings	\$1,424,159.46	9,322,773	\$0.15	4,819,874
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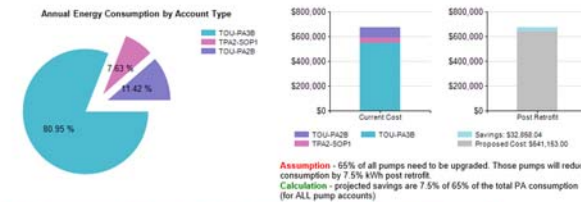
Table 1: Total Energy Portfolio

## 3. Pumping

- Pumping data represents an analysis of the top five highest energy consuming pumping SCE service accounts annual energy costs, annual electric cost, annual energy consumption (kWh), 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<sup>3</sup>.

### 3. Pumping

Your Annual Energy Cost for Pumping is **\$673,565** and **26.4%** of the Total Cost.

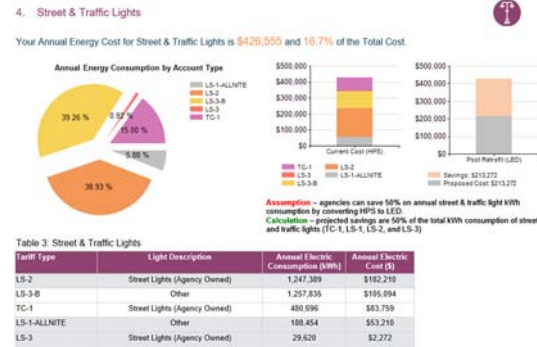


Site Name	Address	Tariff Type	Annual Electric Consumption (kWh)	Annual Electric Cost (\$)	Annual Electric Rate (\$/kWh)
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Pumping	Various	TOU-PA2B	634,629	\$85,637	\$0.13
Pumping	VARIOUS	TPA2-SOP1	424,118	\$49,241	\$0.09

Table 2: Water & Wastewater Pumping

## 4. Street & Traffic Lights

- Street & traffic light data represents an analysis of annual energy costs, annual electric cost, 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 <sup>3</sup>.
- On average, agencies can save 50% on annual kWh consumption by converting HPS to LED, which also results in cost savings <sup>3</sup>.



## 5. Building Summary

- Building summary data represents an analysis of the top ten highest energy consuming agency buildings annual energy costs, annual electric cost, annual energy consumption (kWh), and total annual energy costs based on MBtus.

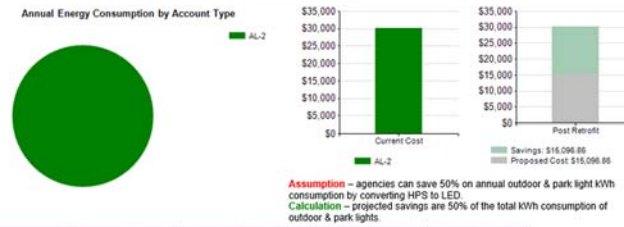


## 6. Outdoor & Park Lights

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

### 6. Outdoor & Park Lights

Your Annual Energy Cost for Outdoor & Park Lights is \$30,208 and 1.2% of the Total Cost.



Name	Address	Tariff Type	Annual Electric Consumption (kWh)	Annual Electric Cost (\$)	Annual Electric Rate (\$/kWh)
Area Lighting	Various	AL-2	371,105	\$30,194	\$0.08

Table 5: Outdoor & Park Lights

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

Tariff type	Meter Number
LS-3	8849459, 1491879, 1491877
Traffic Control	25204125, 25204114, 25204132, 1152028, 1536199
Pumping	1152168, 21267675, 11268

## Endnotes

<sup>1</sup> 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](https://www.sce.com/wps/wcm/connect/c0fceed5-e04a-4287-8301-8e66e3e5fbac/2014_Corporate+Responsibility+Report_FINAL+single-page.pdf?MOD=AJPERES&ContentCache=NONE).

<sup>2</sup> 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](https://www.arb.ca.gov/cc/scopingplan/document/appendices_volume2.pdf).

<sup>3</sup> Based on SoCalREN previous project estimates.