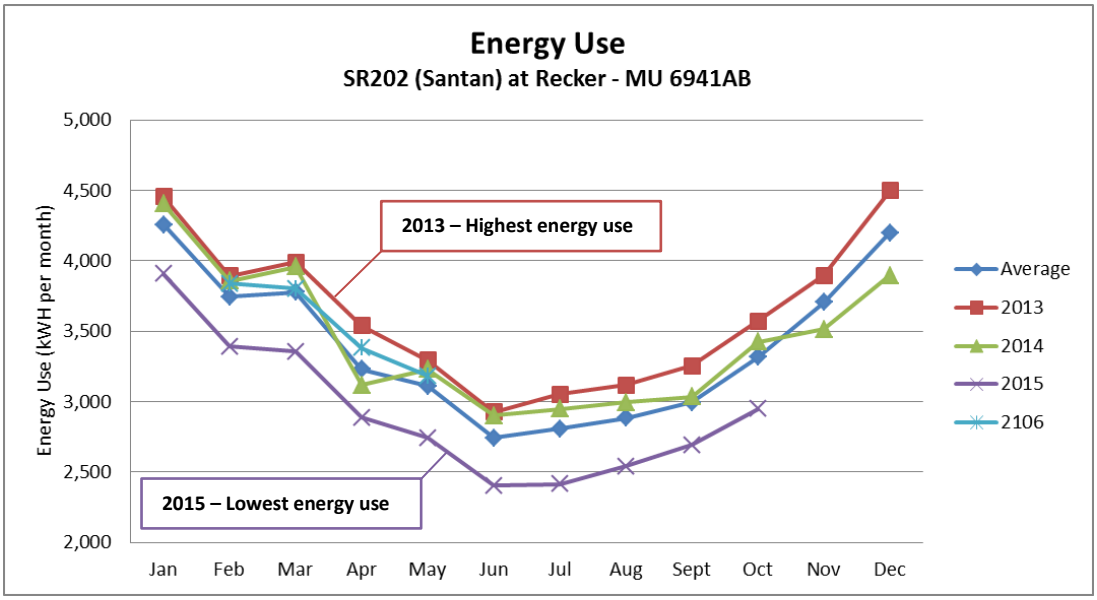
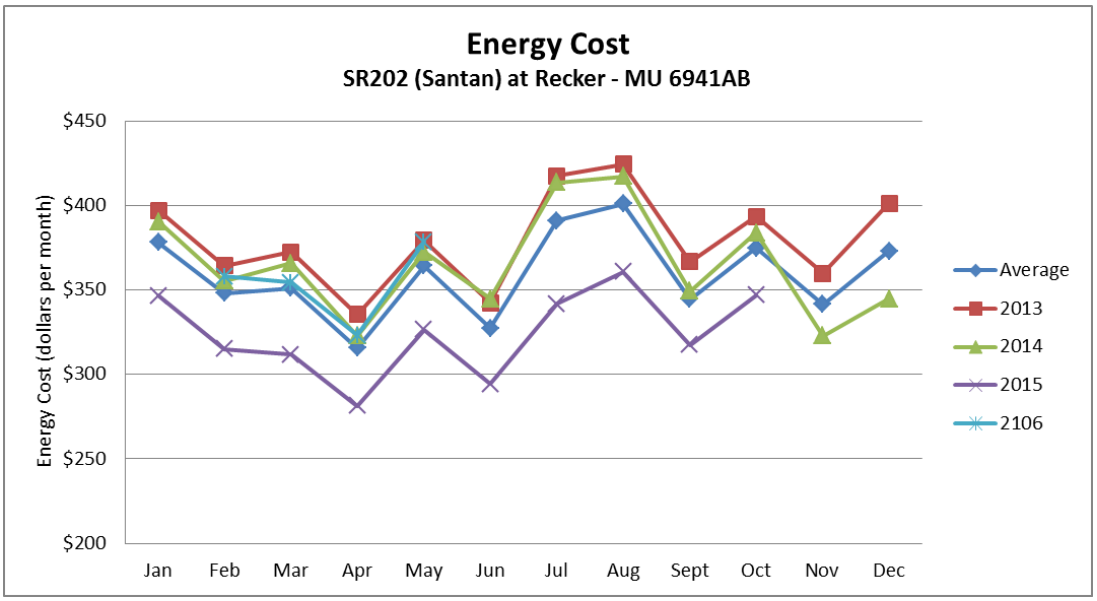
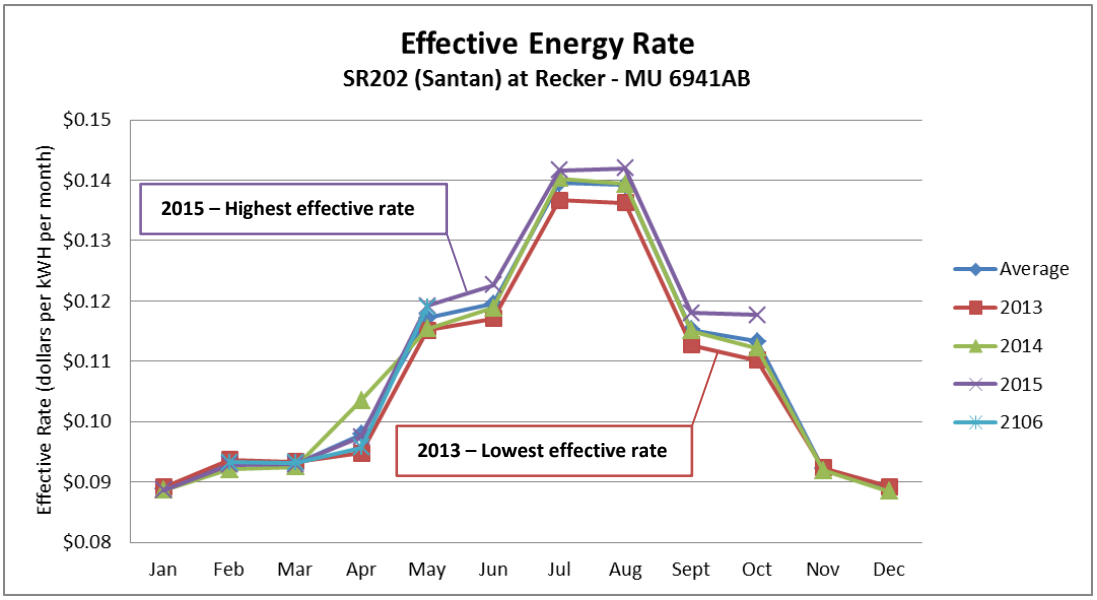

