

# On-Site Power Generation

*For Battery Electric Fleets*



*September 25, 2018*



1-800-920-1166  
[loves.com/trillium](https://loves.com/trillium)

A  **Love's** Company

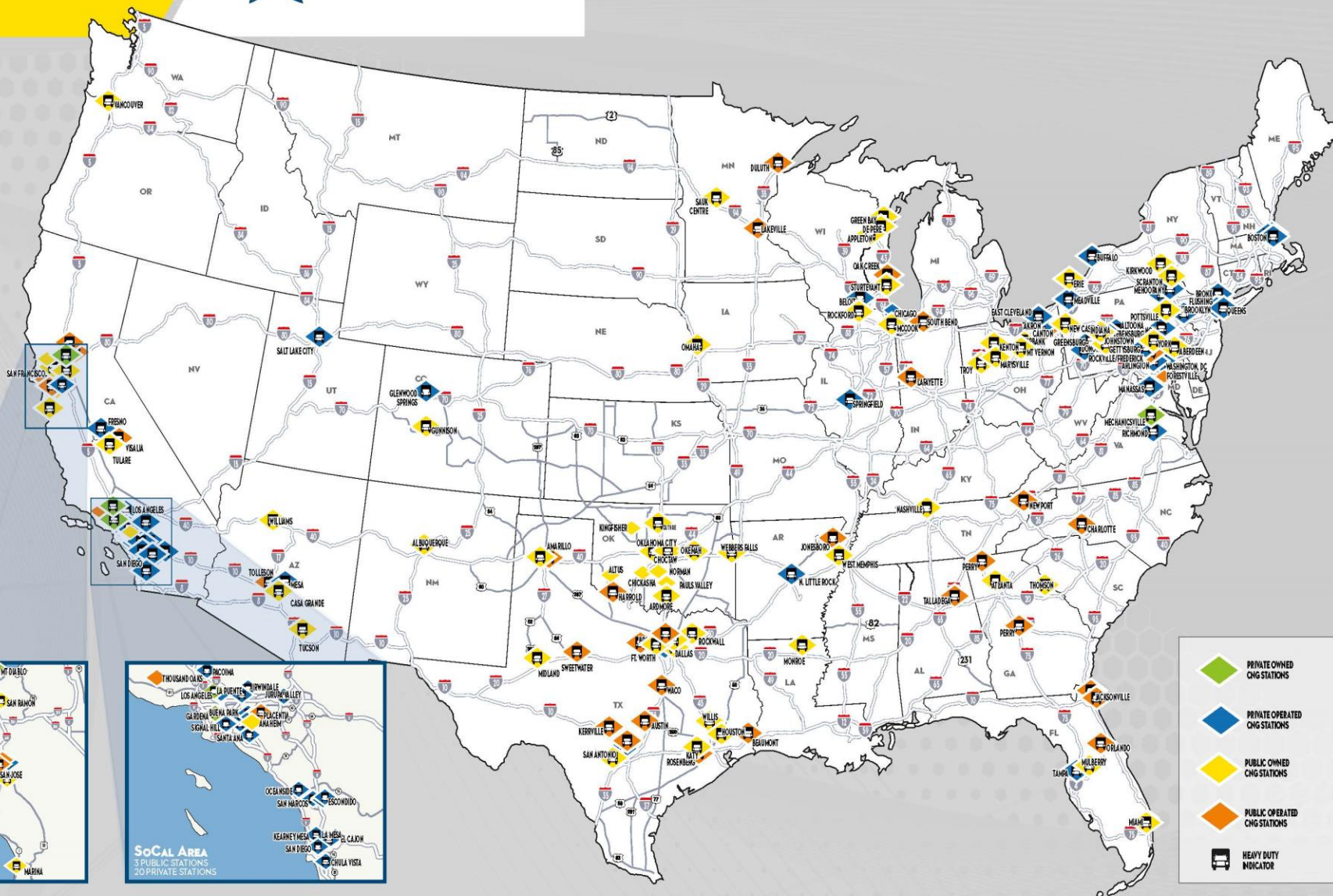
# Who We Are



- **Trillium** provides turn-key solutions for EV Charging, CNG/RNG, and Hydrogen fueling
  - Design/Build Services
  - Operations & Maintenance Services
  - Retail Fueling
  - Renewable Natural Gas Supply
- **Trillium** owns or operates over 220 fueling stations nationwide







