Federal Fleet Management: Fleet Laws and Regulations

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AGENDA

Federal Fleet Requirements and Goals

Federal Fleet Performance and Trends

Fleet Sustainability Strategies

Implementation: Example Fleet

Compliance and GSA Offerings
FEMP’s Federal Fleet Management Program

Mission: Assist Federal agencies with meeting or exceeding requirements for reducing fleet GHG emissions

- Understanding and meeting Federal requirements
  - Guidance
  - Handbook
  - FAST system maintenance, upgrades, and training

- Technical assistance, analysis, and tools
  - Fuel consumption dashboard (FleetDASH)
  - Geographic analysis of fleet fueling patterns, for facilitating development of new alternative fuel infrastructure

- Education and communication
  - Federalfleets.energy.gov
  - INTERFUEL working group
Mission: Provide safe reliable, low cost vehicle solutions to assist federal agencies in effectively and efficiently meeting their mission and federal mandates

- Purchasing
- Leasing
- Automated Solutions
- Ancillary Fleet Solutions
The overarching Federal fleet goal is to increase efficiency.

**Efficiency is currently expressed by GHG/mile**

**Federal Fleet Requirements: Overview**

- **Improve Fleet Efficiency**
  - Reduce Fleet-wide Per Mile GHG Emissions

- **Create Agency Strategic Plan**
  - E.O. 13693

- **Establish VAM to Right-size Fleets**
  - E.O. 13693

- **Increase Fleet Fuel Efficiency**

- **Acquire AFVs and Use Alternative Fuel**
  - Acquire ZEVs and PHEVs
    - E.O. 13693
  - Install Renewable Fuel Pumps
    - EISA Sec. 246

- **Use Alternative Fuel in AFVs**
  - EPAct 2005 Sec. 701

- **Deploy Telematics and Manage Asset-Level Data**
  - E.O. 13693

**Acquire Low Emitting GHG Vehicles**
- EISA Sec. 141

**Acquire AFVs**
- EPAct 1992

**EPAct 2005 Sec. 701**

**EISA Sec. 246**
## Federal Fleet Requirements

<table>
<thead>
<tr>
<th>Fleet Requirement</th>
<th>Statute or Executive Order</th>
<th>Description</th>
</tr>
</thead>
</table>
| Reduce per Mile GHG emissions | E.O. 13693 Sec. 3(g)(ii) | • 4% reduction by FY17  
• 15% by FY21  
• 30% by FY25 |
| Reduce overall GHG emissions | E.O. 13693 Sec. 2 | Reduce fleet GHG emissions as part of agency-established reduction target for FY 2008 to FY 2025 |
| Optimum fleet inventory, right-size fleets | E.O. 13693 Sec. 3(g)(iv) | Establish a structured VAM to determine the appropriate size and number of motor vehicles |
| Acquisition of ZEVs and PHEVs | E.O. 13693 Sec. 3(g)(v) | • 20% of new passenger vehicle acquisitions by FY20  
• 50% of new passenger vehicle acquisitions by FY25 |
| Acquisition of AFVs | EPAct 1992 | At least 75 percent of LDVs acquired in MSAs/CMSAs must be AFVs |
| Acquisition of low GHG-emitting vehicles | EISA § 141 | Prohibits agencies from acquiring vehicles that are not low-GHG-emitting vehicles |
| Alternative fuel use in AFVs | EPAct 2005 § 701 | All dual-fueled vehicles must use alternative fuel if reasonably available (i.e., unless waived) |
| Alternative fuel infrastructure | EISA § 246 | Every federal fleet fueling center must install a renewable fuel pump |
E.O. 13693 Requirement: Per Mile GHG Emission Reduction Targets

2017 Requirement: 4% reduction in FY17

Example with baseline of 500 g CO₂e/mile
Right Sizing Fleets and Vehicles

E.O.13693 Vehicle Allocation Methodology requirement

- Survey required every five years
- Agencies choose the most fuel-efficient vehicle for their operational needs
- Examine low-use vehicles for replacement in fleet
- EPAct covered petroleum consumption has fallen by 26 million GGEs annually since 2011 Presidential Memorandum (excluding USPS)
  - Net fuel expenditures dropped $890 million in that time period

Connection to other requirements

- **EISA §141**: Fuel efficient vehicles tend to be low-GHG emitting vehicles
- **E.O. 13693 ZEV and PHEV acquisition**: PEVs often have fuel efficiency ratings above 100 MPGe
- VAM process considers AFV requirements and preference
**Acquire AFVs**

