FLEETS FOR THE FUTURE

Procurement Kickoff
April 20, 2017

AFV Odyssey at Earth Day Texas – Dallas, TX

North Central Texas Council of Governments (NCTCOG)
Lori Clark, Principal Air Quality Planner
Bailey Muller, Air Quality Planner
Dallas-Fort Worth Clean Cities

2016 Gallons of Gasoline Equivalent Reduced by Fuel Type for Alternative Fuel Projects
24,968,855 gallons

- CNG (72%)
- Biodiesel (4.7%)
- Liquefied Natural Gas (8.8%)
- Hybrid (conventional) (1.1%)
- Electric (0.09%)
- E85 (0.3%)
- Plug-in Hybrid (0.04%)
- Propane (13%)

Existing Alternative Fueling Stations in the DFW Region:

- 38
- 746
- 78
Agenda

I. Project Overview
II. Fleet Transition Planning for AFVs
III. Guide to Financing AFVs
IV. Procurement Best Practices: By Fuel Type
V. Regional Cooperative Procurement
Focuses on reducing the incremental costs of alternative fuel vehicles (AFVs) and supporting infrastructure.

National Partnership
Fleet Transition Planning for AFVs

Considerations

Advantages
- Total Cost of Ownership (TCO) Approach
- Sustainability Initiatives
- High Utilization Rates
- Use of Central Parking Facilities

Feasibility
- Importance of Maintenance Costs
- Return on Investment
- Lower Fuel Prices
- Route Predictability
Fleet Transition Planning for AFVs
Managing AFV Deployment

**Driver Training**
Ensures drivers are confident operating and refueling new technology

**Maintenance Tech. Training**
Ensures maintenance personnel are trained to perform diagnostics, maintenance and repairs on new technology

**Data Management**
Management Information System (MIS) tracks inventory and operations

**Telematics**
Vehicle operational data can be an invaluable management tool
Creating a compelling financial case

Determine the AFV technologies that fit your vehicle sizes and use cases
Conduct financial analysis, include infrastructure needs
Results demonstrate AFVs as a wise investment

Financing the initiative

Understand your organizational budget and procurement rules
Operating vs capital budgets
What options are available to you?

• Outright purchase
• Leasing
• Cooperative purchasing
• Others: 3rd party financing, green/revolving loans
### Guide to Financing AFVs

#### Summary of AFV Financing Opportunities

<table>
<thead>
<tr>
<th>Procurement Type</th>
<th>Best Practices</th>
<th>Questions/Concerns</th>
</tr>
</thead>
</table>
| Commercial Leasing            | • Ability to monetize tax credits  
                                 | • Variety of lease options                                                      | • Uncertain cost structure  
                                 |                                                                                | • Uncertain implementation of tax credit monetization |
| Municipal/Capital Lease       | • Ability to monetize tax credits  
                                 | • “Lease-to-own” structure  
                                 | • Termination for non-appropriation                                             | • Inability to use debt to finance |
| State Bid Procurement         | • Regional/Local specificity  
                                 | • Bulk discounts: 8-10% off MSRP                                                | • Limited vehicle selection                                                   |
| Cooperative Purchasing        | • Bulk procurement discounts                                              | • Ability to monetize tax credits  
                                 |                                                                                | • Lack of experience with vehicles                                            |
| 3rd Party Financing           | • Ability to monetize tax credits  
                                 | • Performance contracting  
                                 | • Bundling EV + EVSE + Operational costs                                       | • Nascent market  
                                 |                                                                                | • Access may be very limited                                               |
### Bundled Procurement Best Practices

- Solution when complexity of deployment is beyond technical capacity or time available to fleet team
- Carefully evaluate the TCO of bundled proposals to ensure that a fair deal is being negotiated on the individual components