# The BEB Infrastructure Challenge

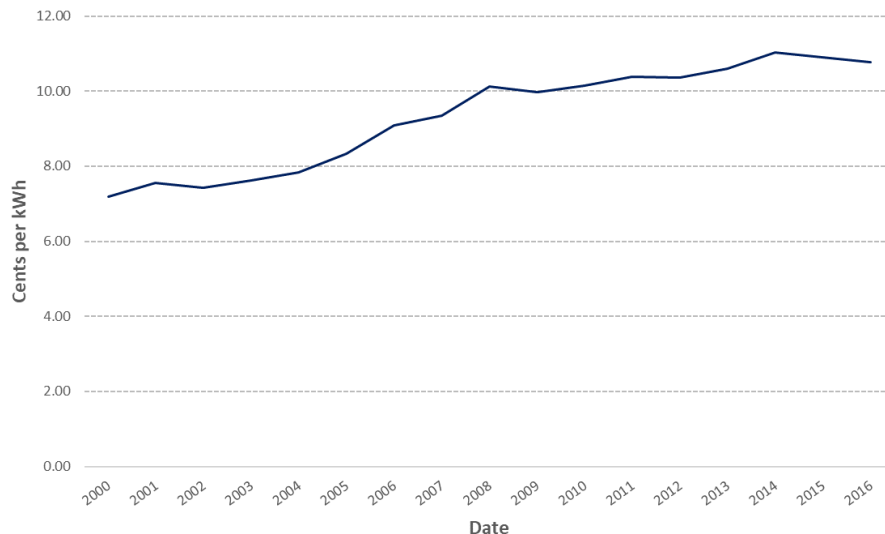


# The Utility Option

The utility option comes with **uncertainty**... and risks to future operating costs

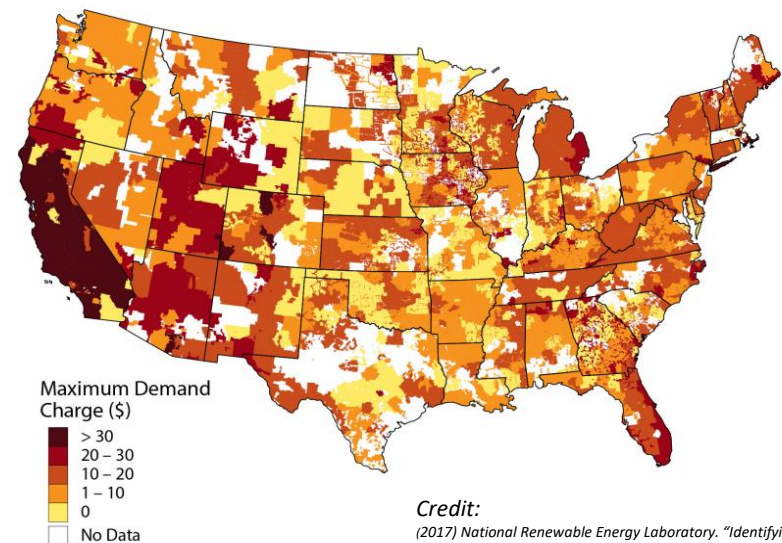
- Immediate Risks - transformer upgrades, infrastructure needs, grid reliability
- Long Term Risks - phased in demand charges, utility recovery of capital costs, rate structure overhaul

Average Price of Electricity - US



Credit: EIA, Nov 2017

Maximum demand charges by utility territory



Credit:

(2017) National Renewable Energy Laboratory. "Identifying Potential Markets for Behind-the-Meter Battery Energy Storage: A Survey of U.S. Demand Charges." <https://www.nrel.gov/docs/fy17osti/68963.pdf>