### AFV acquisition requirements

- **EPA Act 1992**: Ensure that 75% of light duty vehicle acquisitions in metropolitan statistical areas (MSAs) are AFVs. (AFVs acquired outside of MSAs and biodiesel use counts towards meeting requirements)

- **E.O. 13693**: ZEVs (including BEVs) and PHEVs account for 20% of new passenger vehicle acquisitions by end of FY2020; 50% by end of FY2025

- **EISA 2007, Section 141**: LDVs and passenger MDVs must be low GHG emitting vehicles (exceptions permitted). Low GHG emitting vehicles meet AFV definition in locations without access to alternative fuel

### Agency best practices

- Acquire AFVs in areas where alternative fuel is/will become available
- Focus HEV, PHEV, and BEV acquisitions where alternative fuel is not available
- Consider LSEVs, low GHG emitting vehicles (in locations without access to alternative fuel) and other high efficiency vehicles
Use Alternative Fuels

EPAct 2005, Section 701 requirement

- Dual-fueled vehicles (such as E85 FFVs) must use alternative fuel where reasonably available and not unreasonably more expensive than gasoline
- Agencies granted \textbf{waivers} based on lack of accessible station within 5 miles and 15 minutes driving of garage location

Tools: FleetDASH

- Analyzes transactions for opportunities to use alternative fuel within 5 miles

Connection to other requirements

- Acquiring AFVs and not using alternative fuel would be problematic
- Alternative fuels have lower GHG emissions per mile
Install Renewable Fuel Pumps

EISA 2007, Section 246 requirement

- Install renewable fuel pumps at federal fleet fueling centers
- Federal fleet fueling centers defined as >100,000 gallons of a single fuel with a federal fleet of 20+ EPAct-covered vehicles in an MSA
- Renewable fuels include E85, biodiesel, renewable electricity, or renewable hydrogen

Connection to other requirements

- **EPAct 1992**: Acquire AFVs in locations where alternative fuel pumps installed
- **EPAct 2005, §701**: Use alternative fuel in dual-fueled AFVs where reasonably available
- **EISA §141**: Biodiesel as alternative compliance measure
Core Principles

“Core Principles” help fleets reduce:
- Operational costs by lowering petroleum use
- Vehicle asset costs by right-sizing fleets and vehicles to mission

Right-size fleets & vehicles to mission
- Identify & dispose of inefficient vehicles
- Replace them with more fuel efficient vehicles
- Optimize/reduce fleet vehicle miles travelled

Replacing existing vehicles with higher fuel economy vehicles
- Identify most fuel efficient vehicle for the mission
- Cost effective HEVs, PHEVs, and LSEVs

Cost effective operational changes
- Improved maintenance
- Drive more efficiently
- Avoid Idling

Maximize displacement of conventional fuels with domestic alternative fuels
- E85, CNG, B20 AFVs and infrastructure support
- Electric vehicles and charging stations

Increase fleet fuel efficiency
Use alternative fuels, including electricity
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Federal Fleet Requirements and Goals

Fleet Performance and Trends

Fleet Sustainability Strategies

Implementation: Example Fleet

Compliance and GSA Offerings
## FY 2016 Federal Fleet Compliance Summary

<table>
<thead>
<tr>
<th>Requirement</th>
<th>FY 16 Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EO 13693 Per-mile GHG Emissions</strong></td>
<td>1.1 percent&lt;br&gt;25 of 32 covered agencies achieved compliance</td>
</tr>
<tr>
<td>Reduce fleet-wide per-mile GHG emissions by 2% relative to FY 2014 baseline (for FY16)</td>
<td>203 percent&lt;br&gt;29 of 31 covered agencies achieved compliance</td>
</tr>
<tr>
<td><strong>EPAAct 92 AFV Acquisitions</strong></td>
<td>75% of “covered” light-duty vehicle (LDV) acquisitions must be AFVs</td>
</tr>
<tr>
<td><strong>EPAAct 2005 §701 Alternative Fuel Use in AFVs</strong></td>
<td>90 GGE of alternative fuel use per non-waivered dual-fuel AFV (preliminary estimate)</td>
</tr>
<tr>
<td>All dual-fueled AFVs must use alternative fuel if available (i.e., unless waived)</td>
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</tbody>
</table>
AFV Acquisitions

Federal fleets have consistently exceeded EPAct 1992 AFV acquisition requirements
Transformation From Conventional Vehicles to AFVs