### Benefits vs. Drawbacks

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Drawbacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Enables efficiencies of vertical integration, for instance when the fuel provider also installs the refueling infrastructure</td>
<td>• May not allow for picking the best provider for each specific subcomponent of your AFV project</td>
</tr>
<tr>
<td>• Simplifies the procurement process</td>
<td></td>
</tr>
</tbody>
</table>
Procurement Best Practices

Gaseous Fuels
Return-to-base operations, repetitive route, or pre-set geographic operating areas

Higher fuel use -> better economics

<table>
<thead>
<tr>
<th>Vehicle type</th>
<th>Fuel consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit buses</td>
<td>11-13k DGE/year</td>
</tr>
<tr>
<td>Refuse/Concrete trucks, plows</td>
<td>7.5-10k DGE/year</td>
</tr>
<tr>
<td>Municipal sweepers</td>
<td>5-6k DGE/year</td>
</tr>
<tr>
<td>Shuttles</td>
<td>5.5-7.5k GGE/year</td>
</tr>
<tr>
<td>Taxis, police cars</td>
<td>4.5-5.5k GGE/year</td>
</tr>
<tr>
<td>School buses</td>
<td>2.5-3k GGE/year</td>
</tr>
<tr>
<td>Utility trucks, high-mileage pick-ups</td>
<td>2-2.5k GGE/year</td>
</tr>
<tr>
<td>Sedan, utility/telecom van, PWD pick-ups</td>
<td>1.2-1.5k GGE/year</td>
</tr>
</tbody>
</table>
## IV Procurement Best Practices

### Gaseous Fuels: Municipal Applications

<table>
<thead>
<tr>
<th>Vehicle type</th>
<th>Configurations</th>
<th>Providers</th>
<th>Fuel options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sedan/SUV/crossover</strong></td>
<td>Sub-compact through full size; police pursuit vehicle option</td>
<td>Aftermarket</td>
<td>CNG or propane</td>
</tr>
<tr>
<td><strong>Pickup trucks</strong></td>
<td>½-ton, ¾-ton, 1-ton, with multiple cab-chassis and bed configurations</td>
<td>Aftermarket</td>
<td>CNG or propane</td>
</tr>
<tr>
<td><strong>Light duty vans (Class 1-2)</strong></td>
<td>Multiple cab-chassis and cutaway options; cargo and passenger configurations</td>
<td>Aftermarket</td>
<td>CNG or propane</td>
</tr>
<tr>
<td><strong>Class 3-6 work trucks</strong></td>
<td>Cab-chassis, cutaway and strip-chassis configurations for additional upfitting</td>
<td>Aftermarket</td>
<td>CNG or propane</td>
</tr>
<tr>
<td>(e.g., utility trucks, dump-</td>
<td>plow trucks, service step-vans)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Class 4-6 shuttle buses:</strong></td>
<td>Cab-chassis and cutaway configurations; strip-chassis options for trolleys</td>
<td>Aftermarket</td>
<td>CNG or propane</td>
</tr>
<tr>
<td>School buses</td>
<td>Type A, C and D</td>
<td>OEM</td>
<td>CNG or propane</td>
</tr>
<tr>
<td><strong>Refuse trucks</strong></td>
<td>Cab-forward (CF), cab-over-engine (COE) and conventional</td>
<td>OEM</td>
<td>CNG only</td>
</tr>
<tr>
<td><strong>Transit buses</strong></td>
<td>30’, 35’ and 40’ transit buses, 60’ articulated buses and 45’ commuter coaches</td>
<td>OEM</td>
<td>CNG for all types, propane for buses less than 35’</td>
</tr>
<tr>
<td><strong>Street sweepers</strong></td>
<td></td>
<td>OEM</td>
<td>CNG or propane;</td>
</tr>
</tbody>
</table>
**Process is generally different for HDVs than LDVs and MDVs**
IV  Procurement Best Practices
Gaseous Fuels: Build Process

Light-Duty ARS Scenario 1

Vehicle OEM

ARS Manufacturer

Dealer

Customer

Examples
Landi Renzo
Westport FSS
Altech Eco
Green Bridge
AGA Systems
ICOM
Roush
IV Procurement Best Practices
Gaseous Fuels: Build Process

Light-Duty ARS Scenario 2

Examples
A-1 Auto.
Alt Fuel Inn.
Coastal AFS
AVT Services
Cusson Auto.

