Considerations for Ordering a ZEV

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Rebecca Spears
Agenda

- ZEV Suitability and Decision Tree
- FY24 ZEV Vehicle Offerings
- ZEV Capabilities
- Operational Best Practices
- Charging and Infrastructure
- Lessons Learned
- Q & A
Is a ZEV right for your agency?

1. Is there a ZEV model available that meets your mission requirements?

2. Do you have charging infrastructure in place?

3. Are agency funds available to support the AFV incremental cost?

4. How close is the nearest vendor for service?
Single vehicle or Multi-vehicle household

Multi-vehicle (EV, PHEV, Hybrid)

No access to home charging

Access to charging

Length of commute (Gas, PHEV, hybrid)

EV

Short <100 miles

Stop and go driving

PHEV or Hybrid

Constant speed

Gas

Long >100 miles

Stop and go driving

PHEV or Hybrid

Constant speed

Hybrid

Gas

Source: Southern Illinois University
FY24 ZEV Offerings
## FY24 Light/Med. Duty ZEV Offerings

<table>
<thead>
<tr>
<th>Sedans</th>
<th>Type</th>
<th>Incremental</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>8E Nissan Leaf</td>
<td>Subcompact BEV</td>
<td>$5,095</td>
<td>ext. range (149-212 +$115 to rate)</td>
</tr>
<tr>
<td>9E Tesla Model 3</td>
<td>Compact BEV</td>
<td>$25,238</td>
<td>ext. range (272-315 +$75 to rate)</td>
</tr>
<tr>
<td>10E Ioniq 6</td>
<td>Midsize BEV</td>
<td>$0.00</td>
<td>Rate only $9 dollars more than 9E</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vans</th>
<th>Type</th>
<th>Incremental</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>20P Chrysler Pacifica</td>
<td>Minivan PHEV</td>
<td>$9,797</td>
<td>All 50 state delivery</td>
</tr>
<tr>
<td>34E Ford e-Transit</td>
<td>Full-size Cargo Van BEV</td>
<td>$3,660</td>
<td>CONUS delivery only</td>
</tr>
<tr>
<td>162E Ford e-Transit</td>
<td>Dry Cargo Van BEV</td>
<td>$13,519</td>
<td>CONUS &amp; HI (no AK)</td>
</tr>
<tr>
<td>95E Ford e-Transit</td>
<td>Panel Van, Maintenance BEV</td>
<td>$18,324</td>
<td>CONUS delivery only</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pickups</th>
<th>Type</th>
<th>Incremental</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>55E F150 Lightning</td>
<td>Crew Cab Pickup BEV</td>
<td>$4,907</td>
<td>2K units b/t 55E &amp; 56E; 55 AMPs</td>
</tr>
<tr>
<td>56E F150 Lightning</td>
<td>Crew Cab SSV BEV</td>
<td>$6,265</td>
<td>no center console or mats; 55 AMPs</td>
</tr>
<tr>
<td>57E Silverado EV</td>
<td>Crew Cab Pickup BEV</td>
<td>$27,105</td>
<td>450 mile range (ext range option)</td>
</tr>
</tbody>
</table>
### FY24 4X2 SUV ZEV Offerings

<table>
<thead>
<tr>
<th>SIN</th>
<th>Type</th>
<th>Model</th>
<th>Low Bid</th>
<th>Incremental</th>
<th>Range</th>
<th>Delivery/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>98E</td>
<td>BEV</td>
<td>Hyundai Kona</td>
<td>Y</td>
<td>$11,551</td>
<td>258 mi.</td>
<td>CONUS &amp; HI (no AK)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kia Niro</td>
<td>N</td>
<td>$15,105</td>
<td>253 mi.</td>
<td>CONUS only; no AK or HI</td>
</tr>
<tr>
<td>98P</td>
<td>PHEV</td>
<td>Kia Niro</td>
<td>Y</td>
<td>$11,291</td>
<td>34 electric mi.</td>
<td>CONUS &amp; HI (no AK)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford Escape</td>
<td>N</td>
<td>$11,777</td>
<td>37 electric mi.</td>
<td>50 state only; no export</td>
</tr>
<tr>
<td>91E</td>
<td>BEV</td>
<td>Ford Mach-E</td>
<td>Y</td>
<td>$13,420</td>
<td>247 - 310 mi.</td>
<td>50 state dealer delivery only; no export; ext range +$144 to rate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kia EV6</td>
<td>N</td>
<td>$16,485</td>
<td>232 mi.</td>
<td>CONUS only; no AK or HI</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nissan Ariya</td>
<td>N</td>
<td>$20,367</td>
<td>216 - 304 mi.</td>
<td>CONUS only; no AK or HI; ext range +$52 to rate</td>
</tr>
<tr>
<td>100E</td>
<td>BEV</td>
<td>Hyundai Ioniq 5</td>
<td>Y</td>
<td>$5,046</td>
<td>220 mi.</td>
<td>CONUS &amp; HI (no AK)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VW ID 4</td>
<td>N</td>
<td>$6,735</td>
<td>275 mi.</td>
<td>CONUS only; no AK or HI</td>
</tr>
</tbody>
</table>

