

# **Fleet Electrification**

Sustainability/Energy Committee

February 26, 2019

# Overview



- Fleet operation
- Light duty vehicles
- Medium and heavy duty vehicles
- Greenhouse gas reduction
- Emergency preparedness
- Next steps

# Fleet Operation



District Fleet  
(1,311 vehicles)\*



Light Duty  
Vehicles



Medium and  
Heavy Duty  
Vehicles

# Light-Duty Vehicles



- 415 light-duty vehicles
- New sedans, pickups, and SUVs are more fuel efficient
- Hybrids are the standard sedan (69 Toyota Priuses, 6 Chevrolet Volts)
- Mid-march delivery of four fully-electric Nissan Leafs
- Replacements have improved fuel efficiency in class by 23 percent





# Medium & Heavy-Duty Vehicles



- 803 medium and heavy-duty vehicles
- **Examples:** Service trucks, backhoes, skid steers, vacuum excavators
- Renewable diesel use increased from 54,944 gallons in 2016 to 127,726 gallons in 2017
- In 2017, renewable diesel offset 1,304 MT of GHG emissions.

\*Includes 93 trailers



# Medium & Heavy-Duty Vehicle Electrification



- Slow progress in this class
- Available for transportation and mining industries
- Hybrid construction equipment not available in the size and capacity used by the District (except John Deere 644k loader)
- John Deere 644k loader
  - Diesel electric uses 25% less fuel, costs 10-15% more
  - District has two conventional loaders of this type

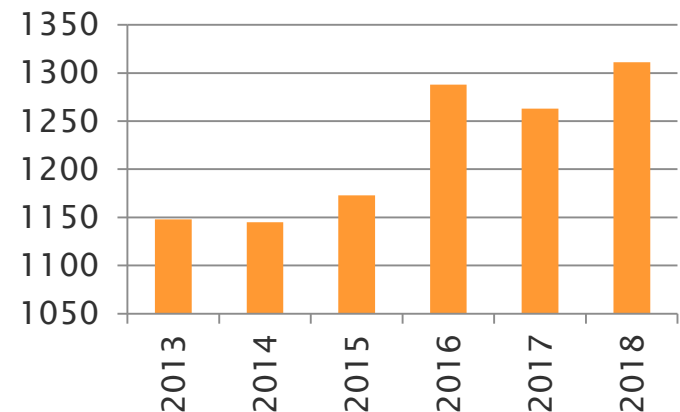


# Greenhouse Gas Reduction

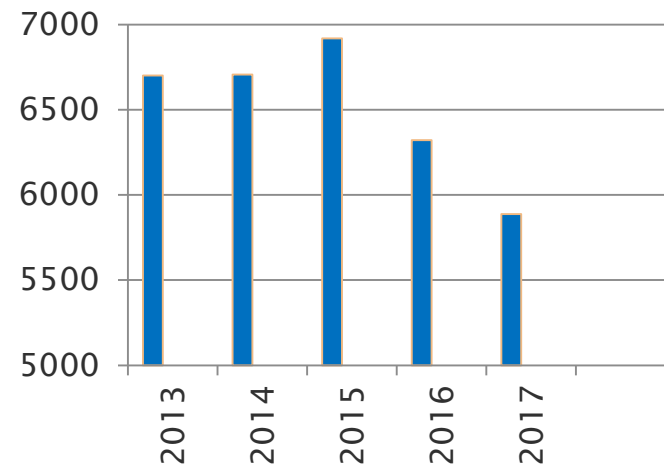


- Fleet has grown by 14.20% in last 6 years
- GHG emissions reduced by 12% in last 5 years
- In 2017, fleet generated
  - 5,887 MT of GHG emissions
  - 28% of overall GHG inventory
  - 66% of overall direct emissions

## Fleet Size



## Fleet Emissions



# Emergency Preparedness



- Fuel is critical commodity in emergency
- Need to ensure our equipment can operate after an emergency
- Support for mutual assistance
  - Assistance to EBMUD
  - EBMUD providing assistance



# Next Steps



- Continue to investigate new technology to improve fuel efficiency and reduce GHG emissions
- Evaluate hybrid and electric powered vehicles for future fleet purchases
- Expand the use of renewable diesel

# Questions



# **Draft Climate Action Policy**

Sustainability/Energy Committee

February 26, 2019

# Agenda



- Climate change assessments
- District activities
- Proposed Climate Action Policy
- Next steps

# IPCC Assessment Report

- Sixth Assessment Report will be completed in 2021
- Special Report released October 2018
- Warming on track to exceed 1.5°C in the next decade
- Limiting warming to 1.5°C will require
  - Rapid, far-reaching, and unprecedented changes
  - Decrease in human-caused GHG emissions by 45% by 2030

