



ENERGY OPTIMIZATION PLANS and EVERGREEN

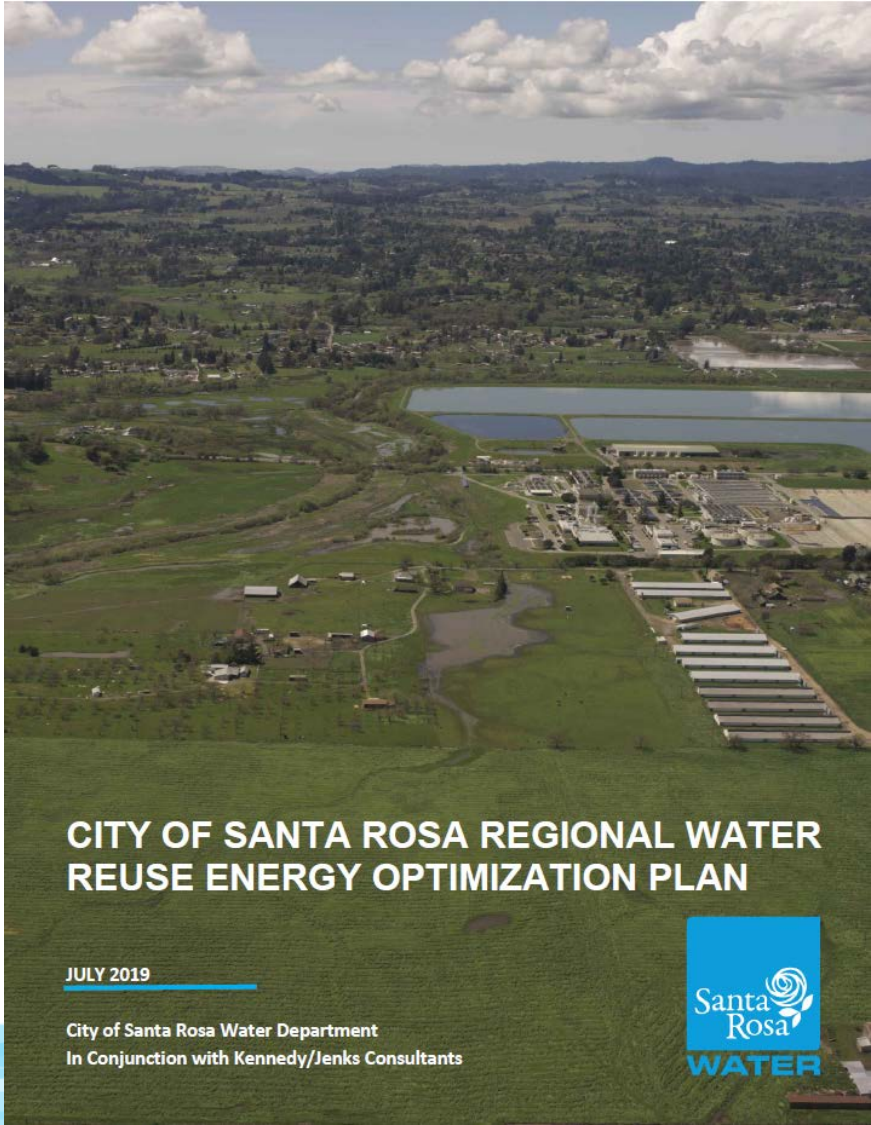
