

# Los Angeles Community College District Energy Trends and M&DR Project

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**LOS ANGELES COMMUNITY COLLEGE DISTRICT**

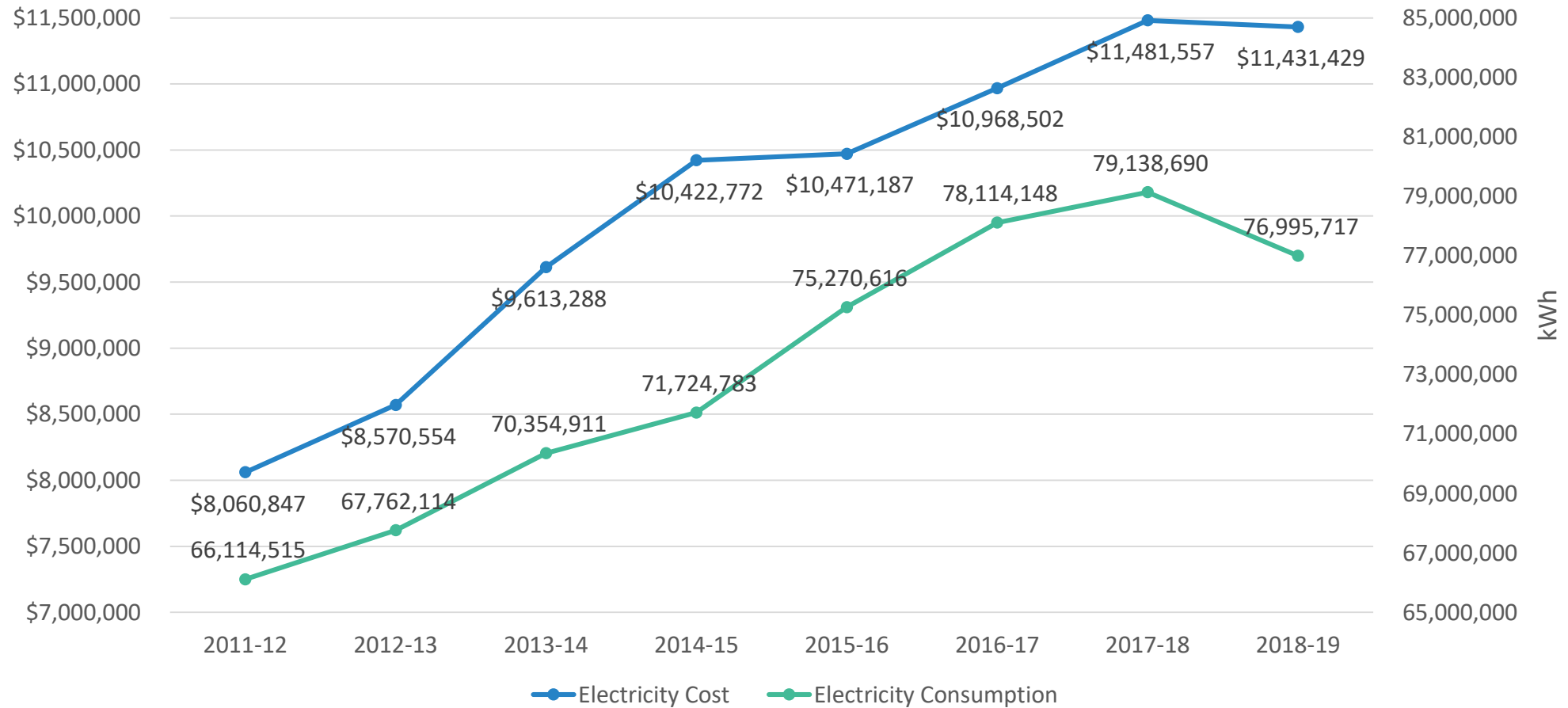
CITY / EAST / HARBOR / MISSION / PIERCE / SOUTHWEST / TRADE-TECHNICAL / VALLEY / WEST

# Agenda

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1. Trends and Data
2. Measurement & Demand Response (M&DR) Project
3. Zero Net Energy Buildings
4. Proposition 39

