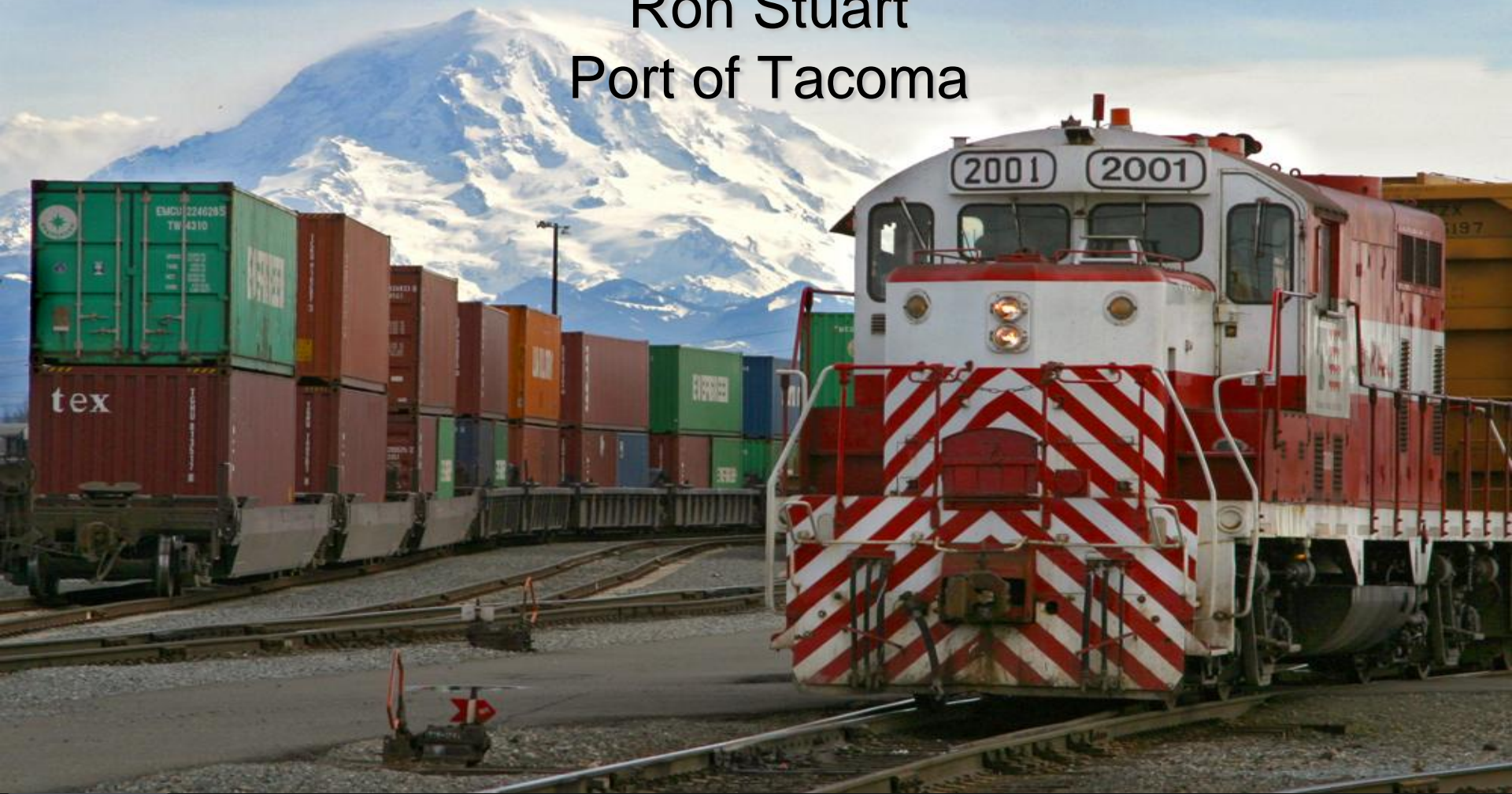




Rail and Re-Power



Ron Stuart
Port of Tacoma



North West Ports Clean Air Strategy – Rail Sector

- Repower Projects are a Result of:
 - The Ports Desire to Lead by Example
 - The NW Ports Clean Air Strategy
- Ports of Seattle, Tacoma, and Vancouver BC
- Strategy Contains Short and Long Term Goals
 - Implement operational efficiencies
 - Explore new and existing technologies

