Refuel: San Diego Regional Alternative Fuel Coordinating Council

Kick-off Meeting
October 16, 2014
Item 3

California Energy Commission Grant Requirements
Why are we here?

- Energy Commission Grant
  - 2 year award
  - $360,040
  - Continue & expand efforts under REVI
  - Further deployment of AFV and AFI
  - Help region achieve energy and climate goals
Who we are

Refuel Partners:

- SANDAG: San Diego Association of Governments
- SDRCCC: San Diego Regional Clean Cities Coalition
- SDCAPCD: San Diego County Air Pollution Control District
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Introduction to Refuel: San Diego Regional Alternative Fuel Coordinating Council
Refuel: Introduction

• San Diego Regional Alternative Fuel Coordinating Council
• Diverse stakeholders
  – Local and regional government
  – Public agencies
  – Utility
  – Education and research institutions
  – Industry
    • Regional
    • Fuel
    • Vehicle
Refuel: Project Overview

• Assess the current state of alternative fuels in the region
• Identify alternative fuel training, infrastructure, policy, and funding gaps
• Create sector-specific toolkits to provide resources to key stakeholders in alternative fuel readiness
• Address the identified needs and challenges in the San Diego Regional Alternative Fuel Readiness Plan
Refuel: Alternative Fuels

- Alternative Fuels Overview
  - Electricity
  - Hydrogen
  - Gaseous Fuels
  - Biofuels
Electricity and Hydrogen

Electricity

- Vehicle types
  - Plug-in hybrid electric
  - Battery electric
- Vehicles use energy stored in a battery and must be charged externally (i.e. plugged-in).
- Majority of vehicles are light-duty.

Hydrogen

- FCVs turn hydrogen and oxygen into electricity to power an electric motor.
- \( \text{H}_2 \) is stored onboard vehicle in high pressure tanks.
- \( \text{H}_2 \) is produced by reformation or electrolysis.
- Currently limited infrastructure and vehicle models.
**Gaseous Fuels**

### Natural Gas
- Mixture of hydrocarbons, primarily methane.
- Stored onboard vehicles in either a compressed gaseous or liquefied state.
- Natural gas vehicles are available in sedans to heavy-duty vehicles.

### Propane
- Produced from natural gas processing and crude oil refining.
- Stored onboard vehicles as a liquid at moderate pressure.
- Commonly available propane vehicles: light and medium-duty trucks, vans, and shuttle buses.
Biofuels

**Ethanol**
- Domestically produced alcohol-based fuel.
- Derived from various plant materials including corn, sugar cane, and grasses.
- Flexible fuel vehicles can operate interchangeably on gasoline and E85.

**Biodiesel**
- Manufactured from vegetable oils, animal fats or recycled restaurant greases.
- Biodiesel blends range from B5 to B99.
- Unmodified diesel engines can run on any biodiesel blend.
## Potential Alternative Fuel Fleet Applications

<table>
<thead>
<tr>
<th>Fleet Application¹</th>
<th>Biodiesel</th>
<th>Electricity</th>
<th>Ethanol (E85)</th>
<th>Hydrogen</th>
<th>Natural Gas</th>
<th>Propane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger Vehicle</td>
<td>B5</td>
<td>PHEV, BEV</td>
<td>FFV</td>
<td>FCV</td>
<td>CNG</td>
<td>LPG</td>
</tr>
<tr>
<td>Vanpool-Shuttle</td>
<td>B20</td>
<td>PHEV</td>
<td>FFV</td>
<td>--</td>
<td>CNG</td>
<td>LPG</td>
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<tr>
<td>Pickup Truck</td>
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<td>PHEV</td>
<td>FFV</td>
<td>CNG</td>
<td>LPG</td>
<td>LPG</td>
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<tr>
<td>School Bus</td>
<td>B20</td>
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<td>CNG</td>
<td>LPG</td>
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<tr>
<td>Sweeper</td>
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<td>--</td>
<td>CNG, LNG</td>
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</tr>
<tr>
<td>Other Medium Duty</td>
<td>B20</td>
<td>BEV, HEV</td>
<td>--</td>
<td>--</td>
<td>CNG, LNG</td>
<td>LPG</td>
</tr>
<tr>
<td>Refuse Hauler</td>
<td>B20</td>
<td>HEV</td>
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<td>CNG, LNG</td>
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<tr>
<td>Transit Bus</td>
<td>B20</td>
<td>BEV, HEV</td>
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<td>CNG, LNG</td>
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</tr>
<tr>
<td>Regional/Long Haul Truck</td>
<td>B20</td>
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<td>--</td>
<td>CNG, LNG</td>
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<tr>
<td>Forklift</td>
<td>--</td>
<td>BEV</td>
<td>--</td>
<td>FCV</td>
<td>CNG</td>
<td>LPG</td>
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<tr>
<td>Lawn/Landscape mower</td>
<td>B20</td>
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<td>LPG</td>
</tr>
<tr>
<td>Low-speed Vehicle³</td>
<td>--</td>
<td>NEV</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>LPG</td>
</tr>
</tbody>
</table>