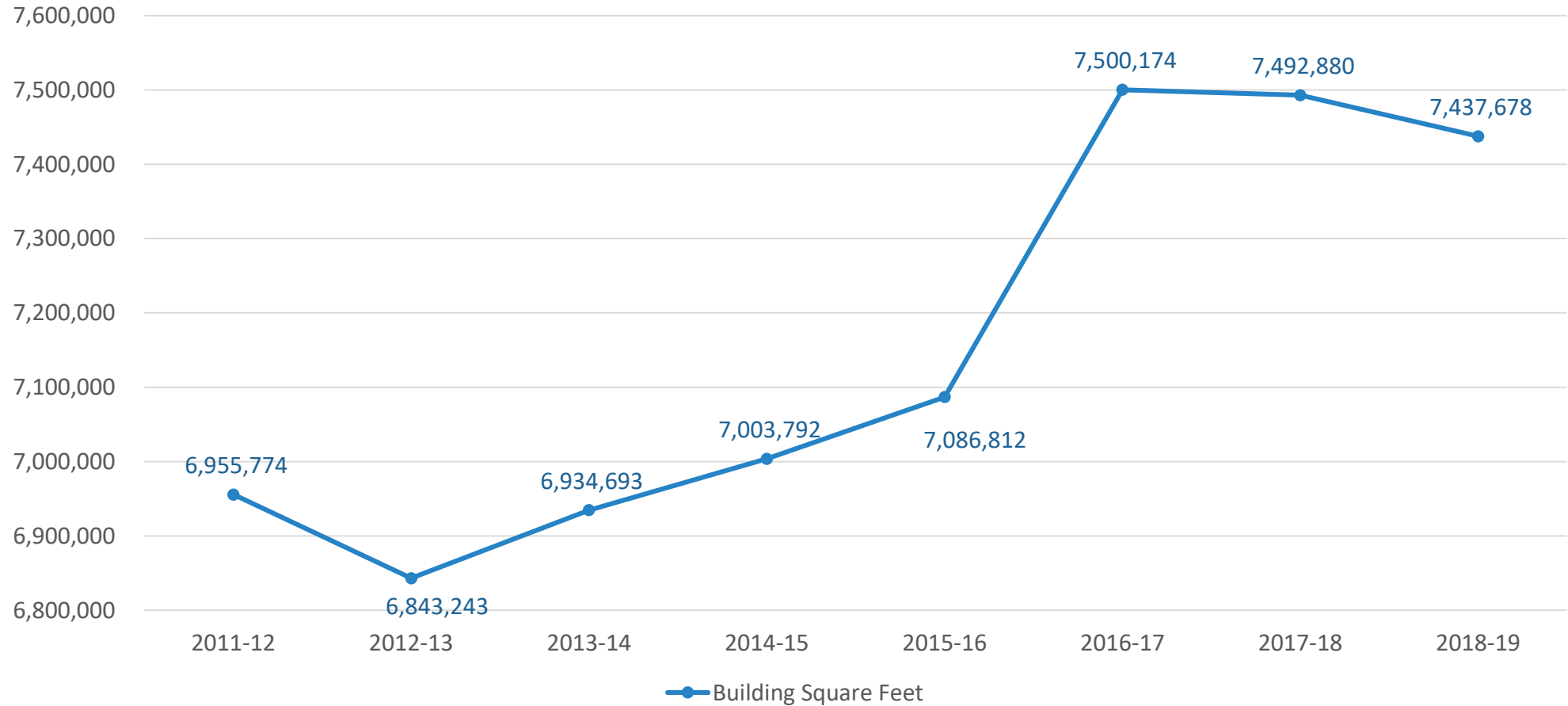
# LACCD Electricity Trends, Eight Years



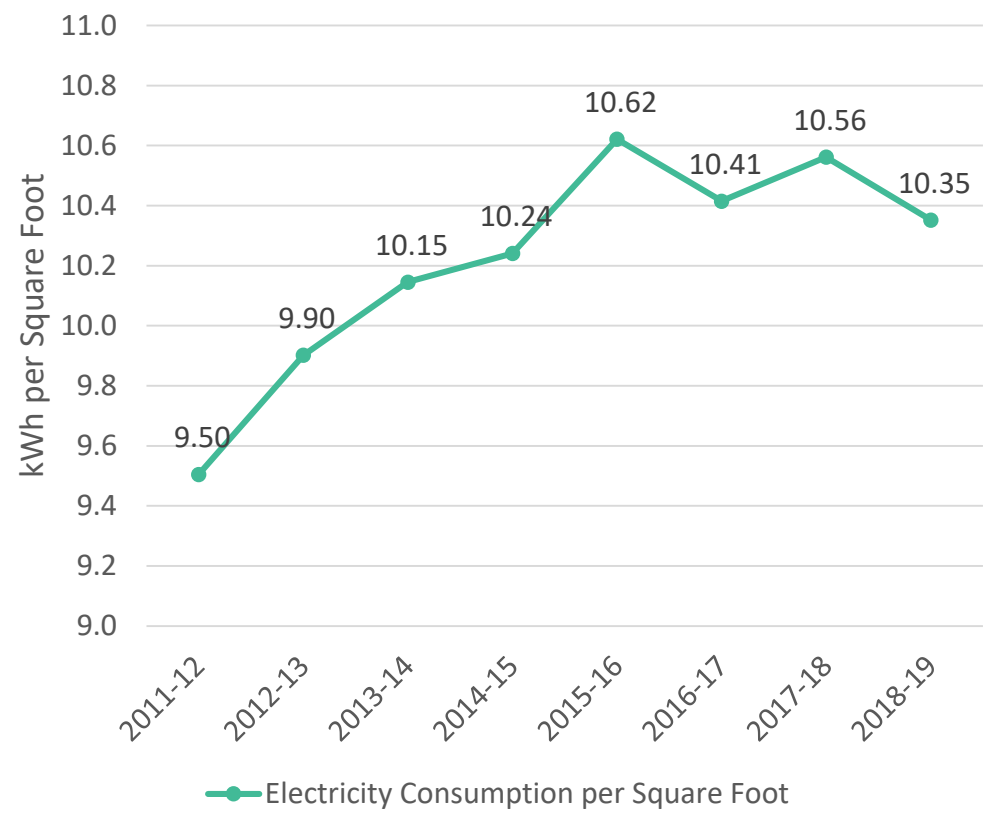
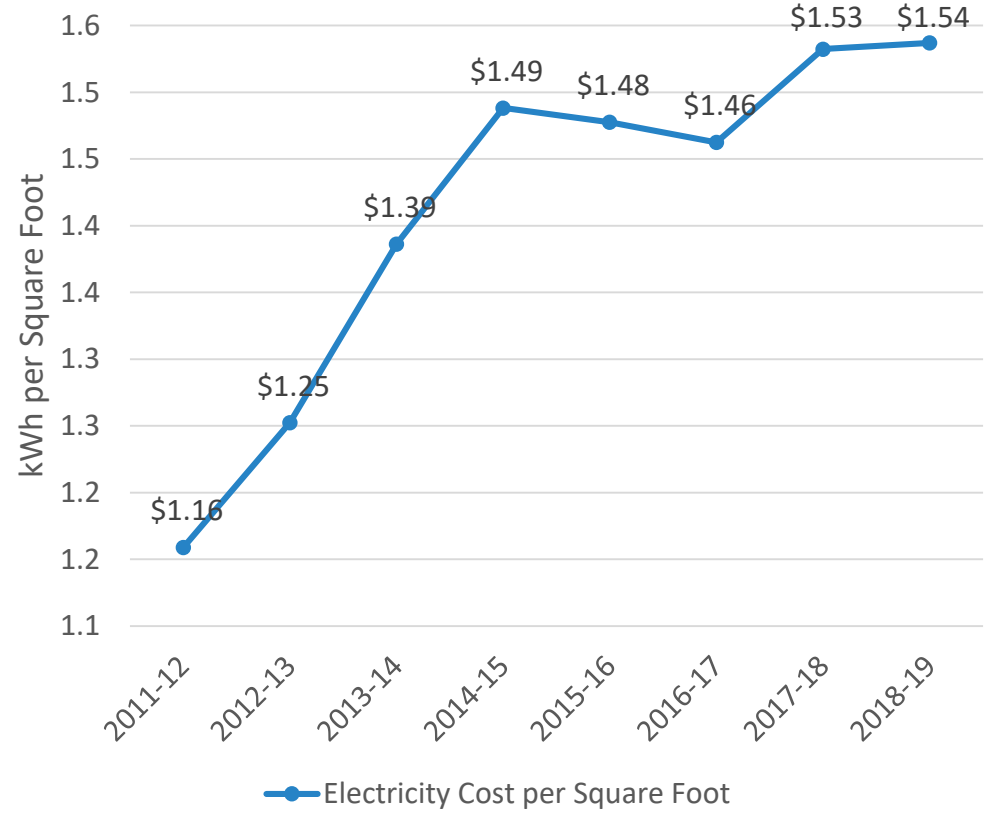
# Value Generated from Solar PV