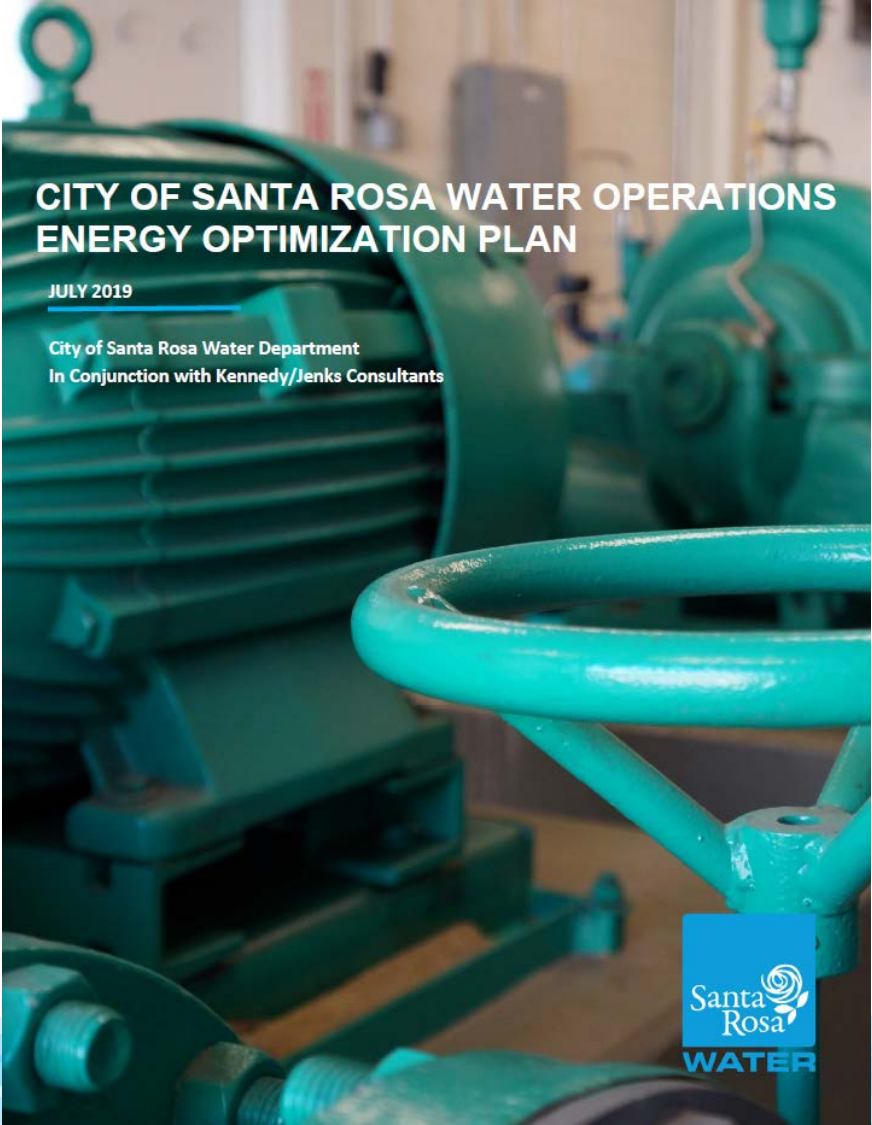
Board of Public Utilities