Energy Use
SR202 (Santan) at Recker - MU 6941AB
Energy Use (kWH per month)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
2013 – Highest energy use
2015 – Lowest energy use
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
Oct
Nov
Dec
Average
2013
2014
2015
2106


Energy Cost
SR202 (Santan) at Recker - MU 6941AB
Energy Cost (dollars per month)
$450
$400
$350
$300
$250
$200
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
Oct
Nov
Dec
Average
2013
2014
2015
2106


Effective Energy Rate
SR202 (Santan) at Recker - MU 6941AB
Effective Rate (dollars per kWH per month)
$0.15
$0.14
$0.13
$0.12
$0.11
$0.10
$0.09
$0.08
2015 – Highest effective rate
2013 – Lowest effective rate
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
Oct
Nov
Dec
Average
2013
2014
2015
2106

The graphs are missing Nov 2015, Dec 2015, and Jan 2016 billing data. Need to obtain for completeness.

Noteworthy observations and speculations:
2015 is lowest energy use and lowest energy cost but (generally) highest effective rate.
2013 is highest energy use and highest energy cost but (generally) lowest effective rate.
Lower energy use in 2015 most likely due to lamp outages.
Do not expect long-term outages with conversion to LED luminaires in conjunction with a central monitor and control system in-place.
2013 most likely represents the year with the lowest count for lamp outages.
However, lower energy use in 2015 could also be attributable to replacement of old starters.
Recommend use 2013 values for energy use and cost values for the existing (36 fixture) HPS system.
These values are:

Annual energy use = 43,482 kWH per year
Annual energy cost = $4,553.32 per year

This equates to the following values:

Annual energy use = 1207.83 kWH per fixture per year
Annual energy cost = $126.48 per fixture per year
Average effective rate = $0.1047 per kWH

Lower energy use will generally result in higher effective rate due to fixed costs associated with the electrical services. It does not appear the effective rate (in any given month) is overly sensitive to lower energy costs, for the range of values in the current data set. This may change with relatively large reductions in energy use, as the relationship between use and effective rate is most likely not linear. Need to further explore this relationship. This is part of the purpose of the pilot installation.
Expected percent dollar savings associated with LED conversion will be lower than expected percent energy savings.

Theoretical existing HPS fixture power demand = 438 W per fixture.
Theoretical new LED fixture power demand = 170 W per fixture.

Expected new annual energy use = (170/438) x 43,482 = 16, 877 kWH per year.
Expected annual energy savings = 43,482 - 16,877 = 26,605 kWH per year.
Or,
Expected approximate energy savings = 60%

Existing carbon footprint = 33.7 tons per year
Expected new carbon footprint = 13.1 tons per year
Expected annual carbon savings = 33.7 – 13.1 = 20.6 tons per year
Or,
Expected approximate carbon savings = 60%

Carbon footprint calculation based on kWH to tons of carbon conversion calculator found at:
https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator
Actual carbon production values may vary due to differences between SRP and nationwide averages.