Fiscal Year	Grid-purchased Electricity (Actual)	Potential Cost of Electricity without Solar PV (Hypothetical)	Value of Solar PV Generation (Calculated)
2011-12	\$8,060,847	\$9,216,724	<b>\$1,155,876</b>
2012-13	\$8,570,554	\$9,984,978	<b>\$1,414,424</b>
2013-14	\$9,613,288	\$11,097,830	<b>\$1,484,542</b>
2014-15	\$10,422,772	\$11,950,884	<b>\$1,528,112</b>
2015-16	\$10,471,187	\$11,988,490	<b>\$1,517,303</b>
2016-17	\$10,968,502	\$12,346,540	<b>\$1,378,038</b>
2017-18	\$11,481,557	\$12,918,410	<b>\$1,436,852</b>
2018-19	\$11,431,429	\$12,889,096	<b>\$1,457,668</b>

# LACCD Square Feet, Eight Years



# Electricity Cost and Consumption per Square Foot



# General Trends

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LACCD electricity cost and consumption decreased in FY 2018-19 after year-to-year increases

The presence of solar PV has greatly mitigated the increase in cost and consumption

LACCD added nearly 500,000 square feet between 2011-12 to 2018-19

Electricity rates have increased significantly the last several years and are projected to keep increasing (roughly 5% per year for both LADWP and SCE)

- Even if we kept consumption static year-over-year, we would still pay more for electricity due to rate increases



# Measurement & Demand Response

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Installed electric sub-meters at all buildings over 10,000 square feet

Installed hot water, chilled water, and natural gas meters at central plants

Real time monitoring of building energy usage

LACCD participated in LADWP's Demand Response Pilot Program in Summer 2015 and has continued to participate every year, earning over \$70,000 over four years

Southern California Edison's programs change year to year and are administered by third parties in some cases, which has led to some challenges in actively participating in the programs due to the lack of consistency year to year

- SCE programs now call events for window from 4-9 pm, during which building operations staff are not on site





# New Metrics and Reports

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The M&DR dashboard is frequently updated with new features

Each college receives an emailed daily report at 5 am showing the previous day's electricity use at each building (sample on next page)

