Guemes Island Ferry Replacement Project

Project Overview

Tuesday, July 19, 2022
Battery-Electric Overview

SES
SHORE ELECTRICAL SYSTEM

VES
VESSEL ELECTRICAL SYSTEM

BATTERY BANK

DC/DC CONVERTER

DC PROPULSION DISTRIBUTION

TERMINAL POWER DISTRIBUTION

AUTOMATIC SHORE CONNECTION SYSTEM

OVERNIGHT SHORE POWER

RAMP

AUXILIARY SHORE DISTRIBUTION

STANDBY GENERATOR

PROPULSION MOTOR

PROPULSION MOTOR DRIVE

AC SHIP SERVICE DISTRIBUTION
<table>
<thead>
<tr>
<th></th>
<th>Electric Car</th>
<th>Guemes Electric Ferry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cruising Power</td>
<td>~10kw (70 mph)</td>
<td>400-500kw (10 knots)</td>
</tr>
<tr>
<td>Battery Capacity</td>
<td>60-100kwh</td>
<td>700kwh</td>
</tr>
<tr>
<td>Charging Rate</td>
<td>10kw (&quot;Level 2&quot; charger)</td>
<td>1700kw</td>
</tr>
<tr>
<td></td>
<td>150-250kw (Tesla supercharger)</td>
<td></td>
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<tr>
<td>Charge/Discharge Cycles (per Year)</td>
<td>~50 (using full range)</td>
<td>8400</td>
</tr>
<tr>
<td></td>
<td>~350 (smaller daily charges)</td>
<td></td>
</tr>
<tr>
<td>Battery Lifetime</td>
<td>20+ years</td>
<td>10 years</td>
</tr>
<tr>
<td>Weight</td>
<td>3800lbs (entire Tesla Model 3)</td>
<td>16,000lbs (battery system alone)</td>
</tr>
</tbody>
</table>
Typical Battery Installations
Typical Schedule

1. Transit to Guemes (4:38)
2. Unload/Load (9:01)
3. Transit to Anacortes (4:38)
4. Connect ASCS (0:30)
5. Unload/Load (Charging) (10:43)
6. Disconnect ASCS (0:30)

30-min roundtrip schedule
Cost of Energy

- With Shore Batteries (As Designed)
- Without Batteries

Average Monthly Electricity Cost

$4,000 $8,000 $12,000 $16,000 $20,000 $24,000

Energy
Peak Demand Charges
Charger Range of Motion
System Integration

- Shore Electrical System
- Automatic Charger
- Plug
- Ship Electrical System

- Project Management
- Commissioning
- Integration and test
- Control Signals
- Safety Automation
- Energy Optimization
A single integrator is essential.
Procurement Policy

- Procured under RCW 36.77 (Roads and Bridges)
- Strict low-bid selection would not be appropriate given technical complexity
- WA passed new RCW in 2021
  - Allows preselection of ship/shore integrator
  - Allows best-value evaluation of construction bids
Project Schedule

Vessel Project:
- IFB Release Target: October 2022
- Owner Acceptance: June 2023
- New Vessel In Service: June 2024

Electrical Project:
- IFB Release Target: December 2022
- Shore Electrical Complete: June 2023

Terminal Project:
- IFB Release Target: April 2023
- Terminal Mods Complete: June 2024

IFB
IFB Construction
Vessel Construction
Vessel Operations
Terminal
Environmental Permitting
Long Lead Time Procurement & Construction
## Funding

<table>
<thead>
<tr>
<th>Ferry Replacement Program</th>
<th>Cost Estimate</th>
<th>Funded</th>
<th>Funding Source</th>
</tr>
</thead>
</table>
| Design & Permitting                           | $2,923,000    | $2,923,000 | • Skagit County Road Fund  
• County Ferry Capital Improvement Program (CFCIP) Grant |
| Vessel Construction                           | $18,993,000   | $18,993,000 | • County Ferry Capital Improvement Program (CFCIP) Grant  
• Washington State Legislature/WSDOT - Move Ahead WA |
| Shore Side Electrical Systems Construction    | $5,847,000    | $5,847,000 | • Washington State Capital Construction Budget Appropriation  
• WA Dept. of Commerce Clean Energy Program  
• WA Dept. of Commerce Electrification of Transportation Systems  
• County Ferry Capital Improvement Program (CFCIP) Grant |
| Terminal Improvements Construction            | $2,500,000    | $2,500,000 | • FTA Transportation Improvement Grant |
| **Ferry Replacement Program Total**           | **$30,263,000** | **$30,263,000** | |

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**Glosten**

**SKAGIT COUNTY**

**WASHINGTON**