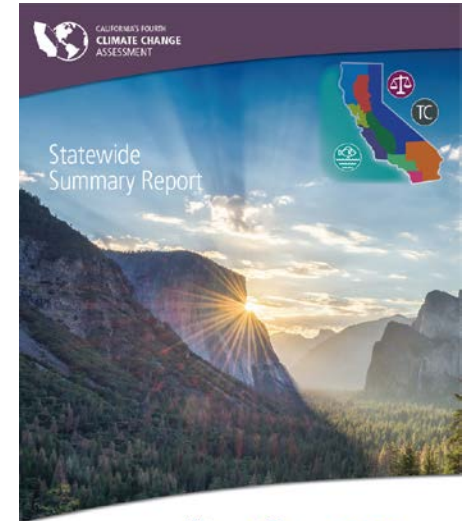




# California Fourth Assessment



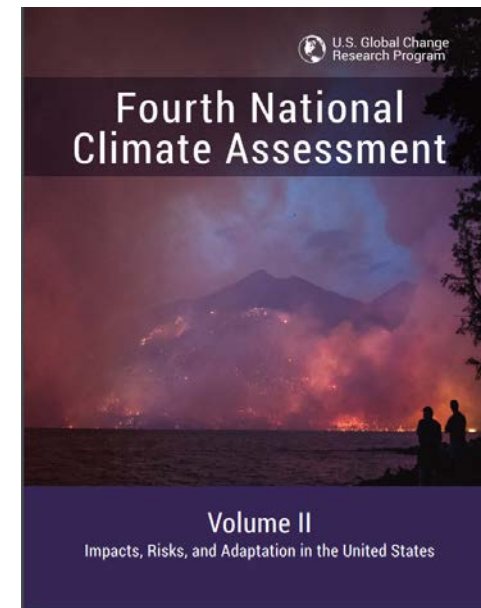
- Released August 2018
- 44 technical reports and 9 regional reports
- Findings
  - Temperature increased  $0.95^{\circ}\text{C}$  from 1950 to 2005
  - Coastal fog less frequent
  - Sea level has risen 8 inches in last 100 years
  - Winter storms and droughts are more severe



# National Climate Assessment



- Fourth Assessment
  - Volume 1, 2017; Focus on the science
  - Volume II, 2018; Focus on the effects
- Findings
  - Summarized for 12 areas including water, infrastructure, ecosystems, and communities
  - Increased extreme weather events
  - Water quality and quantity impacted
  - Coastal communities and the ecosystems are at risk



# District Activities



- Climate change added to the Strategic Plan
- Climate change impact evaluated in the Water Supply Management Program
- Adopted aggressive GHG reduction goals
- Participated in EPA's Climate Ready Water Utilities and other research
- Green building certification for many facilities
- Consider climate change in planning efforts

# Recent District Activities



- Joined the Bay Area Climate Action Network (BayCAN)
- Joined The Climate Registry (TCR)
- Signed on to “We Are Still In”
- Participating in Project Hyperion
- Developed a Draft Climate Action Policy

# Proposed Climate Action Policy



- Other utilities and cities have climate adaptation plans or plans to address impacts of climate change (e.g., sea level rise)
- Policy will affirm the District's belief
  - Climate change will have a significant impact to water and wastewater operations
  - Climate change will result in rising sea levels, increasing temperature and greater climate variability



# Proposed Climate Action Policy



- District commitment to
  - Plan for climate change
  - Complete and annual GHG emissions inventory and significantly reduce GHG emissions
  - Support legislation to mitigate climate change
  - Support strong state and federal action to respond to impacts of climate change
  - Collaborate with others to develop solutions
  - Take a leadership role with respect to climate change

# Next Steps



- Continue participation in BayCAN and The Climate Registry
- Finalize Climate Adaptation plan
- Incorporate Board feedback on the proposed Climate Action Policy for Board adoption on March 26, 2019

# Questions



# **Wastewater Biogas Upgrade Evaluation**

Sustainability/Energy Committee

February 26, 2019

# Agenda



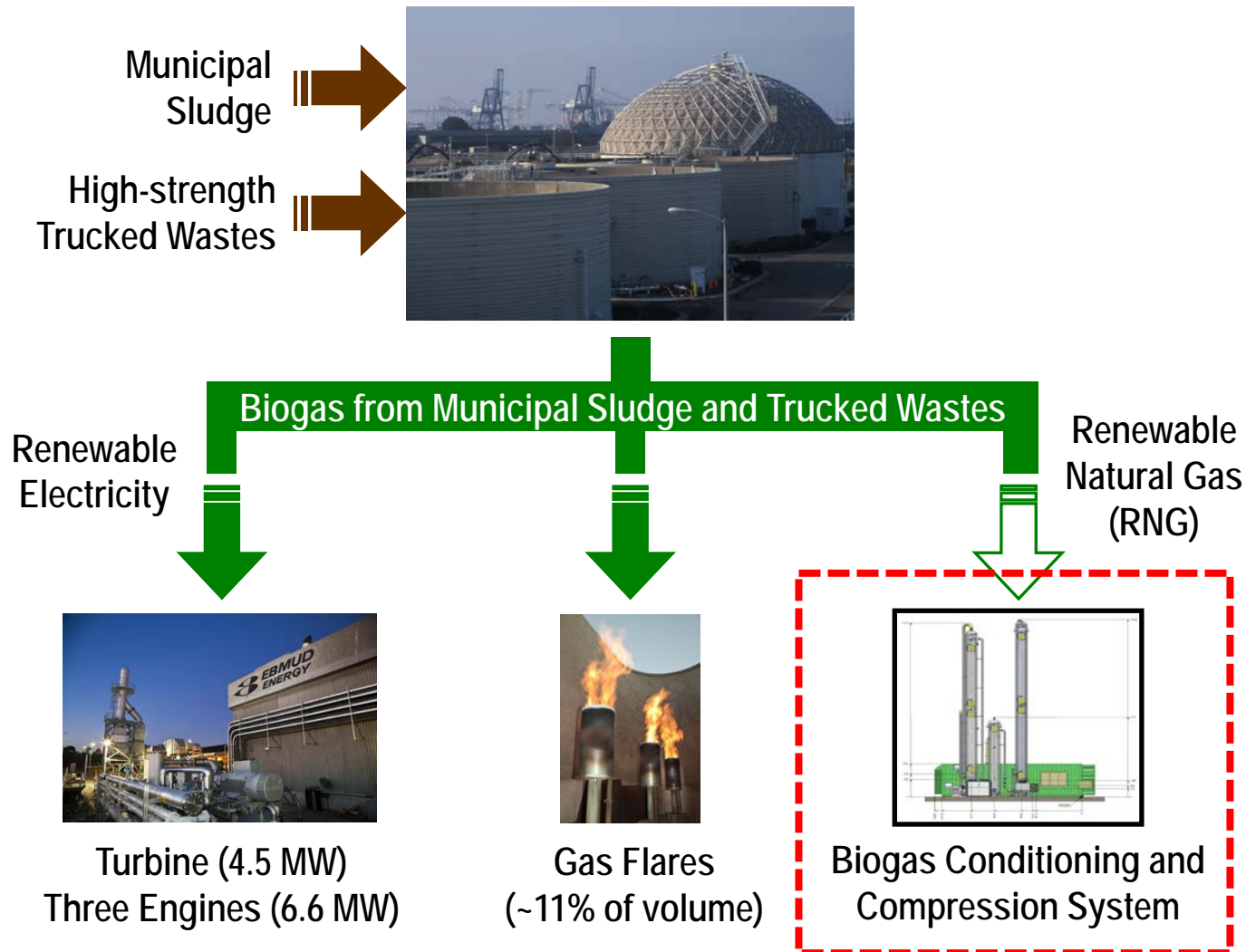
- Background
- Project Evaluation
- Next Steps