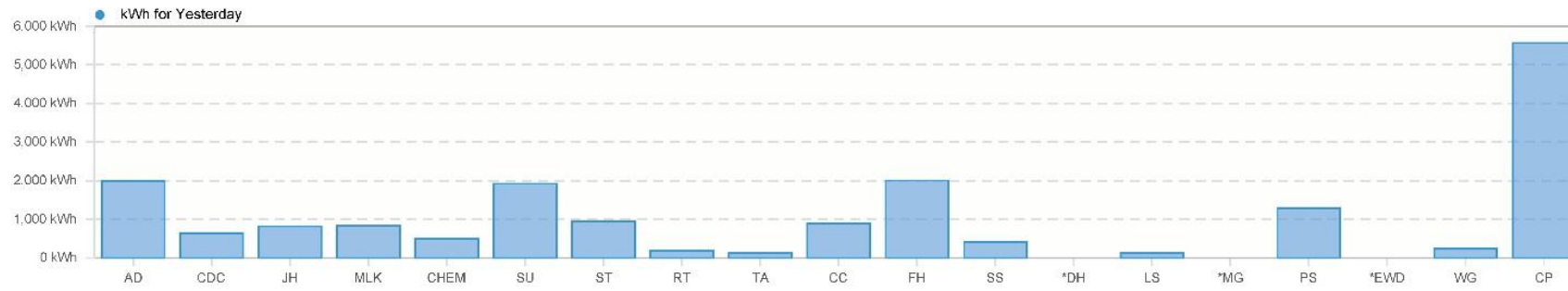
Each college receives an emailed monthly report showing a “heat map” of each building's electricity use for the previous month (sample following next page)

Staff has access to all data that has been recorded by the submeters, and can use them with engineers, contractors, consultants, or other third parties to generate savings estimates and improve project planning activities



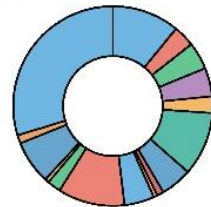
# Sample Daily Report, LA City College, December 12, 2018

LACC kWh by Building



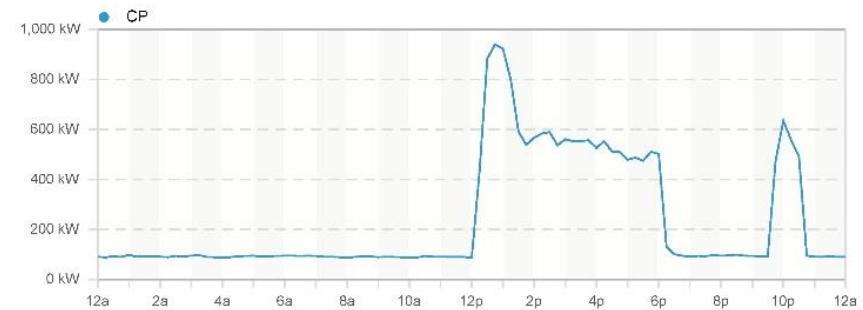
Total KWH by Building • Yesterday • 19,033 kWh