Study Session, August 1, 2019

Claire Myers, Energy & Sustainability Representative

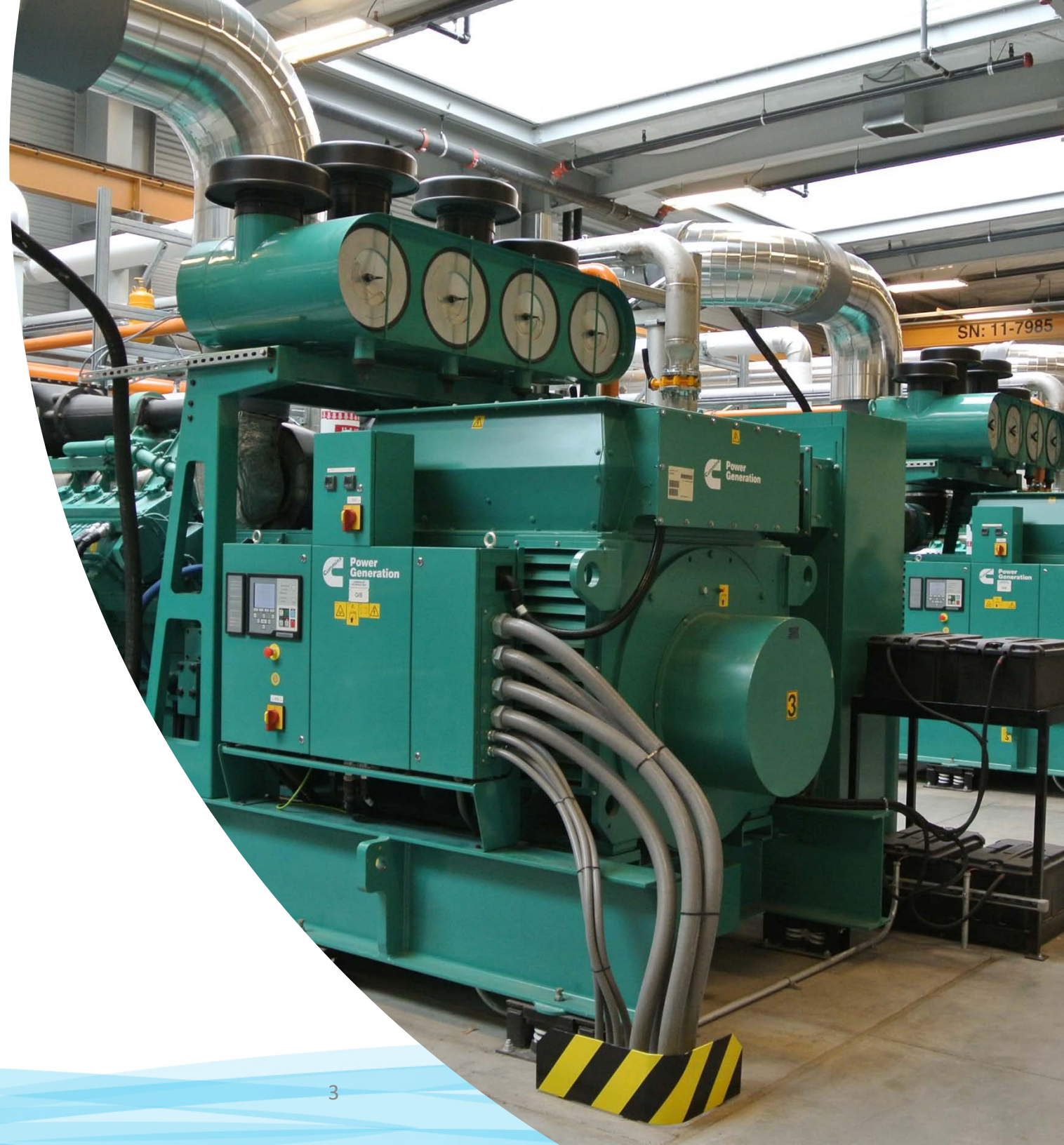
Purpose of EOPs

Roadmaps for strategically and systematically optimizing energy use in Santa Rosa Water's systems



Planning Process

1. System Audit or Energy Overview
2. In-depth Investigations
3. Prioritization of Measures
 - Pursue
 - Completed or in planning
 - Not pursue at this time
 - Not recommended



Regional Water Reuse EOP

Technical Memoranda: Audits

1. LTP Audit
2. Biosolids Compost Facility Audit
3. Reclamation System Audits
4. Geysers Operations Audit
5. Brainstorming Workshop





Regional Water Reuse EOP

Technical Memoranda: Investigations

6. LTP Waste Heat
7. Energy Management Software
8. Irrigation System Optimization
9. Solar Photovoltaic (PV)
10. Mechanical Digester Mixing