- **E85 FFVs**
  - 14% → 33%

- **Hybrid**
  - 0% → 4%

- **Diesel**
  - 11% → 11%

- **Gasoline**
  - 73% → 52%
Use of Alternative Fuels

E85 comprises majority of Federal fleet alternative fuel use increase
Federal fleets have steadily increased the number of dual-fueled AFVs subject to EPAct 2005 §701…

… but the alternative fuel use per non-waivered AFV has been decreasing since FY12
AGENDA

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Fleet Performance and Trends
Fleet Sustainability Strategies
Implementation: Example Fleet
Compliance and GSA Offerings
**Principle 1: Right-size fleets to mission**

**Requirement: VAM study and reports**

<table>
<thead>
<tr>
<th>Generate a fleet profile</th>
<th>Develop minimum utilization criteria</th>
<th>Compare existing fleet to actual mission requirements</th>
<th>Develop acquisition plan</th>
<th>Review and Update VAM</th>
</tr>
</thead>
</table>

**Utilization study, vehicle inventory and mission requirements**
- Validate vehicle need based on mission needs, define baseline of required fleet
- Dispose or reassign vehicles as needed
- Evaluate alternatives where possible
- Create a multi-year acquisition plan, recommend vehicle type and size by location, and place AFVs where fuel is available
- Update VAM at least every five years (VAM reports)
Reduce Vehicle Miles Traveled

Low /No-Cost Solutions for All Vehicle Types

• **Consolidate trips**
  – Eliminate trip duplication
  – Car pooling

• **Eliminate trips**
  – Video and Web conferencing tools
  – Transportation on demand (TOD)

• **Improve scheduling and routing**
  – Optimize travel distance using GPS technology

• **Use mass transportation**
  – Use mass transportation alternatives to eliminate fleet vehicle transportation needs

• **Use agency shuttles**
  – Provide a shuttle service for high-use routes to consolidate trips
Opportunities to Pool Vehicles

Pooling vehicles provides opportunities to eliminate fleet vehicles and reduce costs

- Federal fleet annual average of 6,835 miles per vehicle is much lower than the national average of 11,700 miles
- Low miles per vehicle suggest some opportunities to create vehicle pools
Principle 2: Increase Fleet Fuel Efficiency

- **Acquire higher fuel economy vehicles**
  - Downsize vehicles
  - Use VAM to determine the optimal types based on mission need

- **Acquire hybrid electric vehicles (HEVs) and plug-in hybrid electric vehicles (PHEVs)**
  - Can reduce petroleum and GHG emissions by 30% or more
  - Focus deployment of HEVs in areas lacking access to alternative fuel

- **Maintain vehicles to improve fuel economy**
  - Perform regularly scheduled and preventative maintenance

- **Drive more efficiently**
  - Use cruise control, avoid fast starts, remove excess weight, etc.

- **Avoid excessive idling**
  - Turn off engines when vehicles are stopped or parked
  - Use idling reduction technologies for essential heating, cooling, and other auxiliary loads (e.g., APUs)
## Example per-mile GHG emissions

<table>
<thead>
<tr>
<th>Category</th>
<th>Model</th>
<th>2012/2017</th>
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<tbody>
<tr>
<td><strong>Compact sedan</strong></td>
<td>Ford Focus</td>
<td>287 g/mile</td>
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<tr>
<td></td>
<td></td>
<td>289 g/mile</td>
</tr>
<tr>
<td></td>
<td>Ford C-MAX Hybrid</td>
<td>222 g/mile</td>
</tr>
<tr>
<td><strong>Midsize sedan</strong></td>
<td>Chevy Malibu</td>
<td>342 g/mile</td>
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<tr>
<td></td>
<td></td>
<td>342 g/mile</td>
</tr>
<tr>
<td></td>
<td>Ford Fusion Hybrid</td>
<td>228 g/mile</td>
</tr>
<tr>
<td></td>
<td></td>
<td>210 g/mile</td>
</tr>
<tr>
<td><strong>Large sedan</strong></td>
<td>Ford Taurus</td>
<td>423 g/mile</td>
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<td></td>
<td></td>
<td>362 g/mile</td>
</tr>
<tr>
<td></td>
<td>Toyota Avalon Hybrid</td>
<td>223 g/mile</td>
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<tr>
<td><strong>Passenger Van</strong></td>
<td>Chevrolet Express 2500 8-cyl.</td>
<td>684 g/mile</td>
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<td></td>
<td></td>
<td>704 g/mile</td>
</tr>
<tr>
<td><strong>Minivan</strong></td>
<td>Chrysler Town &amp; Country/Pacifica</td>
<td>444 g/mile</td>
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<tr>
<td></td>
<td></td>
<td>401 g/mile</td>
</tr>
<tr>
<td><strong>Small SUV</strong></td>
<td>Ford Escape</td>
<td>386 g/mile</td>
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<tr>
<td></td>
<td></td>
<td>369 g/mile</td>
</tr>
<tr>
<td><strong>Large SUV</strong></td>
<td>Chevy Tahoe 1500 4x4</td>
<td>523 g/mile</td>
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<tr>
<td></td>
<td></td>
<td>497 g/mile</td>
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<tr>
<td><strong>Light-duty Truck 4x2</strong></td>
<td>Ford F150</td>
<td>468 g/mile</td>
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<tr>
<td></td>
<td></td>
<td>426 g/mile</td>
</tr>
<tr>
<td><strong>Light-duty Truck 4x4</strong></td>
<td>Chevrolet Silverado K15 4WD</td>
<td>555 g/mile</td>
</tr>
<tr>
<td></td>
<td></td>
<td>473 g/mile</td>
</tr>
</tbody>
</table>