# Background

## RNG Biogas Upgrading Project

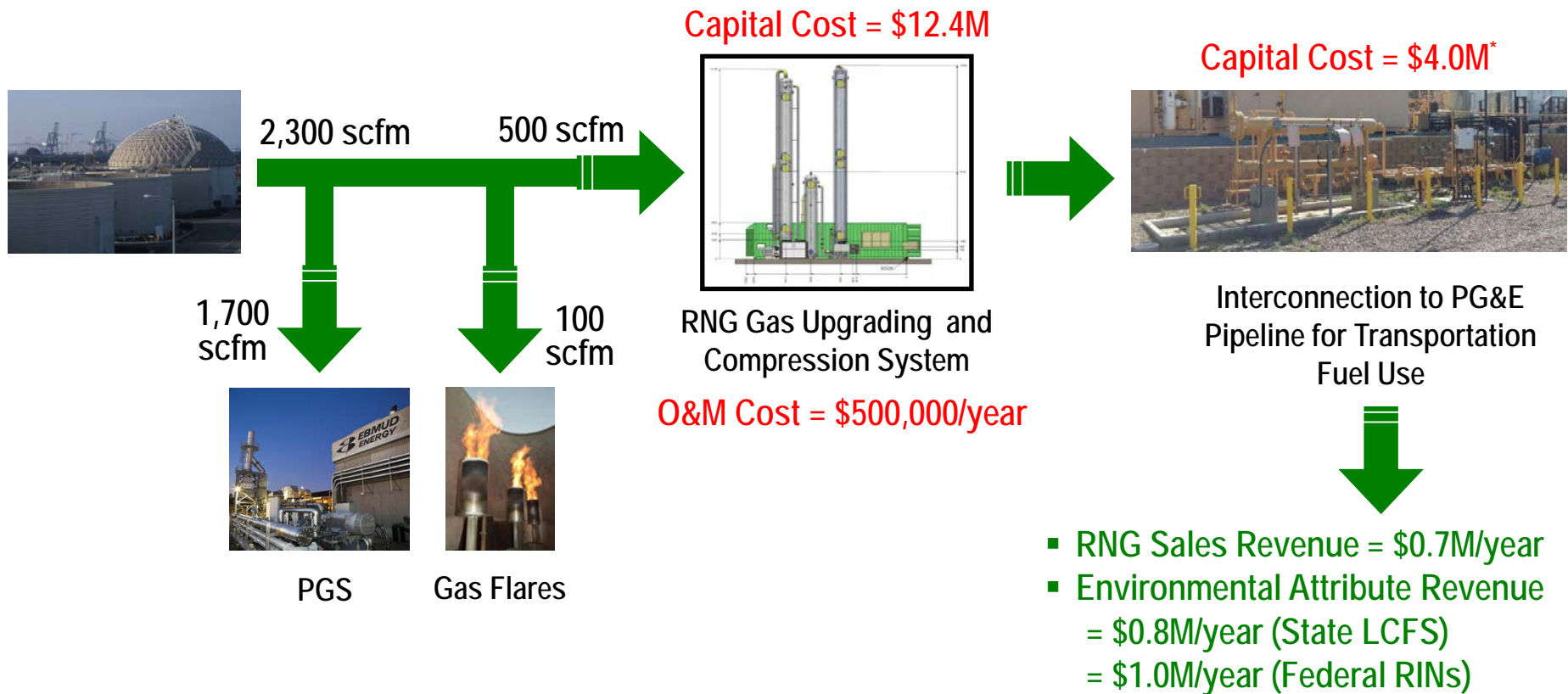


- Biogas production at the MWWTP currently exceeds capacity of turbine and engines
  - Average biogas production = 2,300 standard cubic feet per minute (scfm)
  - Excess biogas is flared approximately 50% of the time (~11% of total volume)
- Benefits of adding a compressed RNG system
  - Adds 500 scfm of biogas use capacity
  - Reduces biogas flaring
  - Significant environmental attribute revenue for transportation fuels



# Financial Analysis

## RNG Process Model



LCFS = Low Carbon Fuel Standard  
RINs = Renewable Identification Numbers

\* Eligible for 50% reimbursement from the CA Interconnection Monetary Incentive Program

- Projected 10-year NPV with no additional funding roughly break even

- Market value for biogas converted to RNG is significantly higher value than for electricity
  - Current market for RNG is over 4x the value
  - PPA with the Port expires in 2022 and the next contract may be less than the current \$58/MWh
- Project would significantly reduce flaring
- Project could increase options for growing the R2 program
- Project would expand market for biogas utilization with long term options to explore:
  - Carbon capture
  - Selling to low carbon liquid fuel producers