Vehicle OEM

ARS Installer

ARS Manufacturer

Dealer

Customer
Alternatively, the installation partner may be an OEM dealer, trained by the ARS mfr.
IV

**Procurement Best Practices**

*Gaseous Fuels: Total Cost of Ownership*

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>License and Registration</th>
<th>Insurance</th>
<th>Maintenance and Repair</th>
<th>Diesel Exhaust Fluid</th>
<th>Fuel</th>
<th>Depreciation</th>
<th>Financing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline</td>
<td>$1,801</td>
<td>$16,633</td>
<td>$30,488</td>
<td>$0</td>
<td>$16,648</td>
<td>$18,590</td>
<td>$0</td>
</tr>
<tr>
<td>Diesel</td>
<td>$1,801</td>
<td>$16,633</td>
<td>$41,101</td>
<td>$305</td>
<td>$13,873</td>
<td>$20,914</td>
<td>$0</td>
</tr>
<tr>
<td>LPG</td>
<td>$1,801</td>
<td>$16,633</td>
<td>$30,488</td>
<td>$0</td>
<td>$12,043</td>
<td>$24,167</td>
<td>$0</td>
</tr>
<tr>
<td>CNG</td>
<td>$1,801</td>
<td>$16,633</td>
<td>$30,488</td>
<td>$0</td>
<td>$11,843</td>
<td>$25,097</td>
<td>$0</td>
</tr>
</tbody>
</table>
IV

Procurement Best Practices

Electric Vehicles
Procurement Best Practices

Electric Vehicles: Myth Busting

- Too Expensive
- Not Enough Range
- Charge Times
Procurement Best Practices

Electric Vehicles: Myth Busting

- Not Enough Selection
- Cold Weather Operability
- EV's are Slow
Battery Electric Vehicle (BEV)
Subcompact and compact sedans
Not a lot of cargo space
Can seat 4 adults comfortably
Well suited for urban settings with lots of stop-and-go traffic and where speeds generally remain below 45 MPH

Plug-In Hybrid Electric Vehicle (PHEV)
Compact and midsize sedans
Medium amounts of cargo space
Can seat 4-5 adults comfortably
Well suited for a wide range of activities with the gasoline engine as backup when the battery power is depleted
Procurement Best Practices

Electric Vehicles: Total Cost of Ownership

<table>
<thead>
<tr>
<th>Total Cost of Ownership</th>
<th>Gasoline</th>
<th>Gasoline PHEV</th>
<th>EV</th>
</tr>
</thead>
<tbody>
<tr>
<td>License and Registration</td>
<td>$1,801</td>
<td>$1,801</td>
<td>$1,801</td>
</tr>
<tr>
<td>Insurance</td>
<td>$16,633</td>
<td>$16,633</td>
<td>$16,633</td>
</tr>
<tr>
<td>Maintenance and Repair</td>
<td>$29,514</td>
<td>$28,018</td>
<td>$26,006</td>
</tr>
<tr>
<td>Diesel Exhaust Fluid</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Fuel</td>
<td>$18,108</td>
<td>$11,055</td>
<td>$8,701</td>
</tr>
<tr>
<td>Depreciation</td>
<td>$18,590</td>
<td>$30,209</td>
<td>$27,885</td>
</tr>
<tr>
<td>Financing</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>
### Procurement Best Practices