- AD
- CDC
- JH
- MLK
- CHEM
- SU
- ST
- RT
- TA
- CC
- FH
- SS
- \*DH
- LS
- \*MG
- PS
- \*EWD
- WG
- CP

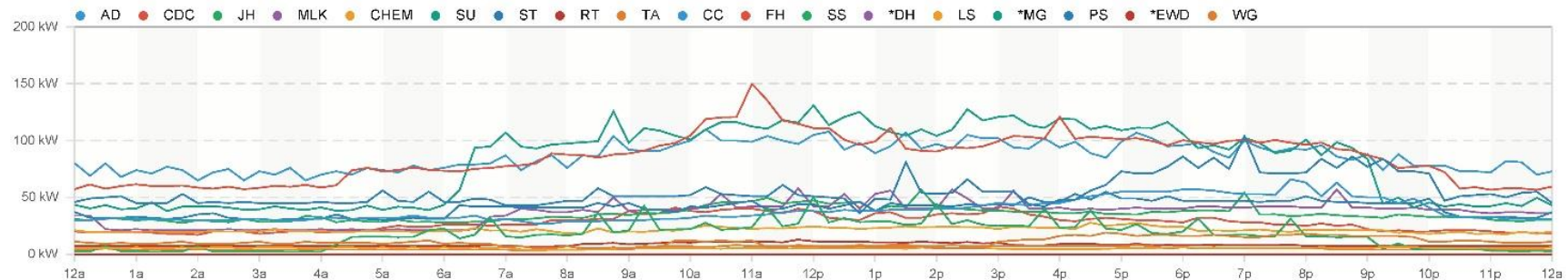


Yesterday

Report Date: 2018-12-12•kW by Building • Yesterday

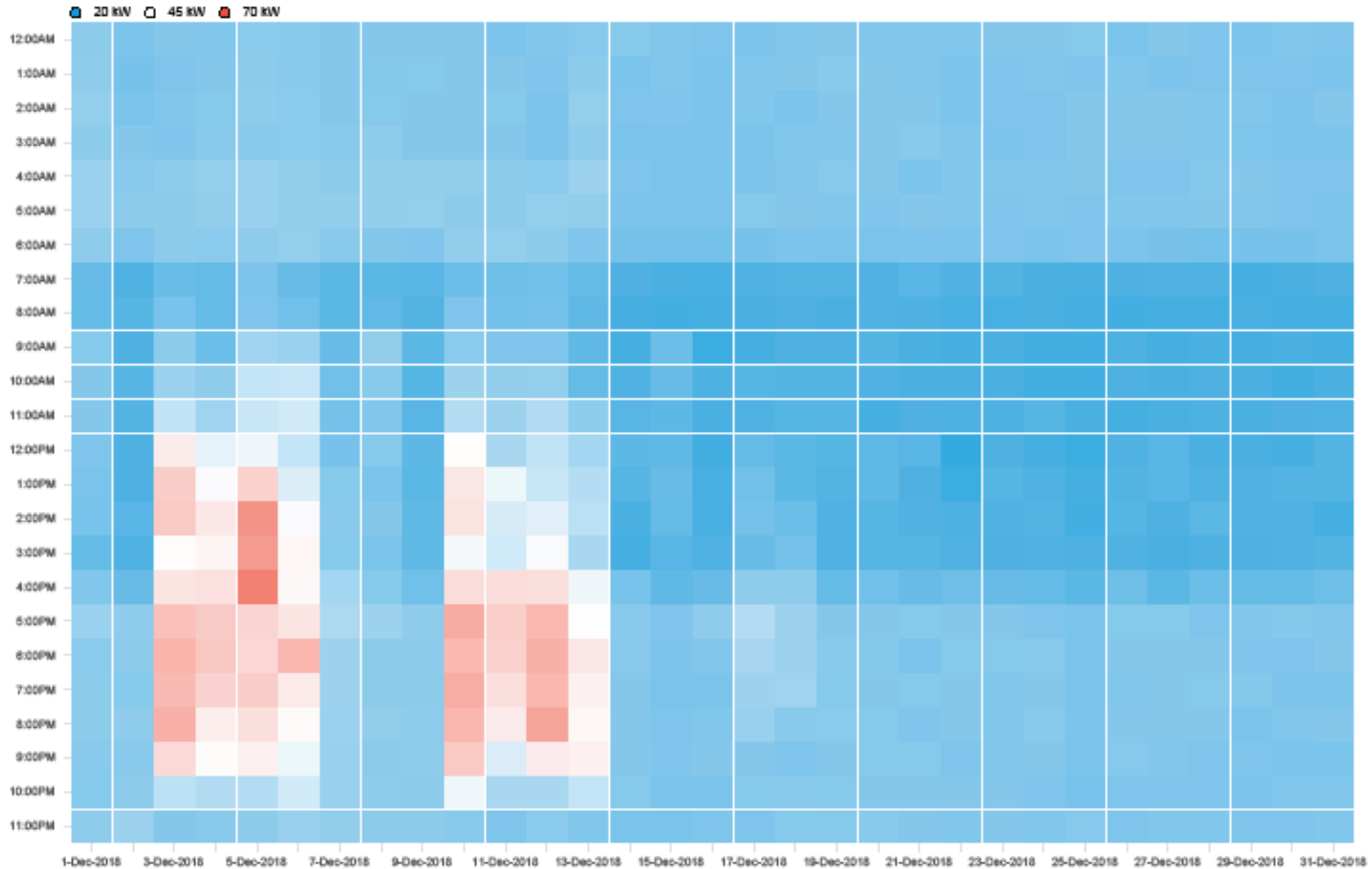


Report Date: 2018-12-12•kW by Building • Yesterday



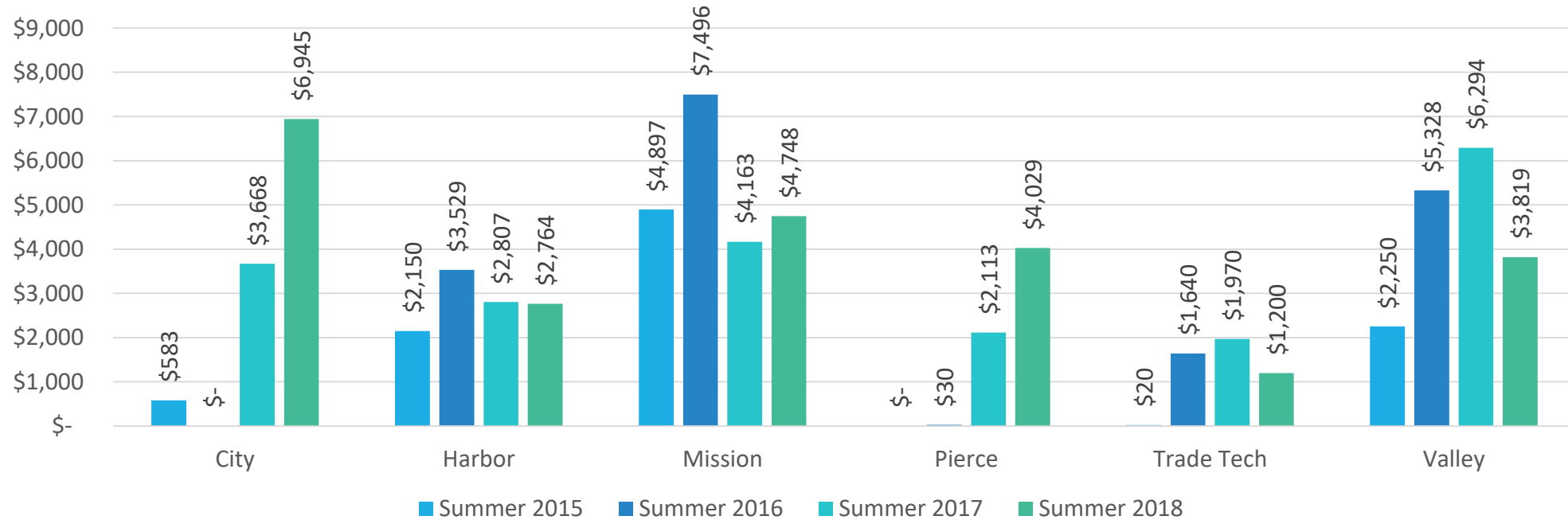
# Sample Monthly Heat Map Report, LA City College, Cesar Chavez, December 2018