# Project Evaluation

## RNG Market Overview

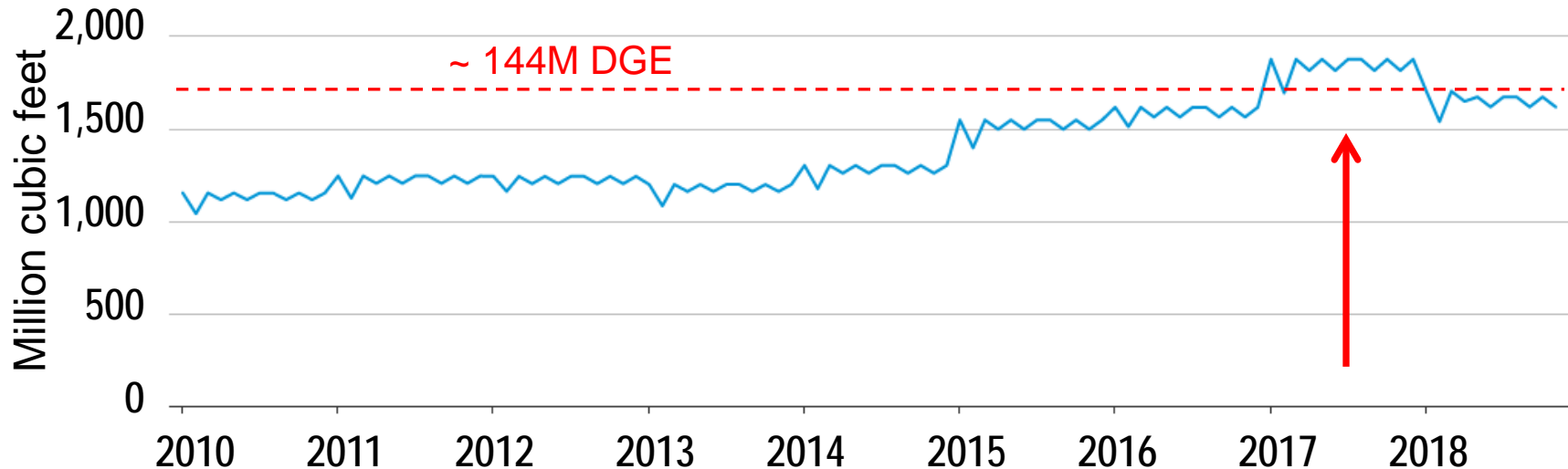


- Highest value market is for transportation
  - If sold for transportation use, the project would generate LCFS and RIN credits
  - These credits are dependent on selling RNG to a vehicle fuel user
  - The value of the credits is variable based on market conditions
  - LCFS is only in CA and RNG must be used for vehicle fuel in CA to qualify
  - RINs is federal and RNG must be used for vehicle fuel in the US to qualify
- There is also a developing green gas market where RNG is purchased for other uses at a premium over CNG (heating, manufacturing, etc)



# Project Evaluation

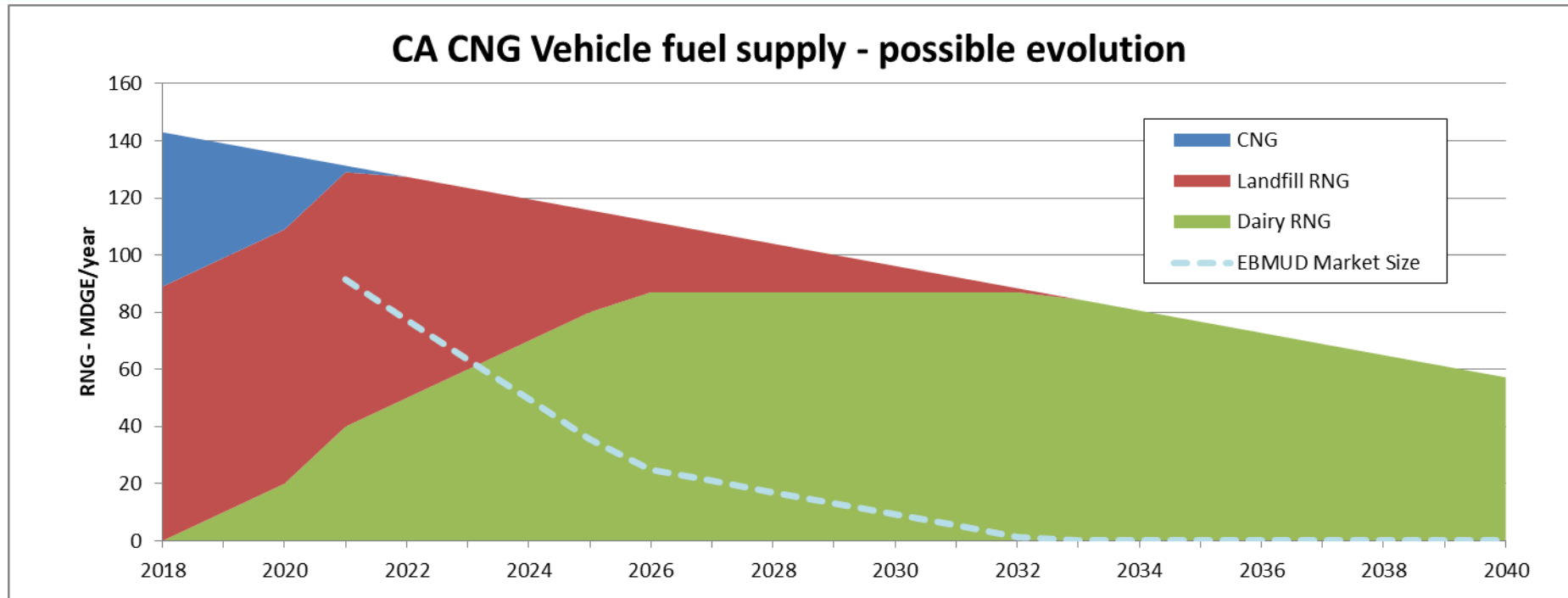
## CA CNG Market Overview



- Unless there is a regulatory change, CA CNG vehicle demand may have already peaked:
  - Roughly half of current demand is from transit and half from heavy duty vehicles
  - CARB has set a statewide goal for all public transit agencies to fully transition to electric by 2040

