Council Resolution 20160505-025

“...work with Rocky Mountain Institute, Vulcan, Inc., and Electrification Coalition on an assessment to determine the benefits, timeline, and feasibility of increasing electric vehicle adoption into the City’s Fleet Services vehicles.”

• Evaluate short and long-term cost savings.

• Analyze return on investment options.

• Determine impacts and benefits to Austin Energy.

• Identify electrification targets to achieve carbon neutral fleet by 2020.
Current Fleet Composition

6,293 Total Units

78% are alternative fuel capable or hybrid
Recommendations


2. Expand City Fleet charging stations from 33 to 330 by 2020.

3. Fund electric vehicle acquisitions by the execution of municipal leases (lease-to-own).

4. Fund charging infrastructure through an interdepartmental fuel surcharge.
Electric Vehicle Economic Benefits

- Lower life-cycle costs than gasoline vehicles.
- Supports the local economy by purchasing kWh from Austin Energy.
- Reduces fuel price volatility risk.
Electric Vehicle Additional Benefits

• Supports Council adopted goal of Net Zero Community Wide GHG emissions by 2050.

• Demonstrates innovation and leadership to employees and the community.

• Diversifies the City fleet.

• Fuel independence.
Vehicle Technology

**Battery Electric Vehicle (BEV)**
Example: Nissan Leaf (MPGe: 126/101)

- No gasoline used
- No oil changes or transmissions required
- 20-100 kWh batteries
- 80–400 mile range on a single charge

**Plug-in Hybrid Electric Vehicle (PHEV)**
Example: Chevy Volt (MPGe: 106/42)

- Gasoline engine creates electricity
- Oil changes and transmissions required
- 5-15 kWh batteries
- 20-60 mile range on a single charge
- 300 miles of gasoline-extended range
Charging Technology

Level 1:
1kW adds 4 miles per hour

Level 2:
6.6kW adds 25 miles per hour

DC Fast Charge:
50kW+ = full charge in 15 minutes
Fleet Analysis

Fleet Electrification Coalition:

• Analyzed over 1,000 City-owned sedans, minivans, and SUVs
  • Excluded marked police vehicles and pickup trucks

• Identified best electric vehicle candidates:
  • Older vehicles
  • Low daily mileage vehicles
  • High lifetime mileage vehicles
  • Expensive-to-operate SUVs and minivans

• 326 vehicles targeted for electrification

• Fleet Services re-analyzed and recommends 330 by 2020
  • 72 Plug-in Hybrids, 258 Battery Electric Vehicles
## Life Cycle Cost Analysis

<table>
<thead>
<tr>
<th>10-year Life-Cycle</th>
<th>Continue Current Operations (Gasoline &amp; Alt Fuels)</th>
<th>Electrification of Vehicles (Muni Lease)</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Purchase Cost</td>
<td>$9,400,000</td>
<td>$9,400,000</td>
<td>$0</td>
</tr>
<tr>
<td>Lifetime Maintenance Cost</td>
<td>$4,400,000</td>
<td>$2,300,000</td>
<td>+$2,100,000</td>
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<tr>
<td>Lifetime Fuel Cost</td>
<td>$4,200,000</td>
<td>$1,100,000</td>
<td>+$3,100,000</td>
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<tr>
<td>Infrastructure Development</td>
<td>$0</td>
<td>$1,700,000</td>
<td>-$1,700,000</td>
</tr>
<tr>
<td>Auction Proceeds</td>
<td>($1,400,000)</td>
<td>($1,400,000)</td>
<td>$0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>$16,500,000</td>
<td>$13,000,000</td>
<td><strong>+$3,500,000</strong></td>
</tr>
</tbody>
</table>

Based on: 330 Electric Vehicles, 10 year-100,000 mile lifetime, Electricity at $0.11 / kWh, $2.25 gasoline, and a $7,500 EV Tax Credit
Vehicle Purchases

GOAL:
330 Plug In Hybrid and Battery Electric vehicles that are charged at City facilities by the end of CY 2020.

• 35 vehicles by the end of CY 2017
• 134 total vehicles by the end of CY 2018 (add 99)
• 229 total vehicles by the end of CY 2019 (add 95)
• 330 total vehicles by the end of CY 2020 (add 101)

Municipal Lease to own:
- Spreads initial costs over 3 years
- Takes advantage of $7,500 federal tax credit per vehicle

Over their 10 year lifetime, these 330 vehicles will avoid:
- 12,000 metric tons of Carbon Dioxide
- 22 metric tons of Nitrogen Oxides
- 34 metric tons of Volatile Organic Compounds
13 year Cash Flow

Total Non-EV Cost: $16,500,000
Total EV Cost: $13,000,000
10 Year EV Savings: $3,500,000
Currently 33 charging stations deployed

Add 100 stations by the end of CY 2018:

- 10 Departments
- 15 Building locations
- All Level 2 Charging
2017 Rollout Process

• Install charging stations
• Buy first batch of electric vehicles
• Train City staff on Electric vehicle operation
• Place electric vehicles into service
• Evaluate performance and adjust as necessary
Commission Feedback

- 9/13 – Urban Transportation Commission
  - Positive feedback and supportive

- 9/19 – Electric Utility Commission
  - Questions related to GreenChoice and impact to AE operations, positive feedback on the initiative

- 9/21 – Environmental Commission
  - Questions related to quantifying air quality benefits, positive feedback on the initiative

- 9/28 – Joint Sustainability Committee
  - Positive feedback. Passed a resolution recommending City Council direct staff to research the costs and benefits of increasing the number of electric vehicles to at least 25% of the total City vehicle fleet. Includes looking more in depth at Austin Energy and storage as well as partnering with other local fleet owners.
Questions?