Regional Water Reuse EOP

Complete or In Planning

EEM 1-2	Replace Ultraviolet (UV) Disinfection
EEM 1-6	Run Idle Cummins Engines on Natural Gas to Generate Electricity
EEM 1-10	Implement Building and Lighting EEMs
EEM 4-4	Reduce Operation of the Air-handling Unit
PI 7-1	SCADA Screens and Instruments to Facilitate Energy Management
PI 7-2	Monitor Time-of-Use (TOU) Rate Changes
PI 7-3	Use the Flow Equalization Basin (FEB) for Peak Shaving
EEM 8-11	Continue Pump Testing Program
EEM 8-13	Transfer Ownership of Vineyard Pumps

Regional Water Reuse EOP

Measures to Pursue

EEM 4-1	Restore Pipeline Capacity
EEM 6-4	Lystek Process
	Evaluate Additional Uses of Waste Heat
EEM 8-12	Upgrade Delta Pump #2
REM 9-4	1 MW Floating Solar Photovoltaic (PV) Installation, Power Purchase Agreement
REM 9-5	Pond Lease for 1 MW Floating Solar Installation

Water Operations EOP

Technical Memoranda: Audits

1. System Energy Overview
2. Brainstorming Workshop





Water Operations EOP

Technical Memoranda: Investigations

3. Utility Management Systems
4. Optimizing Pump Sequencing Logic
5. Pump Efficiency
6. SCADA Programming
7. Solar Photo Voltaic
8. Variable Frequency Drive
9. Time of Use Rate Optimization



Water Operations EOP

Complete or In Planning

EEM 6-2	Add Manual Controls via SCADA for Setting Pump Sequence
EEM 6-3	Add SCADA Provisions for Optimizing TOU Settings
EEM 6-4	Add Software Flow Totalizers for the Pump Stations
TOU	Time of Use (TOU) Optimization at water pump stations and sewer lift stations

Water Operations EOP

Measures to Pursue

REM 7-1	Own and Operate 134 kW photovoltaic (PV) project on existing waste transfer station
REM 7-2	Own and Operate 320 kW PV project on new carport/truckport structure
REM 7-5	Power Purchase Agreement (PPA) for 320 kW PV project on new carport/truckport structure
REM 7-6	PPA for 1257 kW PV project on new carport/truckport structures
EEM 9-1	Adjust heating program at Utility Field Office
EEM 9-2	Adjust cooling program at Utility Field Office
EEM 9-3	Test air changes per hour in HVAC equipment
EEM 9-4	Use window blinds to reduce solar gain
EEM 9-5	Investigate natural light options in dark work spaces
EEM 9-7	Educate staff regarding energy reduction