LACC Building Total Energy Use by Time of Day • Dec-2018 • LACC CC kW



# LADWP Demand Response Results

Revenue from LADWP Demand Response Program



Summer 2015	Summer 2016	Summer 2017	Summer 2018
\$9,900	\$18,023	\$21,015	\$23,505



# Zero Net Energy Buildings

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LACCD has constructed several zero net energy (ZNE) or near zero net energy buildings:

- Pierce College Maintenance & Operations Facility
- LAHC Science Complex
- ELAC Student Success and Retention Center

ZNE buildings generate as much or more energy than it consumes

The New Buildings Institute (NBI) tracks and certifies ZNE buildings across the country

# Proposition 39

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Prop 39 (California Clean Energy Jobs Act) was passed by voters in 2012

Five year program that provided funding for energy efficiency projects in K-14 schools by closing a corporate tax loophole for multi-state corporations

California Community College Chancellor's Office (CCCCO) was responsible for administering program to community college districts (CCDs)

LACCD delivered 51 projects across the five year program

LACCD received \$16.5 million of state funds and just under \$500,000 of utility incentives to deliver approximately \$17 million of projects

LACCD delivered and closed out all projects within the schedule prescribed by CCCCCO



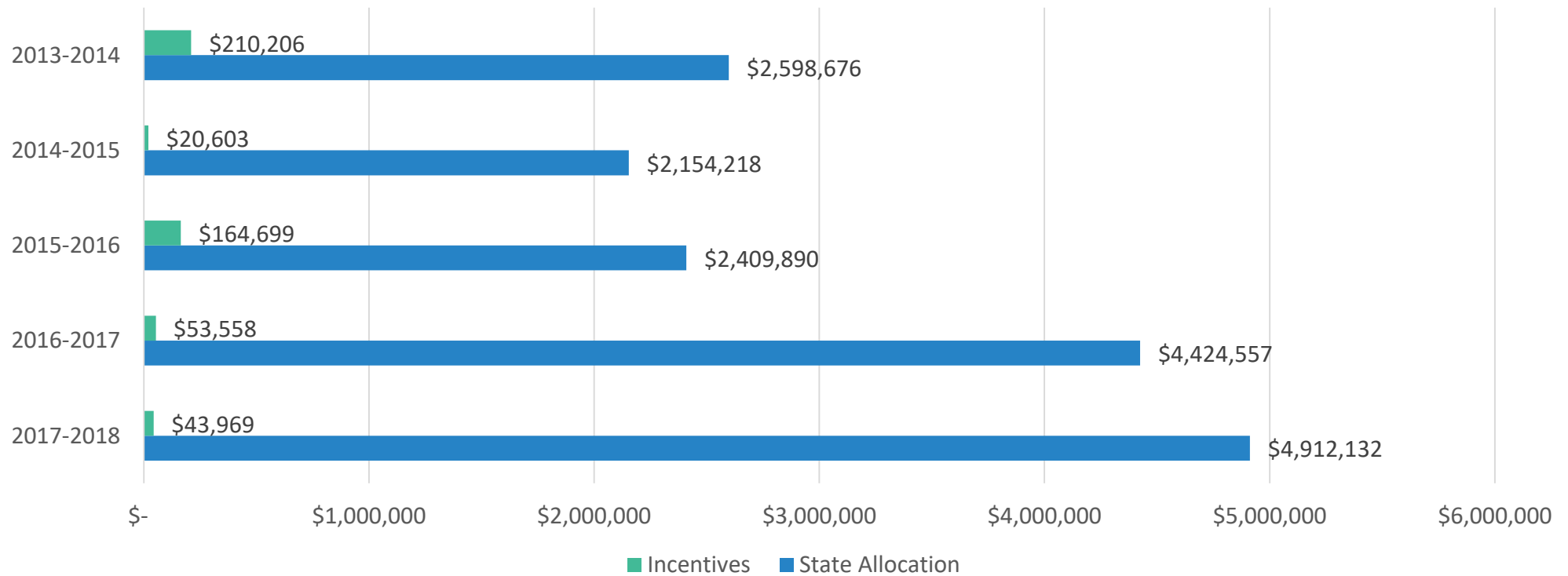
# Prop 39 Project Categories by Fiscal Year

Fiscal Year	Lighting	Boiler	Controls	Retro-Commissioning	Pool Cover	Variable Freq. Drive
2013-2014	5	2	4	2	3	
2014-2015	7	1				
2015-2016	3	1		2		1
2016-2017	11					
2017-2018	9					