Source: fueleconomy.gov
Increase Fleet Fuel Efficiency

Focus on increasing the fuel efficiency of the least efficient vehicles

Federal fleet average: 12 mpg
Principle 3: Use Alternative Fuels, Including Electricity

Alternative fuels include but are not limited to:

- Electricity
- E85
- Compressed natural gas (CNG)
- Liquefied natural gas (LNG)
- Liquefied petroleum gas or propane (LPG)
- Neat (100%) biodiesel (B100) or biodiesel blends

Dual-fueled AFVs MUST use alternative fuel if available (EPAct 2005, Section 701):

- E85 FFVs,
- Bi-fuel CNG or LNG vehicles, and
- Bi-fuel LPG vehicles
Alternative Fuels – **GHG emission reductions**

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>CO₂e/GGE (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel</td>
<td>10</td>
</tr>
<tr>
<td>Gas</td>
<td>9</td>
</tr>
<tr>
<td>LPG</td>
<td>8</td>
</tr>
<tr>
<td>B20</td>
<td>7</td>
</tr>
<tr>
<td>CNG</td>
<td>6</td>
</tr>
<tr>
<td>LNG</td>
<td>5</td>
</tr>
<tr>
<td>HEV</td>
<td>4</td>
</tr>
<tr>
<td>E85</td>
<td>3</td>
</tr>
<tr>
<td>PHEV</td>
<td>2</td>
</tr>
<tr>
<td>B100</td>
<td>1</td>
</tr>
<tr>
<td>BEV</td>
<td>1</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>0</td>
</tr>
</tbody>
</table>

**100% Reduction**
Strategies to Increase Alternative Fuel Use

EPAct 2005 §701: FY 2016 preliminary estimate of 90 GGE of alternative fuel use per non-waivered dual-fuel AFV

- **FLEETDASH**: Monitor fuel transaction data
- **Lock-out dual-fueled AFVs** from using gasoline pumps
- **Provide locations** and driving directions to alternative fuel stations
  - Tools available at AFDC (www.afdc.energy.gov)
- **Policies and training for local fleet managers** and drivers
- Consider alternative fuel use metrics in performance reviews and job descriptions
AGENDA

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Implementation: Example Fleet
Compliance and GSA Offerings
**Goal:** Cost-effectively reduce fleet per-mile GHG emissions (increase fleet efficiency) through the appropriate combination of the three core principles

- Evaluate strategies and tactics for each fleet location
- Assess site-specific characteristics, including:
  - Fleet mission tasks
  - Fleet size and vehicle composition
  - Fleet utilization (operating characteristics)
  - Availability of alternative fuel (public and private)

Our example fleet location
Fleet Location G

- Located approximately 5 miles east of Archdale, NC
- 70 square miles
- Combined 1,117,140 GGE fuel use in FY 2016
  - Covered Petroleum: 1,004,569 GGE
  - Alternative Fuel: 84,199 GGE
- 1,580 fleet vehicles
Example Fleet: *Fleet operations*

- Most vehicles are garaged in both the east and west of site
- Many MD and HD vehicles operate in central area
- Vehicle tasks
  - transportation between the two locations
  - trips between
  - security operations
  - hauling of trailers
  - service truck operations
- Fleet operations expected to grow, including off-road capable vehicles and pickup trucks
### Example Fleet: *Fleet Composition*

<table>
<thead>
<tr>
<th># Vehicles</th>
<th>LD vehicles</th>
<th>MD vehicles</th>
<th>HD vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,023</td>
<td></td>
<td>308</td>
<td>249</td>
</tr>
</tbody>
</table>