# Project Evaluation

## RNG Market - CA



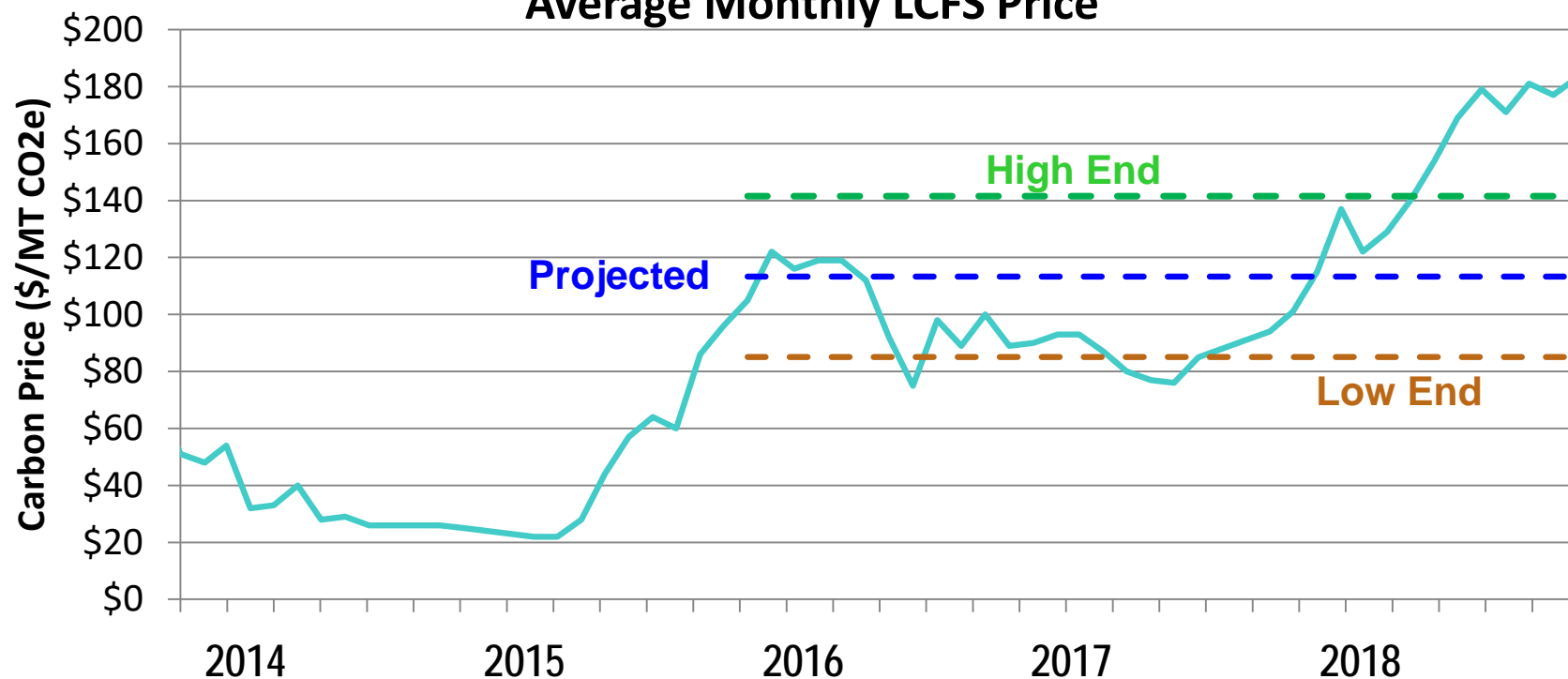
- Due to attributes POTW/R2 gas can out compete CNG and landfill gas but not Dairy gas
- Our project capacity is ~1M DGE
- There is a window of opportunity for selling to the CA transportation market