EOP Next Steps

01

Today's Study
Session: Input
from Board

02

Future Board
Meeting: Consider
acceptance of
Final EOP

03

Additional
research on
Measures to
Pursue

04

Evaluate
confirmed
Measures as part
of Water
Department's CIP

EverGreen Analysis



MUNICIPAL OPERATIONS CLIMATE ACTION PLAN



CITY OF SANTA ROSA

August 6, 2013



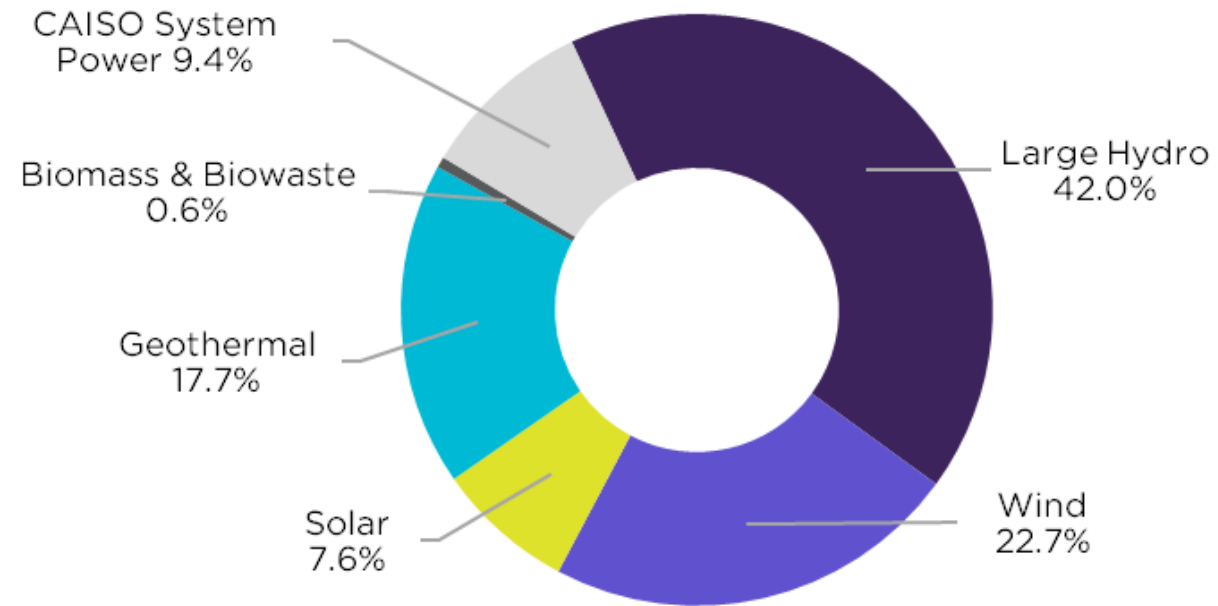
City Council Tier 1 Priority

Implement Climate Action Plan

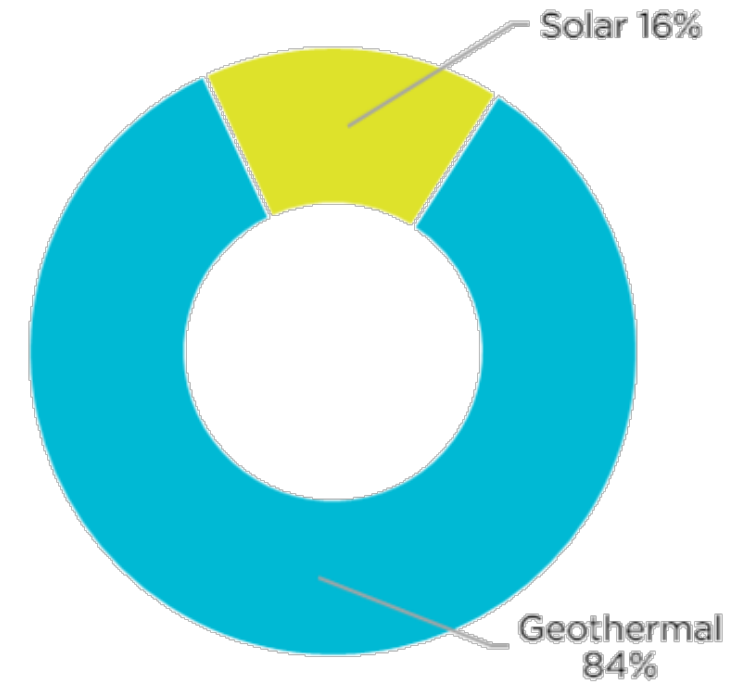
- 100% Renewable
- City Council Subcommittee on Climate
- All-Electric Ready Ordinance and EverGreen Cost Analysis