***The Utility is NOT your only option for power.***



# On-Site Power Generation



## The Concept

- ***Control your power supply, Control your costs***
- On-site natural gas generators that deliver clean power to EV Chargers
- Small footprint
- **Reliable** – on-site generation eliminates blackout risk
- **Scalable** – add or upgrade generators with BEB fleet growth
- Emissions compliant
- Pathway opportunities to monetize RNG
- Significant potential for cost savings over utility alternative

## Take charging off-grid

- No transformer upgrades
- No interconnection costs
- No demand charges from high output chargers
- No risk of rate changes or cost recovery programs
- Improved capital and operational planning

***Most importantly: price control, certainty, and stability***

# Permitting

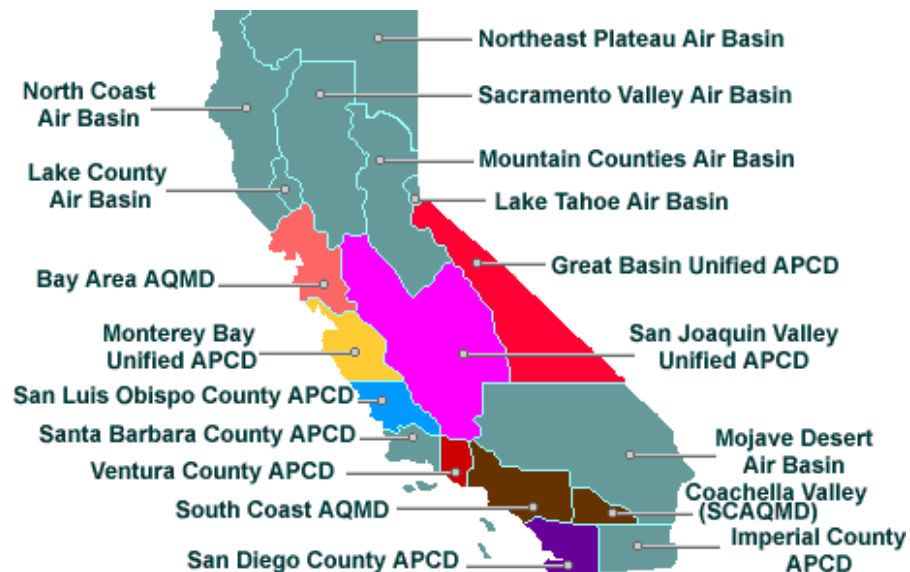


## Air Quality Permitting

- Equipment meets the most stringent AQMD regulations
- Renewable fuel (RNG) can considerably lower carbon emissions

## Safety and Local Permitting

- Equipment meets the highest safety standards – used globally, well known and understood technology
- Compliant with all local codes
- No hazardous materials