# Project Evaluation

## RNG Market - LCFS



Average Monthly LCFS Price

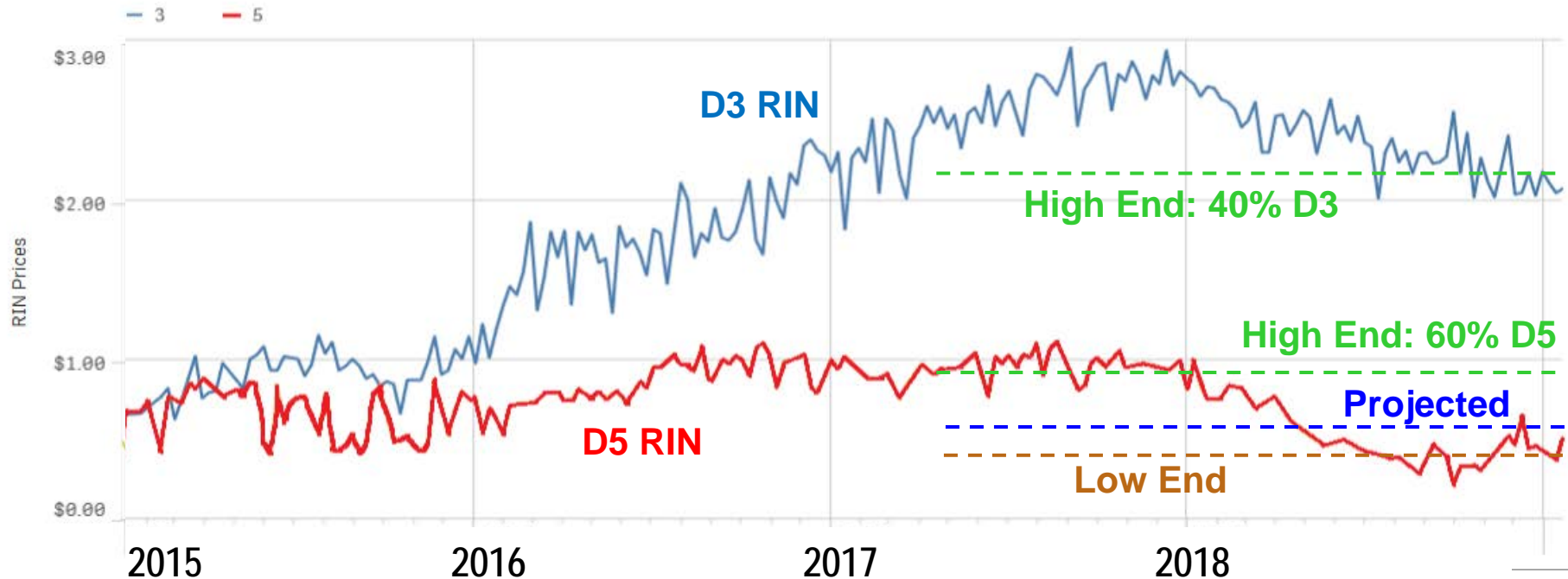


# Project Evaluation

## RNG Market - RINs



### Weekly D3 and D5 RINs Prices



# Project Evaluation

## Risk Mitigation



### **Several ways to reduce risk were identified:**

- Be conservative in assessing credit values
- Apply for grant funding
- Increase size of the project (significant portion of the costs are fixed regardless of project size)
- Explore lower value fixed price contracts for longer time periods

# Project Evaluation

## Outside Funding



### CEC Grant GFO-18-601

- Results released 1/18/2019
- EBMUD awarded \$3M for the project
- EBMUD highest ranking commercial scale project and highest ranking overall project

### CA Interconnection Monetary Incentive

- Half the cost of interconnection eligible for reimbursement (estimated value is nearly \$2M)



# Project Evaluation

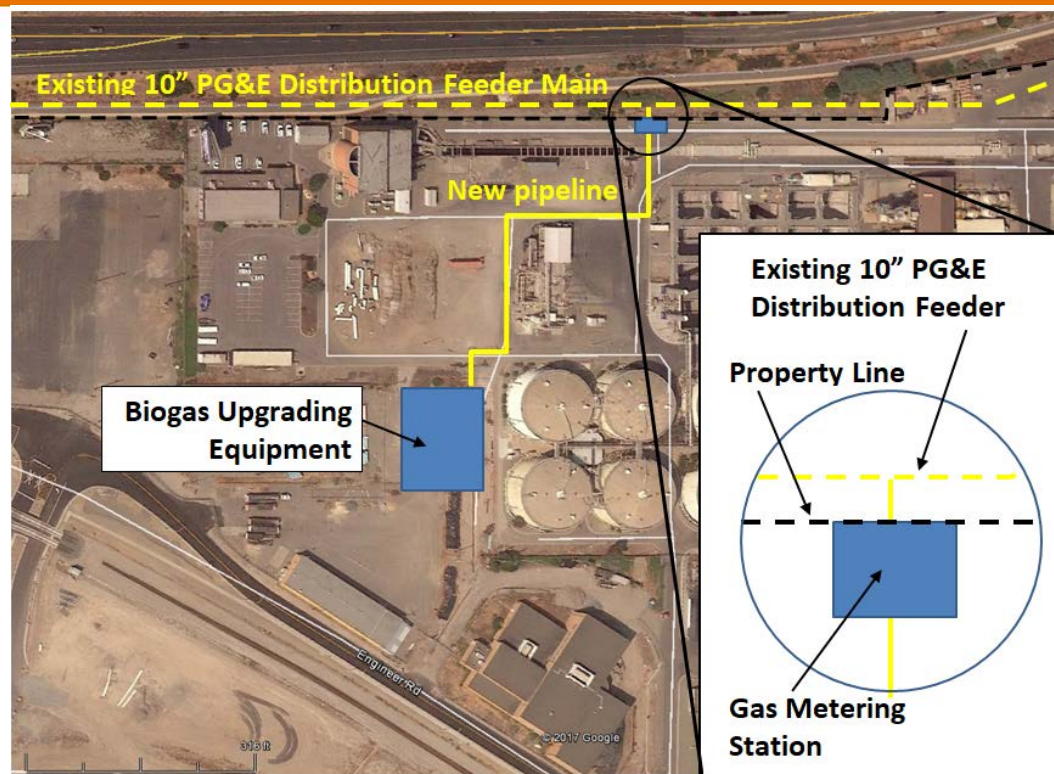
## PG&E Bankruptcy

### Background:

- RNG project would interconnect with the adjacent PG&E gas main
- Initial Feasibility Study with PG&E completed
- Detailed System Study next step

### Update:

- PG&E filed for Chapter 11 bankruptcy on January 29, 2019
- Evaluating potential impacts to interconnection completion, timing, and incentive funding



# Project Evaluation

## CalARP/PSM



- OSHA Process Safety Management (PSM) and California Accidental Release Program (CalARP) regulations have significant requirements for facilities with >10,000 lbs methane on-site
- MWWTP exceeds this threshold
- MWWTP currently considered exempt as biogas is used as a fuel on-site
- The RNG project may make the MWWTP ineligible for this exemption
  - The likelihood of maintaining the exemption is currently being evaluated

# Project Evaluation

## CalARP/PSM Staffing



Current estimate is \$500k consultant services during startup, plus:



- Beyond the subject matter experts, department doesn't have the staff available to re-prioritize for this effort.
- Would require LT or TC positions

# Next Steps



- Complete the evaluation of potential impacts of:
  - PG&E Bankruptcy
  - PSM/CalARP exemption status
    - Likelihood of maintaining the exemption
    - Impact if the exemption is lost
- Assess any economic implications of this evaluation
- If decision is made to recommend the project, will bring the agreement to the Board for authorization

# **Integrated Pest Management Program Update**

Sustainability/Energy Committee

February 26, 2019

# Agenda



- IPM program review
- 2018 progress update
- Public engagement
- Next steps



# What is IPM?

- Comprehensive, systems-based process
- Select appropriate control method
  - Biological controls
  - Physical actions
  - Cultural practices
  - Chemical application
- Based on pest and site conditions
- Minimize impacts to humans, environment, non-target organisms