Electricity Power Sources

2018 CleanStart Power Sources

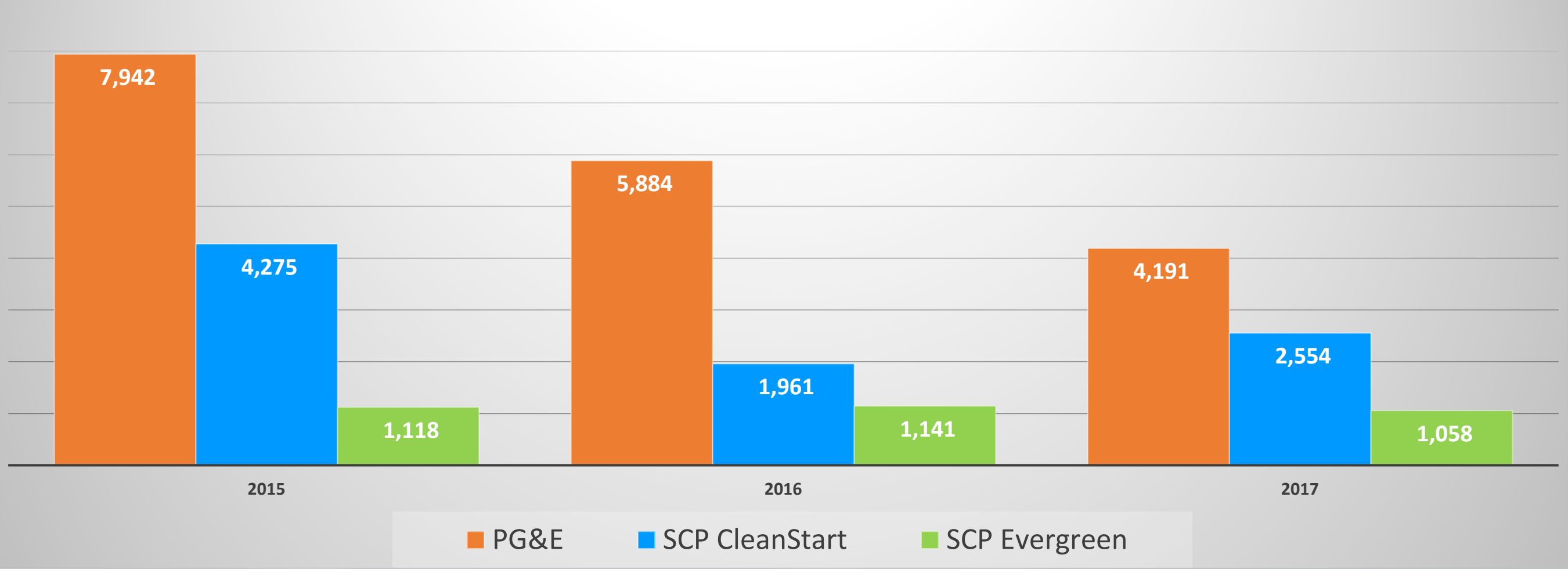


2018 EverGreen Power Sources



City-Wide GHG Reduction Comparison

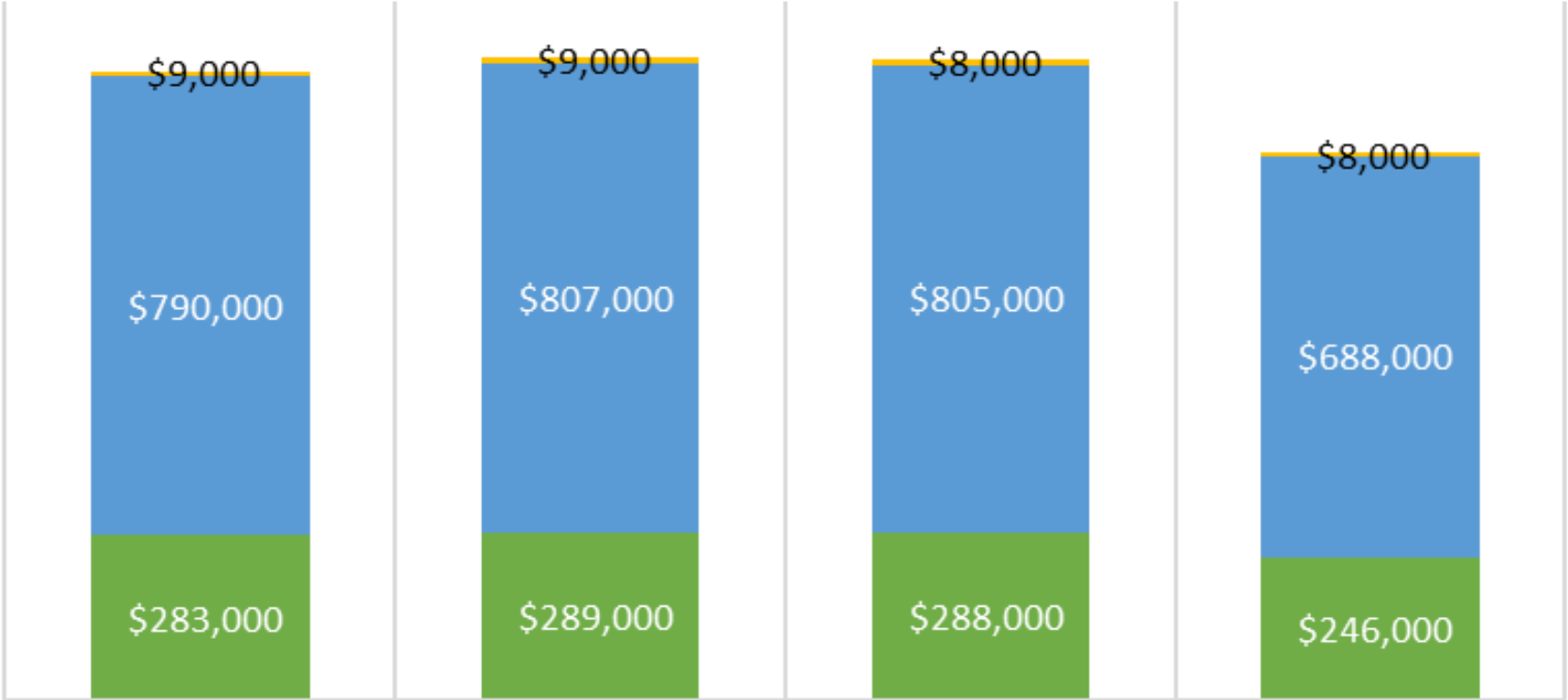
Municipal GHG Emissions Comparison (MT CO2/year)



Cost Impacts

EVERGREEN PREMIUM

■ General Fund ■ Enterprise Fund - Water ■ Enterprise Fund - Parking