#### Vehicles by Type and Fuel Type

<table>
<thead>
<tr>
<th>Type</th>
<th>LD vehicles</th>
<th>MD vehicles</th>
<th>HD vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Midsize Sedans (225)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>95 GAS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>97 E85 FFV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33 HEV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LD Pickup (220)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>117 GAS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>103 E85 FFV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LD SUV (204)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>120 GAS</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>84 E85 FFV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LD Minivan (194)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60 GAS</td>
<td></td>
<td></td>
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<tr>
<td>134 E85 FFV</td>
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<tr>
<td><strong>Compact Sedans (180)</strong></td>
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<tr>
<td>86 GAS</td>
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<td></td>
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<tr>
<td>91 E85 FFV</td>
<td></td>
<td></td>
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<tr>
<td>3 PHEV</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Gasoline: 478</th>
<th>Gasoline: 188</th>
<th>Gasoline: 8</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>E85 FFV:</strong></td>
<td>509</td>
<td>66</td>
<td>241</td>
</tr>
<tr>
<td><strong>HEV:</strong></td>
<td>33</td>
<td>3</td>
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<tr>
<td><strong>PHEV:</strong></td>
<td>3</td>
<td></td>
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</tr>
</tbody>
</table>

**HD Other (239):**
- 231 DSL
- 8 GAS

**HD Bus (10):**
- 10 DSL
<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Gasoline</th>
<th>E85</th>
<th>Diesel</th>
<th>B20</th>
<th>ELE</th>
<th>TOTAL</th>
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</thead>
<tbody>
<tr>
<td>LD Vehicles</td>
<td>512,500</td>
<td>49,200</td>
<td>-</td>
<td>-</td>
<td>790</td>
<td>562,490</td>
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<td>MD Vehicles</td>
<td>146,600</td>
<td>5,700</td>
<td>47,400</td>
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<td>199,700</td>
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<tr>
<td>HD Vehicles</td>
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<td>-</td>
<td>345,550</td>
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<td>354,950</td>
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<tr>
<td>TOTAL</td>
<td>668,500</td>
<td>54,900</td>
<td>392,950</td>
<td>-</td>
<td>790</td>
<td>1,117,140</td>
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</tbody>
</table>
### Principle 1: Right-size fleets to mission

**Vehicle Utilization**

<table>
<thead>
<tr>
<th># of Vehicles</th>
<th>Compact Sedans</th>
<th>Midsize Sedans</th>
<th>LD Pickup</th>
<th>LD SUV</th>
<th>LD Minivan</th>
<th>MD Pickup</th>
<th>MD Van</th>
<th>MD SUV</th>
<th>Ambulance</th>
<th>HD Other</th>
<th>HD Bus</th>
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<tr>
<td>180</td>
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<tr>
<td>239</td>
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</tr>
</tbody>
</table>

Average 7,890 miles per vehicle
# Opportunities to Improve Fleet Efficiency

## Issues limiting fleet efficiency

### Fleet Vehicle Composition
- Number of light-duty gasoline only vehicles
- Number of medium-duty gasoline only vehicles
- Underutilization of fleet vehicles (miles per vehicle)

### Vehicle Fuel Efficiency
- High per-mile GHG emissions
- Inefficient MD and HD vehicles

### AF Infrastructure Limitations
- No E85 infrastructure access near the West site
- No local B20 availability

### AF Utilization Issues
- Low utilization of E85 (23%)

## Recommendations

1. Establish shuttle routes between East and West Sites
2. Complete VAM study to determine optimal fleet composition
3. Evaluate opportunities to create fleet vehicle pools at East and West Sites
4. Maximize replacement of gasoline vehicles with E85 FFVs and PHEVs/BEVs
5. Right-size vehicles to mission
6. Prioritize replacing least efficient vehicles
7. Install new E85 tank system at the gasoline island at West site refueling center
8. Install B20 at diesel refueling center
9. Expand EVSE in East and West Sites
10. Train drivers to use local E85 stations, and use FleetDASH to monitor performance
Principle 1: Right-size fleets to mission