*Late Openings*
<table>
<thead>
<tr>
<th>SIN</th>
<th>Type</th>
<th>Model</th>
<th>Low Bid</th>
<th>Incremental</th>
<th>Range</th>
<th>Delivery/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>96P</td>
<td>PHEV</td>
<td>Mitsubishi Outlander</td>
<td>Y</td>
<td>$12,343</td>
<td>24 electric mi.</td>
<td>CONUS &amp; no AK or HI</td>
</tr>
<tr>
<td>99P</td>
<td>PHEV</td>
<td>Hyundai Tucson</td>
<td>Y</td>
<td>$11,306</td>
<td>33 electric mi.</td>
<td>CONUS &amp; HI (no AK)</td>
</tr>
<tr>
<td>96E</td>
<td>BEV</td>
<td>Ford Mach-E</td>
<td>Y</td>
<td>$15,454</td>
<td>224 - 312 mi.</td>
<td>50 state dealer delivery only; ext range +$144 to rate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Subaru Solterra</td>
<td>N</td>
<td>$17,556</td>
<td>228 mi.</td>
<td>CONUS &amp; AK (no HI)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nissan Ariya</td>
<td>N</td>
<td>$24,003</td>
<td>205 - 272 mi.</td>
<td>CONUS only; no AK/HI; ext range +$52 to rate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kia EV6</td>
<td>N</td>
<td>$25,494</td>
<td>282 mi.</td>
<td>CONUS only; no AK/HI</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tesla Model Y</td>
<td>N</td>
<td>$28,193</td>
<td>279 - 330 mi.</td>
<td>All 50 states &amp; PR; ext range +$40 to rate</td>
</tr>
<tr>
<td>112P</td>
<td>PHEV</td>
<td>Jeep Wrangler</td>
<td>Y</td>
<td>$9,827</td>
<td>22 electric mi.</td>
<td>All 50 states &amp; GU</td>
</tr>
<tr>
<td>105E</td>
<td>BEV</td>
<td>Hyundai Ioniq 5</td>
<td>Y</td>
<td>$15,036</td>
<td>260 mi.</td>
<td>CONUS &amp; HI (no AK)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VW ID4</td>
<td>N</td>
<td>$17,039</td>
<td>255 mi.</td>
<td>CONUS only; no AK/HI</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blazer</td>
<td>N</td>
<td>$19,885</td>
<td>TBD</td>
<td>50 state dealer delivery only; no export</td>
</tr>
<tr>
<td>105P</td>
<td>PHEV</td>
<td>Grand Cherokee</td>
<td>Y</td>
<td>$22,719</td>
<td>26 electric mi.</td>
<td>50 state only; no export</td>
</tr>
<tr>
<td>105G</td>
<td>BEV</td>
<td>Blazer SSV</td>
<td>Y</td>
<td>$9,000</td>
<td>TBD</td>
<td>50 state dealer delivery only; no export</td>
</tr>
<tr>
<td>105L</td>
<td>BEV</td>
<td>Blazer PPV</td>
<td>Y</td>
<td>$21,476</td>
<td>TBD</td>
<td>50 state dealer delivery only; no export</td>
</tr>
</tbody>
</table>

*Late Openings
ZEV Considerations
ZEV Considerations

● Range expectations
  ○ Extreme temperatures, steep terrain, and driving conditions can all impact range.
  ○ Towing may reduce range up to 50%.
  ○ Extreme climates may reduce range up to 35%.

● Mission requirements
  ○ Verify available mission-essential options prior to requesting a ZEV.
  ○ Most BEVs cannot accommodate aftermarket modifications.
  ○ Look at extended range option, as agency mission dictates.
Operational Best Practices
Operational Best Practices

- Maximize drive time
  - Avoid harsh braking and acceleration.
  - Keep the vehicle charged between 20-80%.

- Minimize range lost
  - Set cabin temperature while the vehicle is connected to its charger.
  - Heating and cooling the cabin can significantly decrease the range.
  - Towing or heavy payloads can also reduce the range.

- Roadside Assistance
  - If towing is required, contact the MCC at 1-866-400-0411.
  - Avoid allowing the battery to drop to 0% charge.
  - Place vehicle in neutral and ensure it is towed by flatbed truck.
Charging and Infrastructure
Charging

- Factors to consider when charging
  - Know which charging connector the vehicle uses
  - Do you need an adapter?
- What are the charging capabilities?
  - Battery capacity
  - Types of charger
- Where can you find charging stations?
  - WexConnect app
  - ChargePoint app
  - Plugshare.com
  - EPA charging location finder
  - https://afdc.energy.gov/fuels/electricity_locations.html#/find/nearest?fuel=ELEC
Charging

- Types of Chargers
  - Level 1 - residential charging
  - Level 2 - some residential @240V or commercial @280V
  - DC Fast Charging - heavy traffic corridors

- RFID/ChargePoint Charging
  - FSRs must order a WEX linked ChargePoint
  - Locate nearest ChargePoint charger (WexConnect)
  - *Important* Monitor charging...idle fees could be charged
Lessons Learned
Lessons Learned - Tesla Model Y

- Outstanding charging network
- Connects required to charge outside Tesla network
- Odd gear selector
- Absence of a gauge cluster
- Roadside assistance easy to use
- Tires are expensive $369 each
- Exceptional range! (330 miles)
- Subpar build quality
Lessons Learned - Ford F-150 Lightning

- Simple charging w/ChargePoint RFID
- Automatic charging route in navigation system
- Acceptable range for size (190 miles)
- Little difference in operation of ICE counterpart
- Build quality is outstanding!
- Most customers will need/want sidesteps (very tall)
Lessons Learned - Chrysler Pacifica PHEV

- 16 kWh battery
- Long charging times on solar charger
- 32 mile all electric range = 82 MPGe
- No difference in operation of ICE counterpart
- It took 6 hrs 14 mins to charge from 3% to 83%
- Only uses J1172 charge cable; no option for level 3 charging.
Lessons Learned - Hyundai Kona

- 64 kWh battery.
- 256 mile stated range.
- Uses J1172 adapter or CCS Type 1 or 2 for fast charging.
- Added 180 miles of range in 5 hrs of charging w/Beam solar charger.
- Initial drive of 3.5 miles we lost 23 miles of range.
- Charging port location is ideal at the front left bumper.
Questions??