South Coast  
**AQMD**



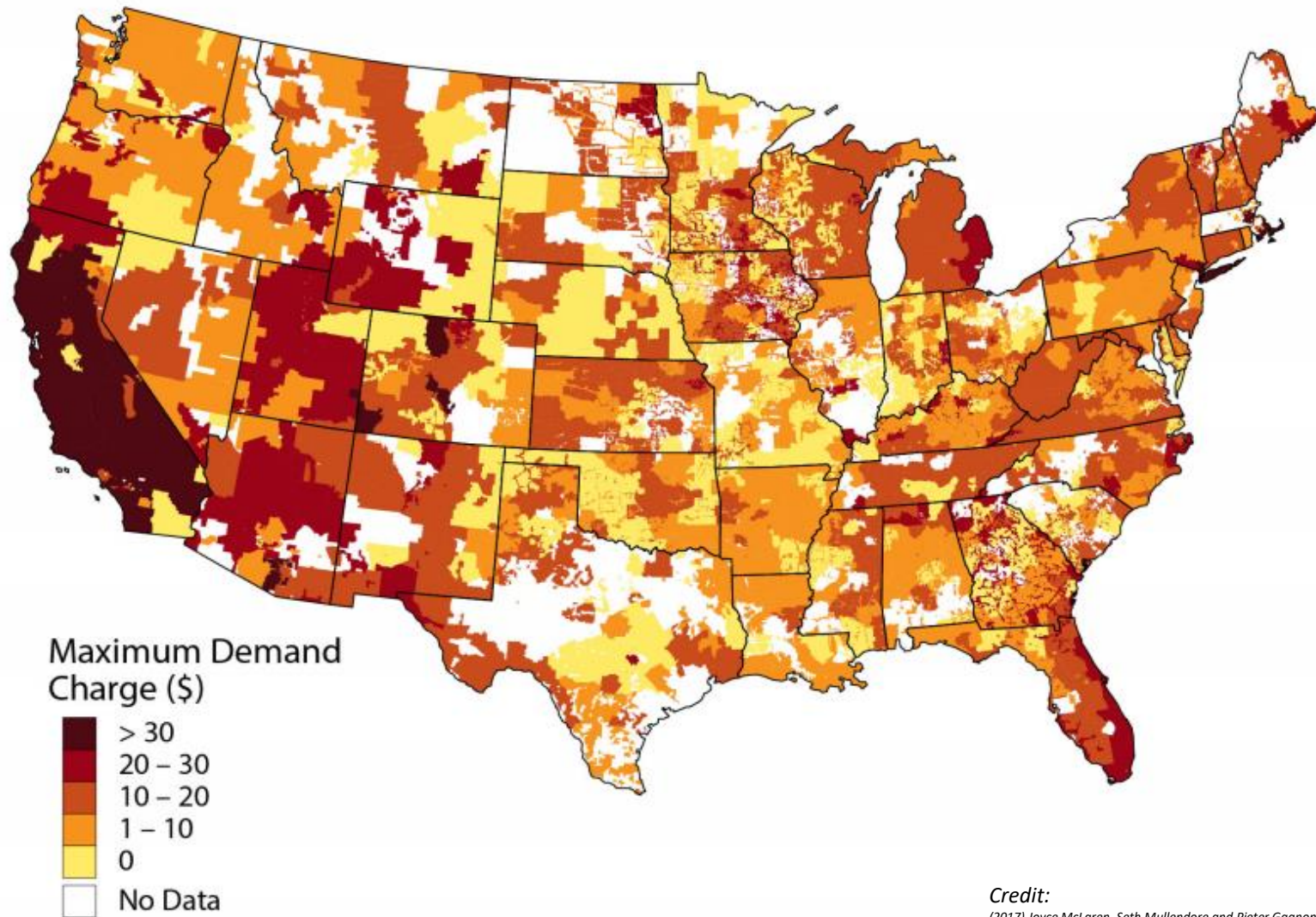
BAY AREA AIR QUALITY  
MANAGEMENT DISTRICT