**Electric Vehicles: Total Cost of Ownership**

<table>
<thead>
<tr>
<th>Make/Model</th>
<th>Nissan Leaf</th>
<th>Ford Focus</th>
<th>Chevy Volt</th>
<th>Ford Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category</strong></td>
<td>BEV</td>
<td>BEV</td>
<td>PHEV</td>
<td>ICE</td>
</tr>
<tr>
<td><strong>Battery Size</strong></td>
<td>30 kWh</td>
<td>23 kWh</td>
<td>18.4 kWh</td>
<td>2.0 L - V4</td>
</tr>
<tr>
<td><strong>MSRP</strong></td>
<td>$34,200</td>
<td>$29,170</td>
<td>$33,170</td>
<td>$23,225</td>
</tr>
<tr>
<td><strong>Incremental Cost</strong></td>
<td>$10,975</td>
<td>$5,945</td>
<td>$9,945</td>
<td>$0</td>
</tr>
<tr>
<td><strong>All-Electric Range</strong></td>
<td>107 miles</td>
<td>76 miles</td>
<td>53 miles</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>EPA MPG Rating</strong></td>
<td>112 MPGe</td>
<td>105 MPGe</td>
<td>106 MPGe</td>
<td>31 MPG</td>
</tr>
<tr>
<td><strong>Charge Time (240v)</strong></td>
<td>8 hours</td>
<td>4 hours</td>
<td>4 hours</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Est. Annual Fuel Cost</strong></td>
<td>$550</td>
<td>$600</td>
<td>$800</td>
<td>$1,000</td>
</tr>
<tr>
<td><strong>TCO/mi</strong></td>
<td>$0.46</td>
<td>$0.42</td>
<td>$0.46</td>
<td>$0.41</td>
</tr>
<tr>
<td><strong>TCO/mi (w/ TC)</strong></td>
<td>$0.39</td>
<td>$0.35</td>
<td>$0.40</td>
<td>$0.41</td>
</tr>
<tr>
<td><strong>TCO/mi (w/ TC &amp; $3.50 gas)</strong></td>
<td>$0.39</td>
<td>$0.35</td>
<td>$0.41</td>
<td>$0.45</td>
</tr>
<tr>
<td><strong>TCO/mi ($3.5 gas &amp; 15k mi)</strong></td>
<td>$0.36</td>
<td>$0.33</td>
<td>$0.38</td>
<td>$0.36</td>
</tr>
</tbody>
</table>

Estimates are based on an example with the $7,500 federal credit. Fuel costs are estimated at $0.12/kWh and $2.24 / gallon. Use assumes 12k miles per year over 10 years. Estimates will vary significantly when adjusted for specific local circumstances. TC = Tax Credit.
Regional Cooperative Procurement
Focusing on local public fleets

Organizing the cooperative procurement of select vehicles to obtain volume discounts that fleets could not access individually

Releasing a vehicle bid RFP to confirm vehicle specs with unique tiered-volume pricing

Executing in Fall 2017
Regional Cooperative Procurement

Anticipated Vehicles

- Propane Vehicles
- Electric Vehicles (EV)
- Plug-In Hybrid Electric Vehicles (PHEV)
- Natural Gas Vehicles

Both Light-Duty and Heavy-Duty Options Available
Regional Cooperative Procurement
Anticipated Process

Fleet signs anticipated vehicle purchase commitment with NCTCOG

NCTCOG pools vehicle purchase commitments from participating fleets

NCTCOG procures vehicles through vehicle bid contract to obtain volume discounts

Each participating fleet coordinates directly with vendor for purchase order
Regional Cooperative Procurement

How to Get Involved

Action Steps:

1. Analyze your fleet’s needs
2. Coordinate with Procurement and Fleet Staff to confirm procurement possibilities
3. Complete the Soft Commitment Form

For more information on the project, visit: www.nctcog.org/f4f
Regional Cooperative Procurement
How to Get Involved

Attend Our Fleets for the Future Bootcamp

When:  **May 24, 2017** from 10 am - 2 pm
Where:  North Central Texas Council of Governments (NCTCOG) in Arlington

RSVP to  **bmuller@nctcog.org** or (817)695-9299 by May 17

Lunch will be provided!
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