School Bus Replacement Program

Jennifer Masterson
Fuels and Transportation Division
California Energy Commission

March 2018
Agenda

• Background

• Proposed Design Concept

• Proposed Implementation of Design Concepts

• Q & A
Program Goals and Objectives

- Follow SB 110 and Governor's Executive Order
- Children’s health and safety
- Allocation scheme that best provides a level of funding equity
- Build the future supporting network of advanced next generation infrastructure
- Position as many schools with the options to embrace next generation zero emission vehicles
- GHG and air quality benefits
Senate Bill 110

- Funding: $75 million

- Eligible applicants: school districts and county offices of education (COE).

- Priority should be given to the oldest school buses, or school buses operating in disadvantaged communities and to schools that have a majority of students eligible for free or reduced-price meals in the prior year.

- Any school bus replaced shall be scrapped.
Proposed Design Concept

Comprehensive Design:

• School bus replacement (2 Phases)
  Phase 1: Identify list of buses eligible for replacement.
  Phase 2: Solicit manufacturers to design, construct, and deliver the replacement buses to school districts.

• Provide EV fueling infrastructure to support bus and future expansion.

• Provide workforce training and development for EV buses.
Phase 1: Identify list of buses eligible for replacement

- Conduct a competitive solicitation for school districts/COE
- Awards will be made to school districts in ranked order until all funds available are exhausted.
- Funds will go directly to the eligible school districts to purchase the buses identified in their application.
- School districts will purchase their buses directly from the bus manufacturer(s) who competitively wins the Energy Commission award.
- Funds pay for 100% of the standard bus (either all Energy Commission funds or leveraged with other sources).
Phase 2: Manufacturing Buses

• Conduct a competitive solicitation for school bus manufacturers.

• Manufacturers will submit applications demonstrating the degree to which they can fulfill the bus list needs.
  – Applications will describe the type(s) of bus available, number of buses that can be produced, cost of buses (including bulk pricing if available), and timing for delivery of buses.
  – Other criteria may include: location of manufacturing facility (in California?), opportunities to leverage funding (such as HVIP eligibility), status of CHP certification, standard features available for buses, and warranty options available.
Phase 2: Manufacturing Buses

- Awarded manufacturers will enter into an agreement with the Energy Commission for the construction of a specified number and type of buses.

- School districts will pay manufacturers directly with Energy Commission grant funding.
Accomplishments to Date

✓ Focus Group Meetings

✓ Public Workshops:
  • Sacramento  February 14, 2018
  • Los Angeles  February 20, 2018
  • Clovis  February 21, 2018

✓ School Bus Replacement Program Web Page
  http://www.energy.ca.gov/transportation/schoolbus/index.htm

✓ Call Center Hotline (855) 279-6381
Major issues under consideration:

• How to identify the oldest buses?
• How to distribute the funding awards?
• What type of bus replacements should we allow?
Scenario 1

- Distribute funds evenly within the four regions established by Prop 39.

- Approximately $18.75 million will be allocated to each region.

- Priority will be given to the oldest school buses, with extra points for buses operating in disadvantaged communities and with a majority of the students eligible for free or reduced-price meals.
Scenario 2

Distribute funds to the highest ranked school buses.
Other Workshop Questions Asked

- Which solicitation structure/option is preferred?
- Is there anything missing from the proposed approach?
- What should be included in the standard features of a bus?
- What type of infrastructure will you need to support your replacement bus?
- What type of training and development will you need to support your replacement bus?
Summary of Public Comments

- 24 letters to the docket
- 55 specific comments

Top Comment Categories:
1. Geographical distribution
2. Type of bus replacement
3. Mechanism on how to rank the buses
Emphasizing Electric School Buses

1. Benefits Children’s Health
2. Lowered Emissions
3. Quieter Smoother Ride
4. Charging Overnight
5. Lower Maintenance
6. Lower Fuel Cost
7. Potential Vehicle to Grid
Cost Savings of Electric Buses

- Electric School Buses are an emerging technology…
  
  ✓ They have a higher up-front front capitol cost compared to mature technologies.
  
  ✓ But… have much lower annual operations and maintenance costs!