**San Joaquin Valley**  
AIR POLLUTION CONTROL DISTRICT



# Maximum demand charges by utility territory

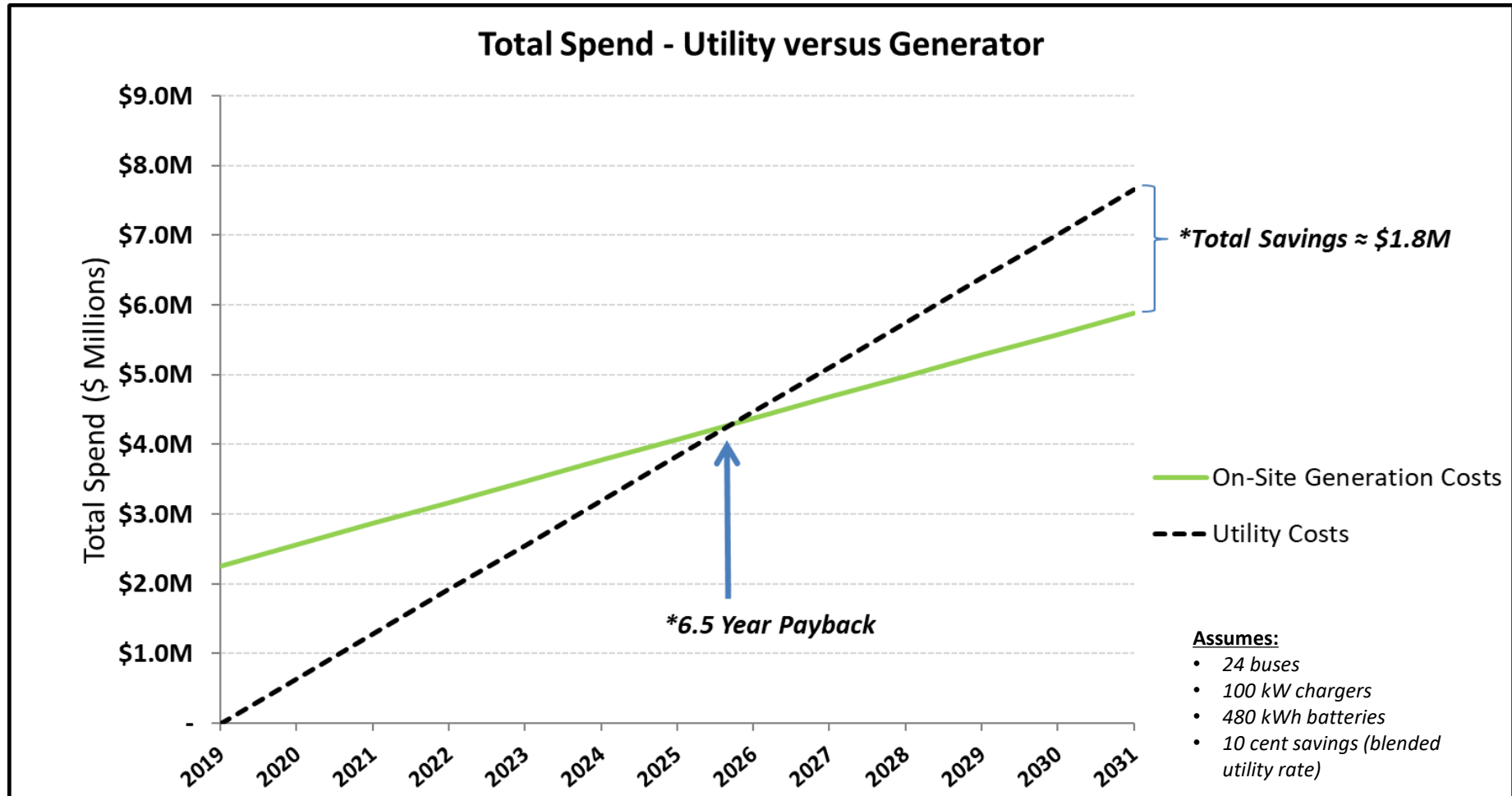


*Credit:*

(2017) Joyce McLaren, Seth Mullendore and Pieter Gagnon. "Identifying Potential Markets for Behind-the-Meter Battery Energy Storage: A Survey of U.S. Demand Charges." National Renewable Energy Laboratory and Clean Energy Group. NREL/BR-6A20-68963. <https://www.nrel.gov/docs/fy17osti/68963.pdf>