¹ Fleet Application
² Potential Alternative Fuel
³ Other Medium Duty
⁴ Biodiesel
⁵ Electricity
⁶ Ethanol (E85)
⁷ Hydrogen
⁸ Natural Gas
⁹ Propane

- B5: Biodiesel
- PHEV: Plug-in Hybrid Electric Vehicle
- BEV: Battery Electric Vehicle
- FFV: Flex Fuel Vehicle
- FCV: Fuel Cell Vehicle
- CNG: Compressed Natural Gas
- LPG: Liquid Petroleum Gas
- NEV: New Energy Vehicle
Previous Alternative Fuel Planning Efforts
Refuel: Deliverables

- Alternative Fuel Coordinating Council
- Alternative Fuel Assessment
- Sector Specific Alternative Fuel Toolkits
- Regional Alternative Fuel Readiness Plan
Refuel: Timeline

- Quarterly meetings
- Readiness Assessment
  - Survey
  - Existing Conditions Report
  - Alternative Fuels Assessment
- Toolkits
  - Sector-specific toolkits
  - Outreach and distribution
- Regional Alternative Fuel Readiness Plan
Refuel:
Quarterly Meeting Schedule

1. October 16, 2014 – Kick-off
3. April 16, 2015
5. October 15, 2015
Refuel:
Subcommittee Timeline-ish

- Electric
- Gaseous Fuels
  - Natural Gas
  - Propane
- Biofuels
  - Biodiesel
  - Ethanol
  - Other
- Hydrogen
Refuel:
Subcommittee Meeting Schedule

• **Electric**:  
  – 2014: November  
  – 2015: February, May & August

• **Gaseous Fuels**  
  – 2014: December  
  – 2015: February, March & June

• **Hydrogen**  
  – 2014: December  
  – 2015: March & June

• **Biofuels**  
  – 2015: January, April & July
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Member Responsibilities
Item 6

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Formation Documents
Mission Statement

To support innovative partnerships and to facilitate and develop a San Diego regional alternative fuel (AF) readiness plan that identifies, reduces or resolves barriers to the widespread deployment of AF infrastructure and vehicles; thereby showcasing the San Diego region as a national leader in AF readiness.
1. To establish a regional alternative fuel (AF) coordinating council to help streamline practices and address barriers to AF adoption as well as provide real-time learning and sharing across jurisdictions and to diverse stakeholders involved in AF readiness.

2. To provide input toward a regionally-accepted comprehensive AF Readiness Plan that leverages past planning efforts, addresses barriers and complexities, and lays the framework for future AF planning efforts.
Goals

3. To provide consistent messages across jurisdictions, agencies, dealerships, consumers, companies, educational institutions, fuel providers, and others about AFs.

4. To leverage and foster partnerships among government, business, academia, and other organizations to promote AF deployment and support economic development in the region.
1. Purpose

2. Responsibilities

3. Membership
   - Voting members
   - Local government membership
   - Advisory members

4. Meeting time and location
Refuel:
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