1. Shuttle, 2. Right-sizing Fleets and Vehicles, and 3. Vehicle Pooling

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Now</th>
<th>Shuttle</th>
<th>Right-size</th>
<th>Pool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compact Sedans</td>
<td>100</td>
<td>83</td>
<td>88</td>
<td>70</td>
</tr>
<tr>
<td>Midsize Sedans</td>
<td>115</td>
<td>92</td>
<td>72</td>
<td>60</td>
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<tr>
<td>LD Pickup</td>
<td>90</td>
<td>85</td>
<td>78</td>
<td>70</td>
</tr>
<tr>
<td>LD SUV</td>
<td>84</td>
<td>75</td>
<td>68</td>
<td>59</td>
</tr>
<tr>
<td>LD Minivan</td>
<td>78</td>
<td>71</td>
<td>65</td>
<td>57</td>
</tr>
<tr>
<td>Shuttle Bus</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>467</strong></td>
<td><strong>414</strong></td>
<td><strong>379</strong></td>
<td><strong>324</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Now</th>
<th>Shuttle</th>
<th>Right-size</th>
<th>Pool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compact Sedans</td>
<td>80</td>
<td>68</td>
<td>76</td>
<td>62</td>
</tr>
<tr>
<td>Midsize Sedans</td>
<td>110</td>
<td>88</td>
<td>63</td>
<td>55</td>
</tr>
<tr>
<td>LD Pickup</td>
<td>70</td>
<td>66</td>
<td>61</td>
<td>55</td>
</tr>
<tr>
<td>LD SUV</td>
<td>72</td>
<td>63</td>
<td>58</td>
<td>51</td>
</tr>
<tr>
<td>LD Minivan</td>
<td>64</td>
<td>57</td>
<td>52</td>
<td>44</td>
</tr>
<tr>
<td>Shuttle Bus</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>396</strong></td>
<td><strong>350</strong></td>
<td><strong>318</strong></td>
<td><strong>275</strong></td>
</tr>
</tbody>
</table>
Principle 2: Increase Fleet Fuel Efficiency

Reduce per mile GHG emissions by acquiring more efficient vehicles:

- Right-sizing vehicles to mission
- Replacing older less efficient vehicles
- Acquiring HEVs

Source: fueleconomy.gov
Principle 3: Use Alternative Fuels, Including Electricity

Maximize AFVs in the fleet

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Now</th>
<th>FY22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline</td>
<td>674</td>
<td>158</td>
</tr>
<tr>
<td>E85 FFV</td>
<td>575</td>
<td>698</td>
</tr>
<tr>
<td>Diesel</td>
<td>295</td>
<td>267</td>
</tr>
<tr>
<td>HEV</td>
<td>33</td>
<td>73</td>
</tr>
<tr>
<td>PHEV/BEV</td>
<td>3</td>
<td>35</td>
</tr>
<tr>
<td>Total</td>
<td>1,580</td>
<td>1,231</td>
</tr>
</tbody>
</table>

Increase AF use in AFVs

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Now</th>
<th>FY22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline</td>
<td>668,500</td>
<td>142,000</td>
</tr>
<tr>
<td>Diesel</td>
<td>392,950</td>
<td>76,400</td>
</tr>
<tr>
<td>E85</td>
<td>54,900</td>
<td>231,500</td>
</tr>
<tr>
<td>B20</td>
<td>-</td>
<td>294,200</td>
</tr>
<tr>
<td>Electricity</td>
<td>790</td>
<td>4,900</td>
</tr>
<tr>
<td>Total</td>
<td>1,117,140</td>
<td>749,000</td>
</tr>
</tbody>
</table>
AGENDA

Federal Fleet Requirements and Goals
Federal Fleet Performance and Trends
Fleet Sustainability Strategies
Implementation: Example Fleet
Compliance and GSA Offerings
Competing Priorities

Save $$

CUT SPENDING

EPAct

AFVs

EISA 2007
Section 141

Meet mission requirements

Executive Order 13693

Low GHGs

Save $$

CUT SPENDING

EPAct

AFVs

EISA 2007
Section 141

Meet mission requirements

Executive Order 13693

Low GHGs
How to Comply with EPAct

• Acquire AFVs…
  – If LD or MDPV, the vehicle is also a low GHG vehicle
  – If alternative fuel is available within 5 miles or 15 minutes and reasonably priced
  – If E85, Biodiesel, Electric or CNG - Stations are easily accessed on the vehicle’s normal route
  – If vehicle is garaged near mechanics that work on the vehicle
    • CNG, electric, hydrogen fuel cell, and other alternative fuels should be serviced by trained and certified mechanics
## Alternative Fuel Options