# Types of District Property



- Facilities (East Bay and Upcountry)
- Aqueduct rights-of-way
- Watersheds



# Facility Example





# Facility Example





# Aqueduct Right-of-Way Example





# Watershed Reservoirs





# Watershed Open Space Example



# Pest Management Objectives



- Employee and public safety/security
- Regulatory drivers
  - Division of Safety of Dams
  - Fuel management/fire access
- Flood control/drainage
- Infrastructure management/protection
- Habitat management
- Aesthetics

# Third Party Review Results & Recommendations



- Blankinship & Associates review
- Knowledgeable staff and good foundation in IPM
- Recommendations for improvement
  - Enhanced training
  - Enhanced communication
  - Consistent records management
  - Standardize qualifications, decisions, and activities



# Enhanced Training

- Standardize pest management training
  - 1<sup>st</sup> Annual Training April 2018
  - 2<sup>nd</sup> Annual Training March 2019
- Create a forum for sharing challenges and successes
  - Monthly Workgroup meeting
  - Annual Check-In Meeting



# Enhanced Communication



- Require Pest Control Advisors to make site visits and interview staff
  - Leverage existing PCAs
  - New third-party independent PCA contract
- Involve District biologists in the pest management process
  - Biologist sessions at IPM training
  - Staff level consultations

# Enhanced Communication



- Improve communication with the public
  - Public meetings in January 2019
  - IPM email address created
  - New field brochures
  - Updated District IPM webpage

A brochure titled 'Integrated Pest Management' with a background image of rolling green hills and yellow wildflowers. The brochure contains information about public meetings and IPM practices.

*Integrated Pest Management*

**Public Meetings**  
Opportunity to learn how EBMUD manages pests

The East Bay Municipal Utility District makes decisions about managing pests such as invasive plants, insects and rodents using a carefully planned set of tools which may include a combination of techniques including selective planting, mulching, mowing, grazing, pruning, natural predation, controlled burns and spraying. EBMUD is holding a series of public meetings to share details on its Integrated Pest Management Program.

**PUBLIC MEETING INFORMATION**

**STOCKTON**  
DATE: January 10, 2018  
LOCATION: San Joaquin Farm Bureau  
ADDRESS: 3290 North Ad Art Road  
Stockton, CA 95215

**WALNUT CREEK**  
DATE: January 16, 2018  
LOCATION: Lindsay Wildlife Museum  
ADDRESS: 1931 1st Avenue  
Walnut Creek, CA 94597

**OAKLAND**  
DATE: January 23, 2018  
LOCATION: EBMUD Admin. Building  
ADDRESS: 375 11th Street, 2nd Floor  
Oakland, CA 94607

**VALLEY SPRINGS**  
DATE: January 30, 2018  
LOCATION: McLean Hall, Pardee Center  
ADDRESS: 3535 Sandretto Road  
Valley Springs, CA 95252

All meetings will begin at 6:00 pm.