<table>
<thead>
<tr>
<th>Cost</th>
<th>Diesel</th>
<th>CNG</th>
<th>Electric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance</td>
<td>$9,075</td>
<td>$3,360</td>
<td>$1,770</td>
</tr>
<tr>
<td>Fuel</td>
<td>$5,930</td>
<td>$5,000</td>
<td>$2,714</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$15,005</strong></td>
<td><strong>$8,360</strong></td>
<td><strong>$4,484</strong></td>
</tr>
</tbody>
</table>

- This program will cover the up-front capitol costs, passing on the annual O&M cost savings to the school districts, while replacing an older bus with a clean new one!
Available Electric Buses

- Thomas
- eLion
- TransTech
- GreenPower
- BlueBird
## Size and Types of Buses

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Type</th>
<th>Seating</th>
<th>Range (miles)</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenpower</td>
<td>Synapse 72</td>
<td>72</td>
<td>75-140</td>
<td>2017</td>
</tr>
<tr>
<td>Greenpower</td>
<td>Synapse Shuttle</td>
<td>48</td>
<td>75-140</td>
<td>2018</td>
</tr>
<tr>
<td>Greenpower</td>
<td>Synapse Shuttle</td>
<td>30</td>
<td>75-140</td>
<td>2018</td>
</tr>
<tr>
<td>Trans Tech</td>
<td>Motiv SST</td>
<td>18-25</td>
<td>80-100</td>
<td>2013</td>
</tr>
<tr>
<td>Blue Bird</td>
<td>Type C</td>
<td>75</td>
<td>80-100</td>
<td>2018</td>
</tr>
<tr>
<td>Blue Bird</td>
<td>Type D</td>
<td>78-81</td>
<td>80-100</td>
<td>2018</td>
</tr>
<tr>
<td>Blue Bird</td>
<td>Micro Bird G5</td>
<td>&lt;30</td>
<td>80-100</td>
<td>2018</td>
</tr>
<tr>
<td>Daimler</td>
<td>Jouley</td>
<td>81</td>
<td>80-100</td>
<td>2019</td>
</tr>
</tbody>
</table>
Infrastructure
## Charging Systems

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Bus Type</th>
<th>Charging Standard</th>
<th>Battery Size in kWh</th>
<th>KWh per mile</th>
<th>Charging Power</th>
<th>Average charging time (hours)</th>
<th>Ave. Range (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Bird Corporation</td>
<td>D C</td>
<td>Level 2 J1772</td>
<td>150 100 – 150</td>
<td>1.5</td>
<td></td>
<td>8</td>
<td>100</td>
</tr>
<tr>
<td>Blue Bird – Girardin</td>
<td>A</td>
<td>Level 2 J1772</td>
<td></td>
<td></td>
<td></td>
<td>6.5</td>
<td>100</td>
</tr>
<tr>
<td>Thomas Built</td>
<td>C</td>
<td>Level 2 J1772</td>
<td>100 – 160</td>
<td>1 – 1.6</td>
<td></td>
<td>8</td>
<td>100</td>
</tr>
<tr>
<td>Trans Tech</td>
<td>A</td>
<td>Level 2 J1772</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td>80</td>
</tr>
<tr>
<td>Lion Electric</td>
<td>C</td>
<td>Level 2 J1772</td>
<td>130</td>
<td>1.3 – 2.6</td>
<td>19.2</td>
<td>4 – 6</td>
<td>50 – 100</td>
</tr>
<tr>
<td>Green Power Motor</td>
<td>D</td>
<td>Level 2 J1772</td>
<td>100 – 200</td>
<td>0.71 – 1.43</td>
<td>22</td>
<td>8</td>
<td>140</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DC Fast CCS</td>
<td></td>
<td></td>
<td>150</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Starcraft Bus</td>
<td>C</td>
<td>Level 2 J1772</td>
<td>106 – 127</td>
<td>1.25 – 1.49</td>
<td>25</td>
<td>8</td>
<td>85</td>
</tr>
<tr>
<td>Motiv</td>
<td>A C</td>
<td>Level 2 Meltric DR100</td>
<td>85 – 106 85 – 127</td>
<td>0.94 – 1.18</td>
<td>29</td>
<td>8</td>
<td>90</td>
</tr>
</tbody>
</table>
Workforce Training and Development

- Alternative & Renewable Fuel & Vehicle Technology Program (ARFVTP) Funds.
- Determine training & development needs.
- Work with Community Colleges and Schools to develop a program and curriculum to meet needs.
## Proposed Schedule

<table>
<thead>
<tr>
<th>Activity</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solicitation release and workshops</td>
<td>May – June 2018</td>
</tr>
<tr>
<td>Funding Available</td>
<td>July 1, 2018</td>
</tr>
<tr>
<td>Business meetings</td>
<td>August – September 2018</td>
</tr>
<tr>
<td>Bus deliveries</td>
<td>TBD</td>
</tr>
</tbody>
</table>
Stay Connected

List Server:
- [http://www.energy.ca.gov/transportation/schoolbus/index.html](http://www.energy.ca.gov/transportation/schoolbus/index.html)
- Follow instructions in bottom left corner.

Contact:
Jennifer Masterson
[Schoolbusprogram@energy.ca.gov](mailto:Schoolbusprogram@energy.ca.gov)

School Bus Hotline:
(855) 279-6381