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>PRO</th>
<th>CON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>No GHG emissions, low fuel costs, high fuel economy</td>
<td>High vehicle/infrastructure costs, long refueling time, limited vehicle options</td>
</tr>
<tr>
<td>&gt;85% Ethanol (E85)</td>
<td>Domestically produced, renewable, less expensive vehicles</td>
<td>Emits GHGs, lower fuel economy than gas, somewhat corrosive</td>
</tr>
<tr>
<td>Propane</td>
<td>Domestically produced, clean-burning</td>
<td>Lower fuel economy than gas, limited LD vehicle availability</td>
</tr>
<tr>
<td>Natural Gas (CNG/LNG)</td>
<td>Domestically produced, low fueling costs, can retrofit gas vehicles</td>
<td>High vehicle/equipment costs, limited fueling infrastructure</td>
</tr>
<tr>
<td>Biodiesel (B20)</td>
<td>Domestically produced, renewable, clean-burning, better fuel economy than gas</td>
<td>LD vehicles are expensive, limited fueling infrastructure, lower fuel economy than diesel</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>Zero tailpipe emissions, domestically Produced</td>
<td>Limited availability, fuel storage difficult, high production costs</td>
</tr>
</tbody>
</table>

**Pros and Cons**

When taking into consideration what kind of AFV to integrate into your fleet, think through fuel and vehicle availability, vehicle application, and costs.
GSA AFV Offerings

• More than 2,100 AFV configurations available from GSA Fleet in FY17
  – All vehicle classes
  – B20 Capable, CNG, E85, Electric, Hybrid, Liquified Natural Gas, Propane

• GSA’s Alternative Fuel Vehicle Guide, AFV Acquisition Tool and GSA AutoChoice
  – Provide clarifications, pricing, options and specifications
## GSA FY17 Alternative Fuel Vehicle Availability

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Fuel Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulances</td>
<td>B20 Capable</td>
</tr>
<tr>
<td>Buses</td>
<td>B20 Capable, E85, HEV Diesel, HEV Gas, Propane</td>
</tr>
<tr>
<td>Cab &amp; Chassis</td>
<td>B20 Capable, E85</td>
</tr>
<tr>
<td>Cargo and Passenger Vans</td>
<td>B20 Capable, E85, Plug-in Hybrid Electric</td>
</tr>
<tr>
<td>Medium and Heavy Trucks</td>
<td>B20 Capable, CNG Dedicated, LNG</td>
</tr>
<tr>
<td>Pickup Trucks</td>
<td>B20 Capable, CNG Bi-Fuel, E85</td>
</tr>
<tr>
<td>SUVs</td>
<td>E85, Gas Low GHG</td>
</tr>
<tr>
<td>Sedans</td>
<td>E85, Gas, Electricity, Plug-in Hybrid Electric, HEV</td>
</tr>
<tr>
<td>Wheelchair Vans</td>
<td>B20 Capable, E85</td>
</tr>
</tbody>
</table>
How to Comply with EISA Section 141

• Order Low GHG Vehicles (~25% of available LD vehicles)

• Due to size and type, 52 vehicle SINs, when ordered, are required to be ordered as low GHG-emitting vehicles
  – All sedans, most SUVs, passenger vans, and light-duty pickup trucks must be ordered as low GHG emitting

• GSA Fleet maintains list of all EISA-compliant vehicles available during the current FY
  – 41 configurations available in FY17

• **Look for opportunities to acquire low-GHG AFVs to meet both EPAct and EISA requirements**
Low-GHG vehicles available from GSA:

- 23 sedans
- 15 SUVs (4x2 and 4x4)
- 2 cargo vans
- 1 passenger van

**Only category with no low GHG options is the pickup truck category**
Two acceptable reasons for light-duty vehicles to not meet EISA requirements:

• No low GHG-emitting vehicle is available that meets the **functional needs** of the agency
  – Submit Functional Needs Waiver

• When an agency has taken specific **alternative measures** to reduce petroleum consumption and GHG emissions.

**Agencies SELF-CERTIFY when a vehicle they are acquiring will not meet EISA low GHG Requirements**
The FAST Act - Comply with the EO & Reduce Emissions

- Agencies are required to recoup the cost of providing electric vehicle supply equipment (EVSE) for employee and visitor use.
- EVSE should be installed in locations where employees and/or visitors have access to the parking spaces.
- Each agency may have different policies on the deployment of EVSE for employee and visitor use.
Best Practices for Employee Charging

• Survey employees to gauge interest in EV charging
• Plan for current as well as future needs
  – It is often cheaper to install more units at once then to go back and add units at a location
• Create a pricing structure that includes the cost of electricity, the EVSE, and installation
• Clearly mark EVSE that are available for employee use and, if applicable, those that are restricted to use by fleet vehicles.
• Explore both Level 1 and Level 2 charging options
• See FEMP Lounge for a full presentation
Agencies located in GSA owned or leased buildings must submit written requests for permission to install EVSE, regardless of whether units are to be used for employee or fleet use