20 40 60 Kilometers

Tacoma/Seattle - Rail

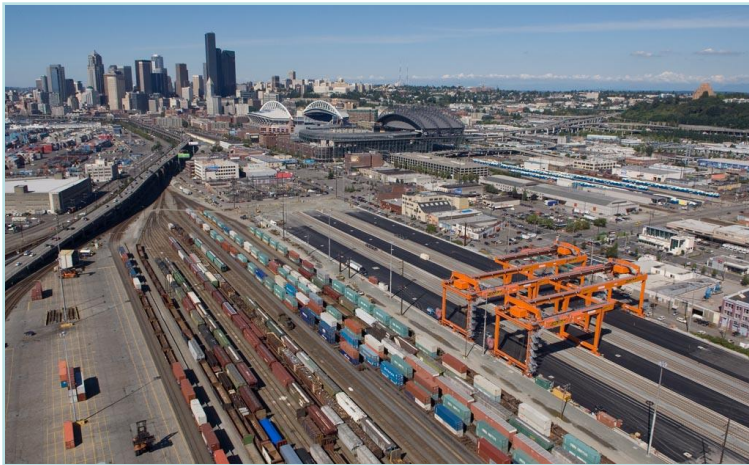
- Implementing Operational Efficiencies
 - Cleaner Engines and Fuels
 - Promote Ultra-Low Sulfur Diesel
 - Support EPA Locomotive Marine Diesel Engine Rule
 - Anti Idling and Efficiency
 - Promote Anti Idling Systems
 - Promote Smartway Participation at Rail Yards

A stronger economy.
A healthier environment.



SmartWay Transport Partners **DELIVER.**

Tacoma/Seattle - Rail



- Exploring New and Existing Technologies
 - Intermodal Yard Electric Gantry Cranes
 - GenSet Switching Locomotives
 - Emission Technology Retrofits
 - Port of Tacoma Emerging Technology Project

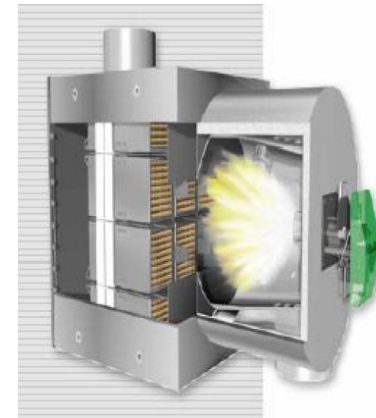
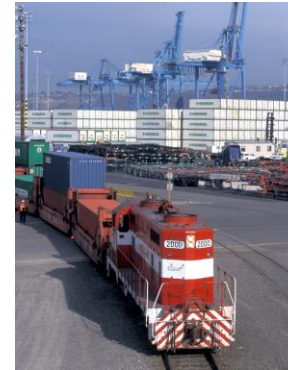
Emerging Technology Project

- Project Overview
 - Collaboration with Miratech Corporation Tacoma Rail, Puget Sound Clean Air Agency and Port of Tacoma
 - Combined DPF/SCR Retrofit on Locomotive Primary Power
 - EPA Emerging Technology Grant Eligible
 - Technology not Certified nor Verified by EPA or CARB



Emerging Technology Grant

- Partnership Between
 - A Technology Manufacturer
 - A Grant Applicant
- Emerging Technology Listing
 - Miratech Technology
 - Submit Listing Application
 - Intent to Verify Form
 - Verification Application
 - Respond to Information Requests
 - Submit Approved Test Plan
 - EPA or CARB Approved Plan
- Grant Application



Project Overview

- Repower and retrofit an existing old, inefficient non-tier or EPA Tier 1 locomotive to an ultra-low emission EPA Tier 4 locomotive
 - 1.) A State-of-the-Art After-Treatment System
 - 2.) An Anti-Idling Device
 - 3.) An Electronic Control System.
- Miratech's combined (DPF/SCR) to provide
 - 90% Particulate Reduction
 - 85% of NOx

The Patient

Tacoma Rail identified a suitable switching locomotive for this project.

This selected locomotive is typical of a workhorse model in its fleet

- Tacoma Rail Fleet ID: TMBL 2003
- Manufacture/Model: EMD GP 20
- Engine Model: 16-567-D2

- Year: 1981
- Axle: 4
- Horsepower: 2,000 hp
- Annual fuel use: 39,000 gallons



Thank You