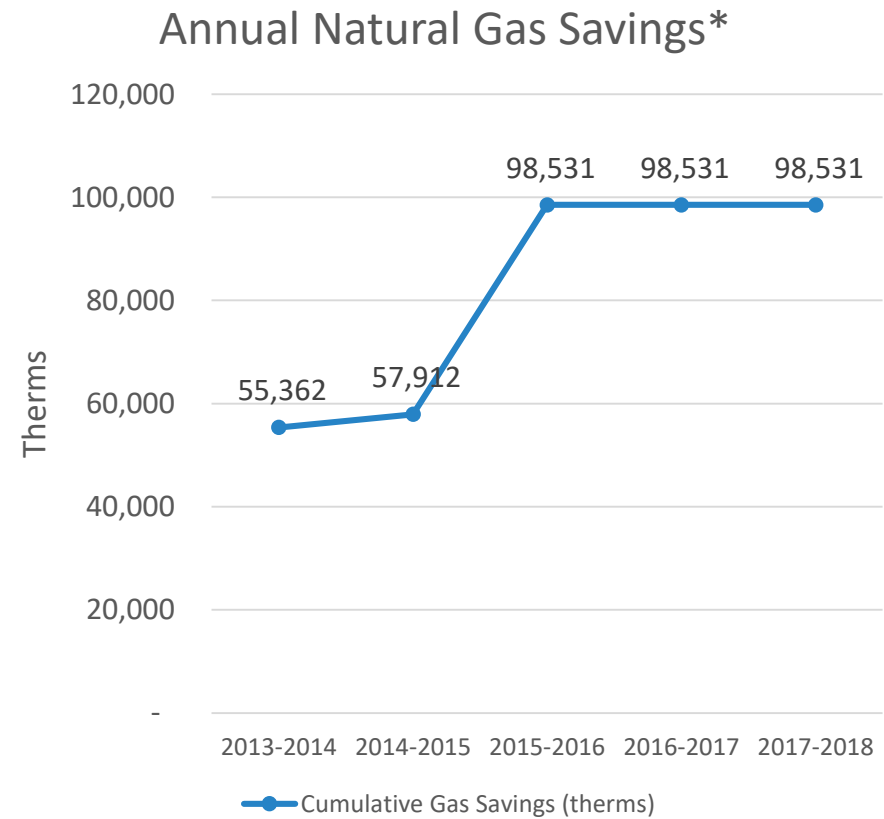
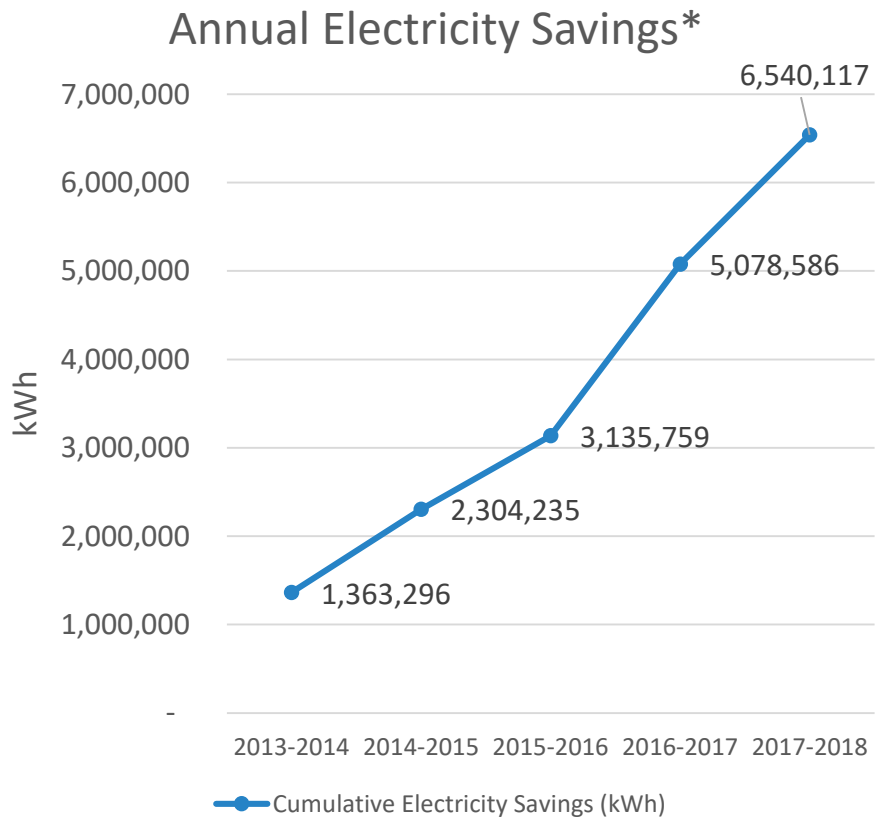
# Proposition 39