2015

2016

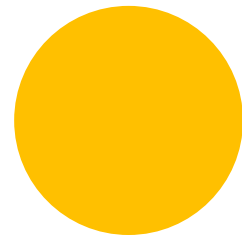
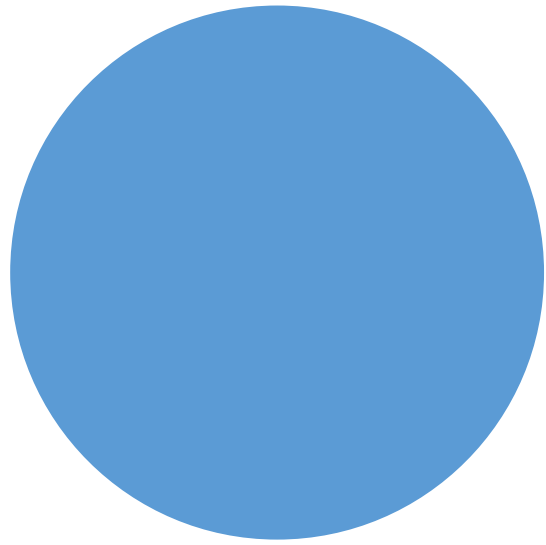
2017

2018

Estimated Historic Costs if the City Had Purchased EverGreen

~\$1 Million /year added cost
~25% General Fund
~75% Enterprise Funds

*Does not account for any additional efficiency gains



Questions?