- Send requests to the GSA Lease Administration Manager or Facility Manager for review
- GSA will perform site assessment on behalf of the agency through a Reimbursable Work Authorization
- Reference GSA PBS Order 5605.1
Electric Charging Stations (EVSE) Available through GSA

- Level 1, Level 2, and DC Fast Charging Stations
- Fleet and Commercial Units
- Wall and Pedestal Mounted Units
- Single and Dual Port Units
- Gateway and Non-Gateway Units
  - Networked and Non-Networked Units
- Data Plans
• GSA awarded a Governmentwide BPA for EVSE in 2017
  – Reduces administrative and contracting burden for agencies
    • Easy ordering at pre-competed prices

• 2 firms received awards
  – Encompass 6 different EVSE manufacturers
  – Includes equipment and data plans
  – Shipment to all 50 states, the District of Columbia, and Puerto Rico

• More info at gsa.gov/evse
How to Comply with E.O. 13693

• Reduce fleet-wide GHG emissions by selecting more fuel efficient models
• Identify opportunities for cost savings through deploying vehicle telematics and capturing Asset-level data
• Acquire the right sized vehicles to achieve your mission
• Replace vehicles with EVs where it is cost and operationally efficient
  – Incorporate EV infrastructure to support EVs
GSA FY17 Battery Electric Vehicle Offerings

8E Ford Focus
115 Mile Range
Purchase
$16,160
Lease
$182/month, $.063/mile
Incremental
$1,515

SPECIAL! Break Even Rate
$199/month, $.063/mile
No Incremental

8E Nissan Leaf
107 Mile Range
Purchase
$20,076
Lease
$182/month, $.063/mile
Incremental
$5,431

8E GM Bolt BEV
238 Mile Range
Purchase
$34,811
Lease
$182/month, $.063/mile
Incremental
$20,166

Now available in all 50 states!
GSA FY17 Plug-in Hybrid Electric Vehicle Offerings

Subcompact Sedans

8P Chevrolet Volt PHEV
Purchase: $30,300
Lease: $182/month, $.08/mile
Incremental: $15,655.00

9P Ford Fusion Energi PHEV
Purchase: $28,209.30
Lease: $182/month, $.08/mile
Incremental: $9,838.41

Compact Sedans

8P Ford CMAX Energi PHEV
Purchase: $27,143.75
Lease: $182/month, $.08/mile
Incremental: $12,498.75

9P Hyundai Sonata PHEV
Purchase: $27,961.85
Lease: $182/month, $.08/mile
Incremental: $9,590.96

NEW! Minivan

20P Chrysler Pacifica PHEV
Purchase: $38,458.78
Lease: $228/month, $.19/mile
Incremental: $17,341.70
When Electric Vehicles Make Sense

- Average distance traveled per day or per trip is less than 60 miles
- Operated primarily on paved roadways
- Missions requiring start-stop driving, long idle times or city driving
- Missions not requiring the carrying of large loads
- Infrastructure exists or the agency has the funding to obtain
- Located near dealerships authorized to service/repair EVs
- Often transport five people or less
- Replacing a less fuel efficient car
- Locations with temperate climates
Federal Fleet Resources

- **Acquisition Gateway**

- **GSA Fleet Alternative Fuel Vehicles**
  - [http://www.gsa.gov/afv](http://www.gsa.gov/afv)
  - Links to annual AFV Guide and AFV Decision Tool

- **GSA Fleet Drive-thru**
  - [http://drivethru.gsa.gov](http://drivethru.gsa.gov)

- **GSA OGP/Motor Vehicle Policy Division:**
  - [https://gsa.gov/portal/content/121443](https://gsa.gov/portal/content/121443)

- **FEMP Fleet Resources:**
  - [https://energy.gov/eere/femp/federal-fleet-management](https://energy.gov/eere/femp/federal-fleet-management)

- **DOE Alternative Fuel Data Center**
  - [http://www.afdc.energy.gov/](http://www.afdc.energy.gov/)

- **FAST:**
  - [https://fastweb.inl.gov/](https://fastweb.inl.gov/)

- **FleetDASH:**
  - [https://federalfleets.energy.gov/FleetDASH/](https://federalfleets.energy.gov/FleetDASH/)
Contact

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Alternative Fuel Vehicle Branch
GSAFleetAFVTteam@gsa.gov