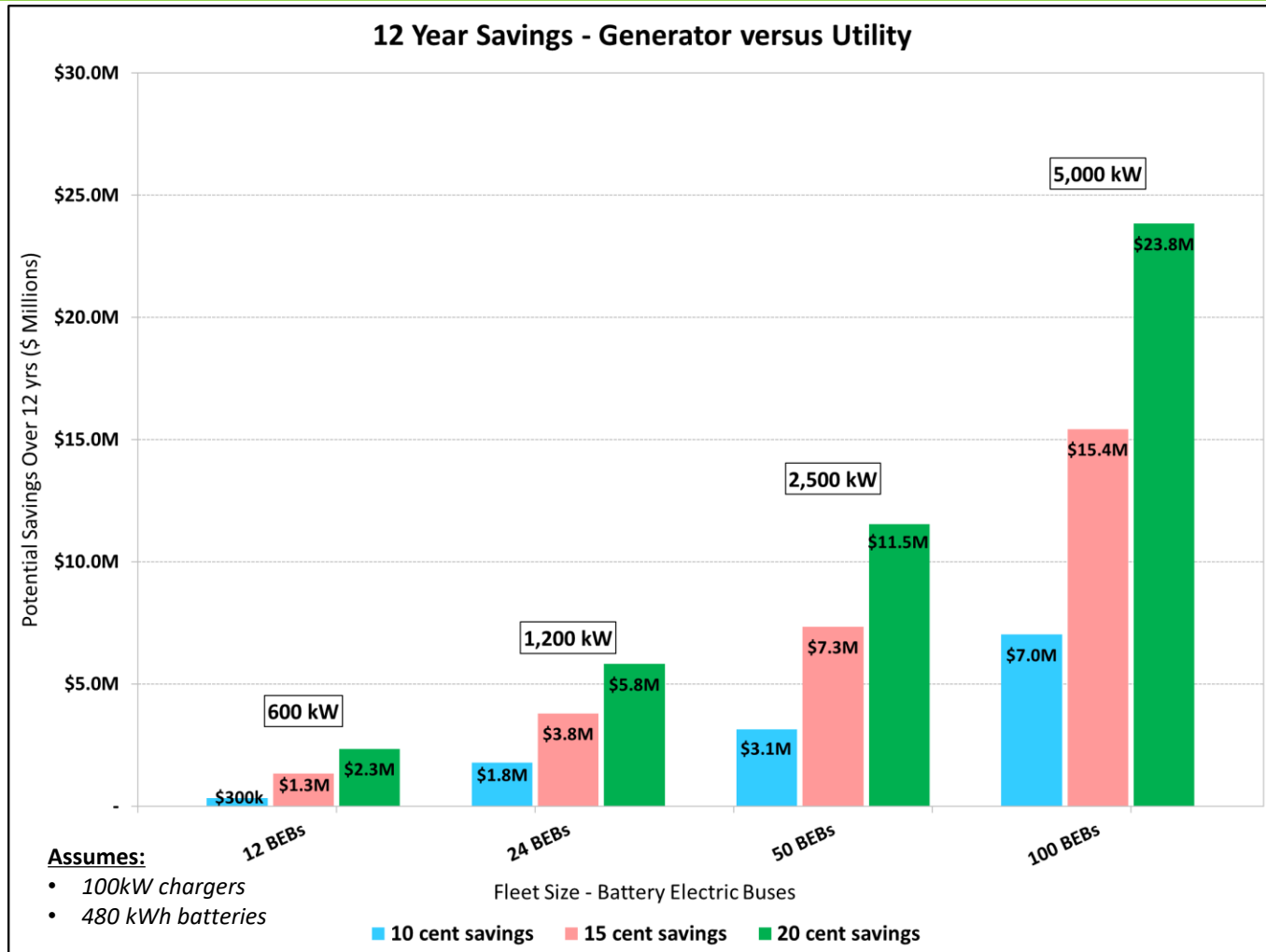


# Potential Cash Flow



# Long Term Costs

*As your fleet grows... so will your savings.*



# Planning For Growth



*Growing your EV fleet should be exciting, not concerning!*

## Key Considerations

- Scalability is key.
- As the number of EV vehicles increases, utility demand charges will play a greater role, having a profound impact on your costs.

## Solutions for Fleet Growth

1. **Utility interconnect.** Expensive infrastructure upgrades, increased operating costs, and unknown future rates.
2. **Add generators.** Simple and cost effective.
3. **Upgrade generators.** Replace with more powerful units. Fits the same footprint and avoids “overbuilding” your power generation.



# Conclusions



## Cost Savings

- Compelling cost savings from *producing power* rather than *buying it*.
- A simple review of your rate structure can indicate fit
- Scalable – up to full scale deployment of EV

## RNG opportunity is significant

- LCFS and eRIN can add material value
- Dairy farms produce negative CI scores (better than solar)
- Substantial environmental AND economic impact

## Drive the industry forward

- Reduced operating costs **will facilitate electrification**
- Positive for state goals, transit agency costs, and the environment
- *Without pushing any costs onto ratepayers*
- Private market competition is healthy for the industry
- Multiple options for power will encourage innovation and lower costs

## On-Site Power Generation

***Simplicity of design, certainty of future costs, and reliable rollout of your EV fleet.***

# Trillium

Alex Agrons: General Manager – Strategic Initiatives

Office: (713) 332-4800

Cell: (405) 496-7596

Email: [Alex.Agrons@Loves.com](mailto:Alex.Agrons@Loves.com)



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[loves.com/trillium](http://loves.com/trillium)

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