**QUESTIONS?**  
[ipm@ebmud.com](mailto:ipm@ebmud.com)  
[ebmud.com/sustainability](http://ebmud.com/sustainability)

**MULCHING • CONTROLLED BURNS • MOWING • GRAZING  
PRUNING • NATURAL PREDATION • SELECTIVE PLANTING • SPRAYING**

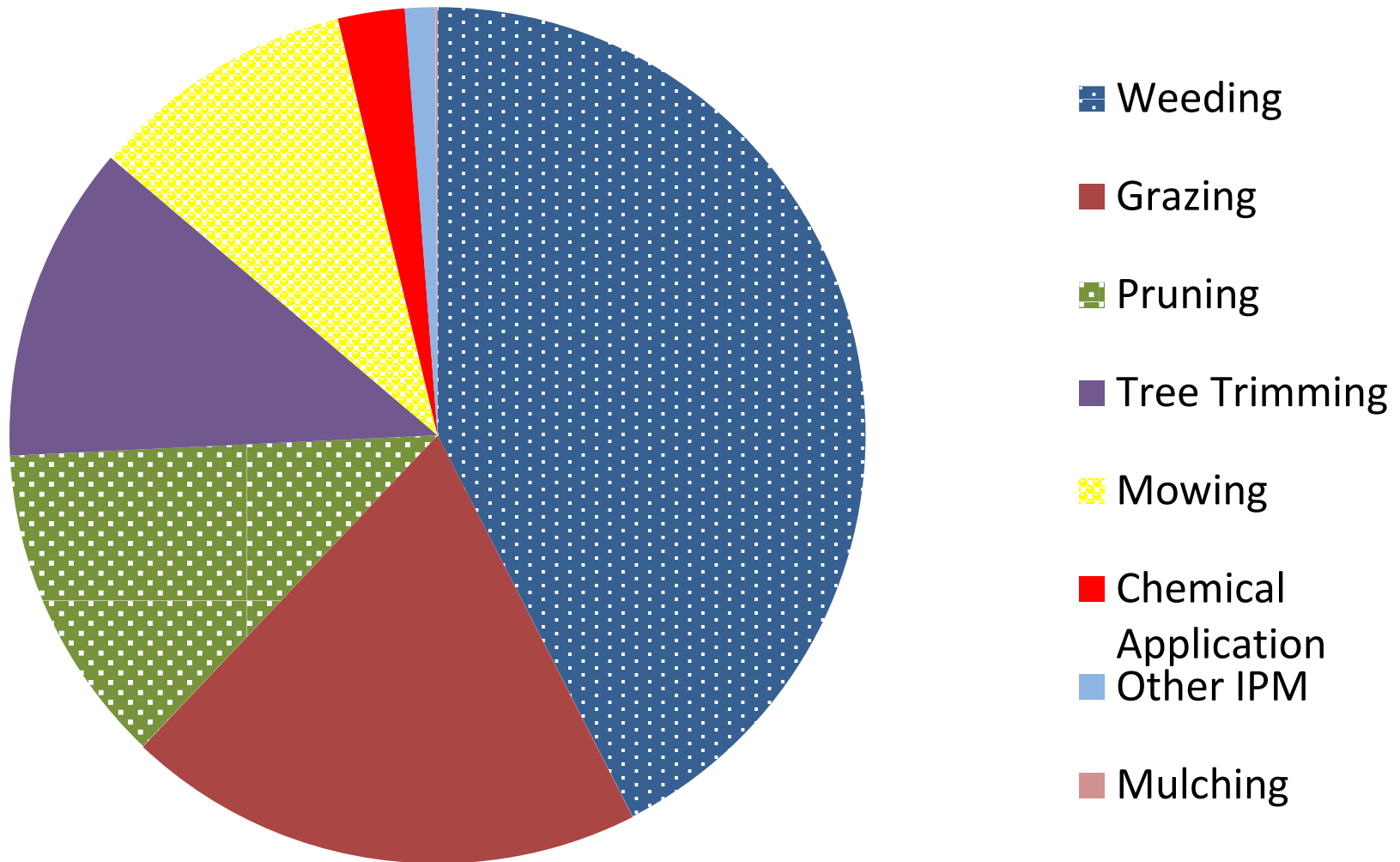


# Consistent Records Management



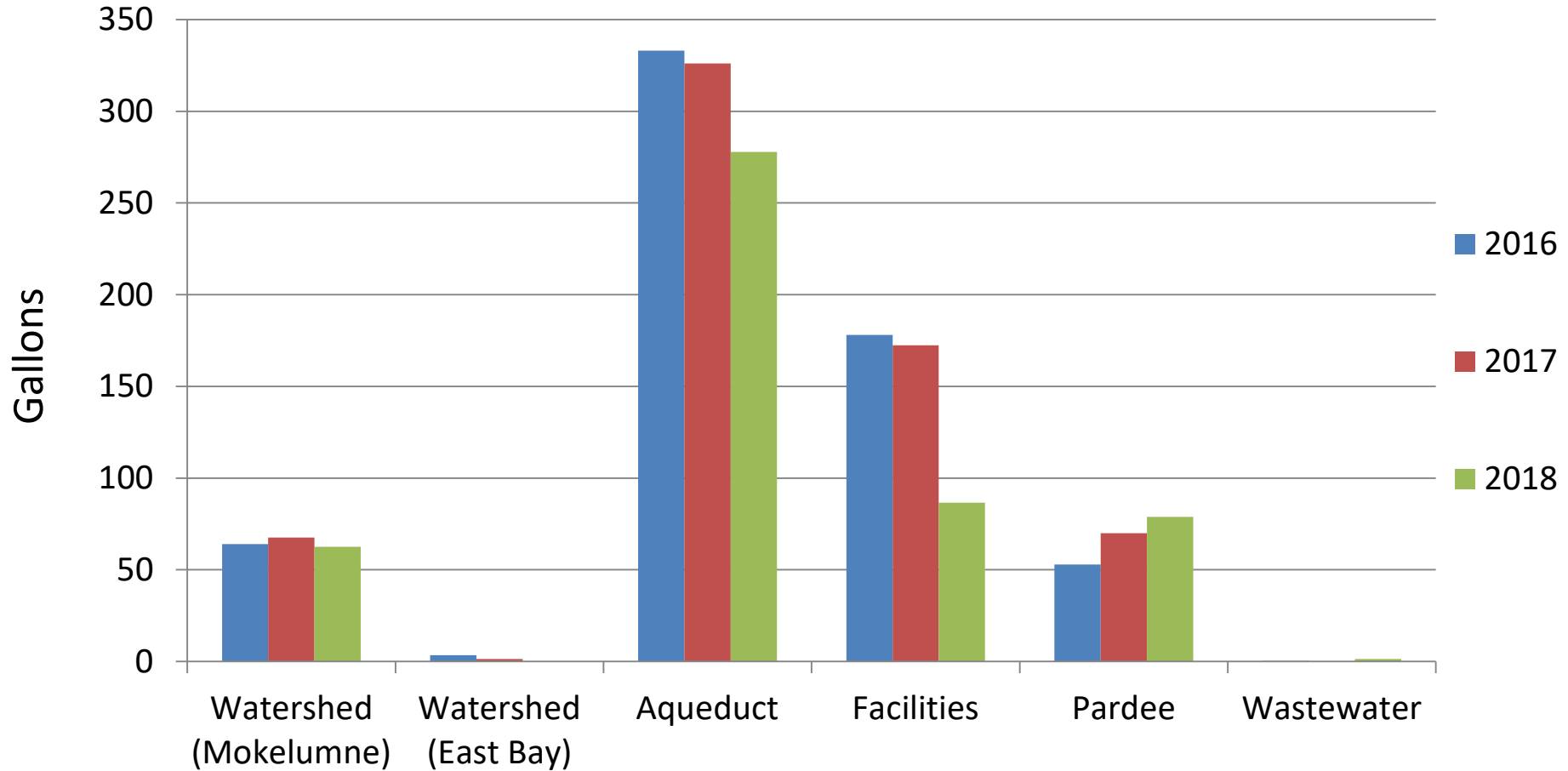
- Create decision process document
  - Describes goals, pests, monitoring, control methods, etc.
  - Approximately 400 sites completed
- Electronic data collection
  - Developed database and field forms
  - Documented pest management activity
  - Improved regulatory reporting and data analysis

# IPM Methods Used in 2018: Districtwide



\*Staff Hours Dedicated to Method Type

# EBMUD Pesticide Use Trends: 2016-2018\*



# Next Steps



- Continue incorporating recommendations from third-party review
- Continue capturing data for trends analysis
- Hold annual training in March 2019
- Independent PCA reviews on priority sites
- Continue public outreach
- Evaluate IPM guidelines update
- Equipment procurement to support alternative IPM methods

# Questions

