Fleet Decarbonization
Public Works Commission
January 11, 2024

Fleet Decarbonization

Presentation Objectives

- Alternative Fuels
  - Renewable Diesel
  - Renewable Natural Gas
  - Gas/Electric Hybrid
  - Full Electric
- Advanced Clean Fleet Rule
- Challenges to Decarbonization
- Opportunities
- Benefits

Alternative Fuels

- **Renewable Diesel**
  - Ultra-Low Sulfur Petroleum Diesel to Renewable Diesel in 2018
  - Greenhouse Gas (GHG) emissions -40-70% (depending on feedstock)

  - Nitrogen Oxides (NOx) emissions: -10 %
  - Particulate Matter (PM) emissions: -30 %
  - Carbon Monoxide (CO) emissions: -35 %
  - Total Hydrocarbon (THC) emissions: -40 %

Alternative Fuels

- **Renewable Natural Gas**
  - Fossil NG to Renewable NG in 2018
  - Southern California Air Quality Management District (SCAQMD) compliant
  - 100% sustainable fuel product
  - Up to 70% reduction in Greenhouse Gas Emissions (GHG)

Alternative Fuels

- **<u>Gasoline/Electric Hybrids</u>**
  - Reduced emissions
  - Better fuel efficiency
  - Less idle time due to battery power
  - Reduced maintenance needs
  - More available replacement options in market
  - On average, hybrid can emit 46% less GHG gas than regular vehicles.

Environmental Benefits

Fuel Type	Metric Tons of CO_2 equivalent	Fuel Type	Reduced Metric Tons of CO_2	Equivalent to number of gas-powered passenger vehicle driven for 1 year	Equivalent to number of miles driven by an average gas-powered vehicle	Equivalent to Carbon Sequestered By:
Diesel	2,222	Renewable Diesel	-2,221	494	6M	2,649 acres of US forests in one year.
Natural Gas	3,968	Renewable Natural Gas	-3,968	883	10M	4,732 acres of US forests in one year

https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results

Fleet Electrification

- 5 full EV Chevy Bolts in service
- 6 Ford F150 Lightings light-duty pickups on order
- 5 electric John Deere Gators on order
- Piloting EV Solid Waste rear/side-loader in future

Fleet Electrification

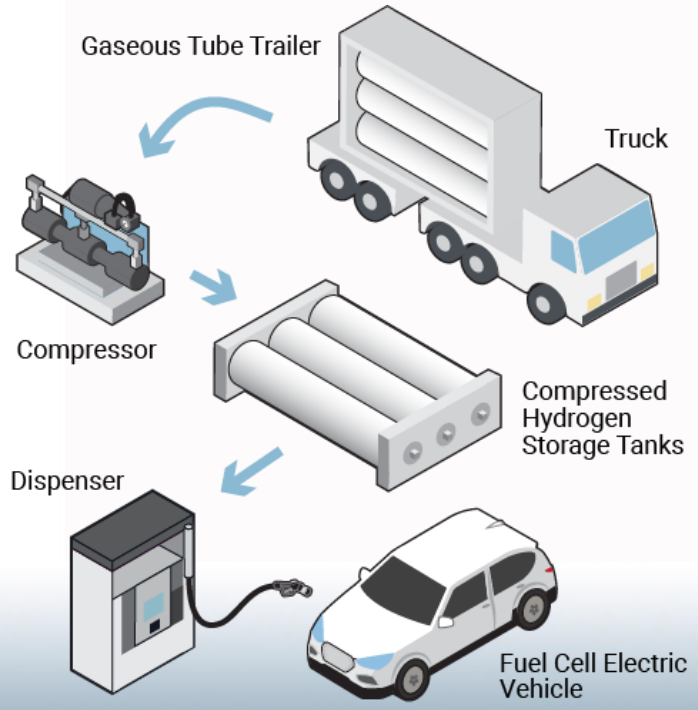
- **<u>Current Fleet EV Charing Stations</u>**
  - Eight (8) grant funded BCT Power Level 2 EV charging stations at 9333 Parking Structure
- Edison Charge Ready Program Installation
  - Edison approved installation of 65 Level 2 EV charging ports at 9333 Parking Structure.
  - Charging station hardware purchased and received
  - Pending Edison infrastructure completion

Fleet Electrification

- **<u>Future Fleet Specific EV Charging Station Locations</u>**
  - 6 dual station Level 2 at Library Parking Structure
  - 2 DC fast chargers at Public Works fuel alley
  - Undetermined amount Level 2 Chargers at Police Department
  - Undetermined amount of Level 2 fleet at Civic Center Parking Structure
  - Charging infrastructure at City parks for fleet use

Alternative Fuels

- **Hydrogen Fuel Cell**
  - Staff monitor market offerings and station availability
  - Limited vehicle offerings that meet application needs
  - Limited fueling stations nearby



Advanced Clean Fleets Rule

- **Advanced Clean Fleets Regulation**
  - California Air Resources Board (CARB or Board)
  - Accelerate transition to zero-emission medium- and heavy-duty vehicles
  - Agencies that own, lease, or operate in California, one or more fleet vehicles
  - Medium/Heavy duty vehicles GVW rating greater than 8,500 pounds
  - Off-road yard tractors, light-duty mail, package delivery vehicles
  - Currently, 64 fleet vehicles qualify for ACF
- **ACF State and Local Agencies**
  - City, county, special district, and State agency fleets
  - 50% of vehicle purchases are zero-emission beginning in 2024
  - 100% percent of vehicle purchases are zero-emission by 2027
  - Register ACF qualifying vehicles with CARB

Fleet Decarbonization

- **Challenges**
  - Limited medium and heavy-duty ZEV options
  - All agencies competing for same available ZEVs
  - Manufacturing is fairly consumer focused
  - Limited production capabilities and raw materials
  - Charging infrastructure
  - Up front costs
  - Power supply and infrastructure
  - Rapidly changing technology
  - EVs may not fit application
  - Limited range and battery capacity
  - Limited alternatives-e.g., hydrogen fuel

Fleet Decarbonization

- **<u>Opportunities/Benefits</u>**
  - Reduced carbon footprint
  - Fuel savings
  - Potentially reduced maintenance needs for EVs
  - Rapidly changing technology
  - Diversified fleet
  - Model the way

QUESTIONS ?