Prop 39 LACCD Project Spending by FY





# Proposition 39

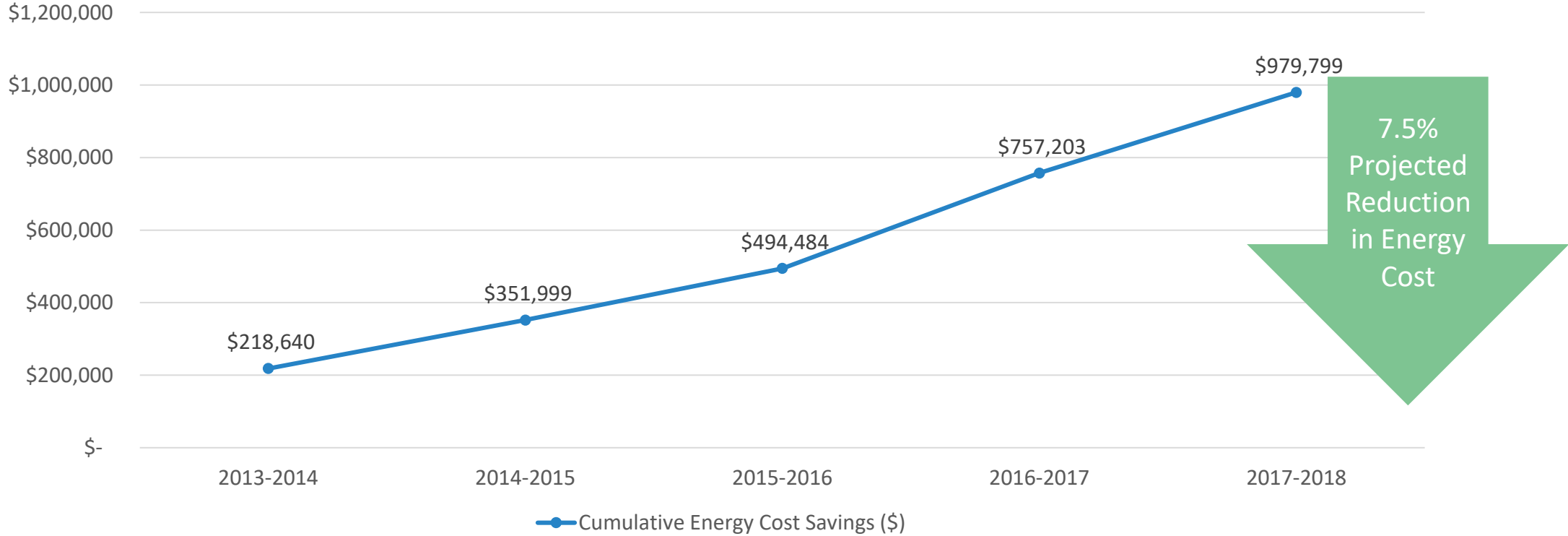


\*Calculated savings amounts



# Proposition 39

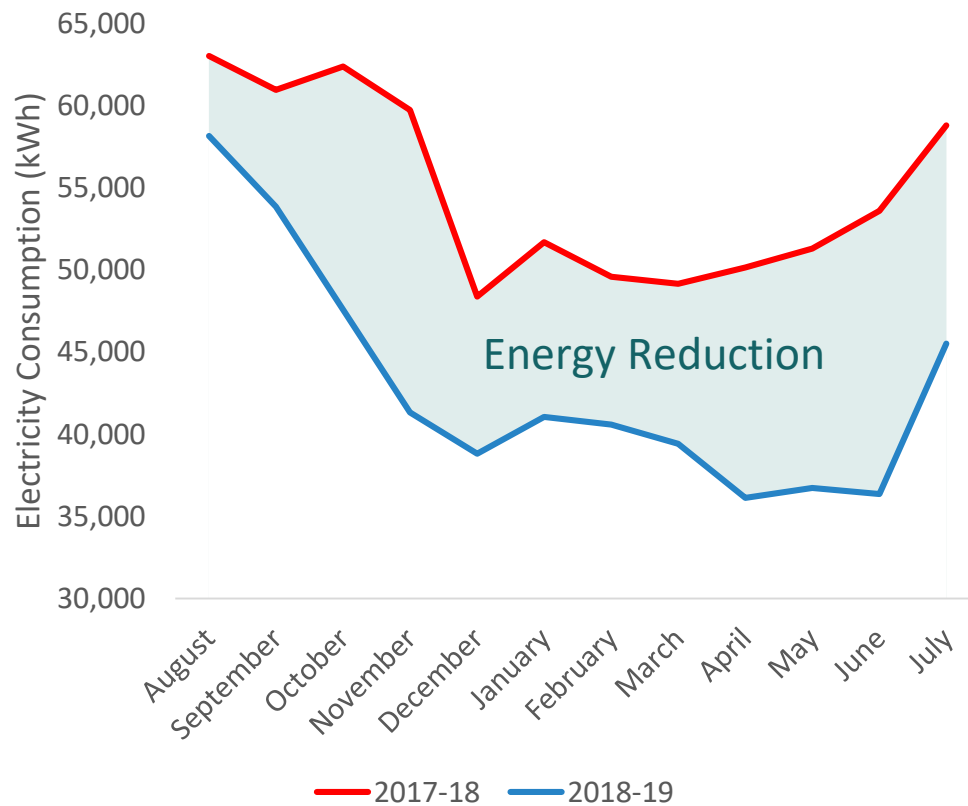
Cumulative Energy Cost Savings (Electricity and Gas)\*



\*Calculated savings amounts



# Prop 39 Highlight: LACC Parking Structure LED Upgrade



Prop 39 LED upgrade project for Parking Structure and Athletic Field on Roof

Unique case where lighting is the highest energy end use (very little HVAC)

Sub-meter from M&DR shows us effects of the LED upgrade

Building electricity use has already been reduced by 26% in the last twelve month period

Year one electricity savings of more than \$27K

Significant life-cycle savings on maintenance

# Prop 39 Highlight: LAVC Football Field LED Upgrade

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# Opportunities

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LACCD hosted a Climate Corps Fellow funded through a grant from LADWP

- Assigned to LA City College for 2018-19 academic year
- Provided outreach and education about energy conservation, sustainability, and LADWP energy efficiency programs
- LACCD has applied for the next round of grants from LADWP to fund additional fellowships

LACCD's Utility Program Manager is supervising a Build-LACCD intern Fall 2019

LACCD developed a pilot project with LADWP and the Southern California Gas Company to conduct free energy audits at LAHC, LACC, and LAVC

- Buildings were selected based on highest consumption observed through M&DR platform

LACCD is exploring energy efficiency tax credit availability

LACCD has enrolled in the US Green Building Council (USGBC) LA Chapter's "Net Zero Accelerator" program

Developing energy efficiency projects using bond funds



# Questions

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