On Track For The Future
Tacoma Rail Battery-Electric Switcher Locomotive Replacement Project
Sponsoring Agency: Puget Sound Clean Air Agency, Co-sponsoring Agency: Tacoma Rail
April 21, 2022
**Project Description**

Replace two 1965, diesel-electric switcher locomotives with two battery-electric switcher locomotives (old engines will be scrapped).

**Project Location:** Tacoma Rail Yard
- 2601 State Route 509 N. Frontage Rd, Tacoma WA 98421
- Port of Tacoma Manufacturing/Industrial Center

**Project Total:** $11,700,000
- CMAAQ funding request: $5,500,000
- Tacoma Rail Match: $6,200,000

**Project Readiness:**
- Funds are reasonably secured
- Shovel Ready—Could issue RFP as early as June 2023
Air Quality & Climate Change

Zero-emission technology eliminates each year:

- 65,000 gallons of diesel (731 tons of GHGs)
- 0.62 tons PM$_{2.5}$ (1240 lbs)
- 29 tons NO$_X$

Alignment with regional and climate plans:

- Vision 2050
- City of Tacoma Climate Action Plan
- City of Tacoma Comprehensive Plan
- Port of Tacoma 2021–2026 Strategic Plan
- Northwest Ports Clean Air Strategy
- Norwest Seaport Alliance Implementation Plan
- Puget Sound Clean Air Agency’s Strategic Plan

Provides approximately $380,000 per year in health benefits
Equity

Diesel emissions can increase asthma, heart attacks, strokes, and premature death.

Impacted Area:
- Traditional homelands of the Puyallup Tribe
- 10/10 for diesel exposure & disproportionate impact
- Above regional poverty thresholds
- High BIPOC population
- Low opportunity mapping score
- Top 10% air quality concern area for Agency
- Former PM$_{2.5}$ non-attainment area

Community Feedback:
- City of Tacoma Climate Action Plan
- The Northwest Seaport Alliance Implementation Plan
Circulation, Mobility & Accessibility

Status quo engine rebuilds won’t get us what area needs

- Provide no toxic diesel emissions reductions
- Provide no GHG reductions

Efficiency of Battery-Electric switchers delivers

- Lower operational costs
  - Electricity is a cost-effective, stable fuel source
  - Brake regeneration could save 10% on energy needs
- Reduced maintenance
  - Eliminates over 50% of mechanical parts
  - Less maintenance downtime
- Groundwork for future electrification
  - Rail operators in the region are leaning electric but waiting to see them in use
Safety and Security

Federal Railroad Administration Compliant

- Locomotives will be built consistent with:
  - Federal regulations
  - Industry safety standards
- Workers will be trained on new equipment

Fueling Safety

- Reverse pantograph automatic charging
- Won’t charge until connection conditions are satisfied

Locomotive Battery Safety

- Lithium Iron Phosphate batteries (LFP)
- Best for safety, energy storage, & life-cycle cost
Development & User Benefits

Air Quality Benefits

- Improves air for
  - 9,250 port employees
  - 1,300 residents
  - 5,400 residents in adjacent tracts
  - Other nearby businesses
  - Commuters

Greenhouse Gases (GHGs) Reductions

- Critical to achieve state, regional, county, city, & port climate goals
- Incorporates community feedback to employ low-carbon solutions
Development & User Benefits

Modernizes Rail Freight Operations with Zero-Emissions Technology & Infrastructure

Supports current freight economy

• 41 commercial freight customers
• 115 Tacoma rail workers
• Indirectly supports 1,290 regional rail jobs & 58,000 cargo-related jobs

Aligns with freight infrastructure plans

• Modernizes equipment
• Sustainable operations
• Supports state, regional, county, city, & ports freight goals

Establishes the region as a leader in innovative technology
Contact Information

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## Location Demographics

<table>
<thead>
<tr>
<th>Project Location</th>
<th>Adjacent Areas in the Airshed</th>
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<tbody>
<tr>
<td><strong>Census tract</strong></td>
<td><strong>940002</strong></td>
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<tr>
<td><strong>Population</strong></td>
<td><strong>4,281</strong></td>
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<tr>
<td>(2018 WA health disparities map)</td>
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<tr>
<td><strong>Percentage People of color</strong></td>
<td><strong>45%</strong></td>
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<tr>
<td>(Regional percentage: 33.5%)</td>
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<tr>
<td><strong>Above federal poverty threshold</strong></td>
<td><strong>11%</strong></td>
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<td>(Regional poverty rate: 10.8%)</td>
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<td><strong>Top 10% AQ focus area</strong></td>
<td><strong>Yes</strong></td>
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<tr>
<td><strong>Opportunity mapping score</strong></td>
<td><strong>Very Low</strong></td>
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<tr>
<td><strong>Displacement risk</strong></td>
<td><strong>Low</strong></td>
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