



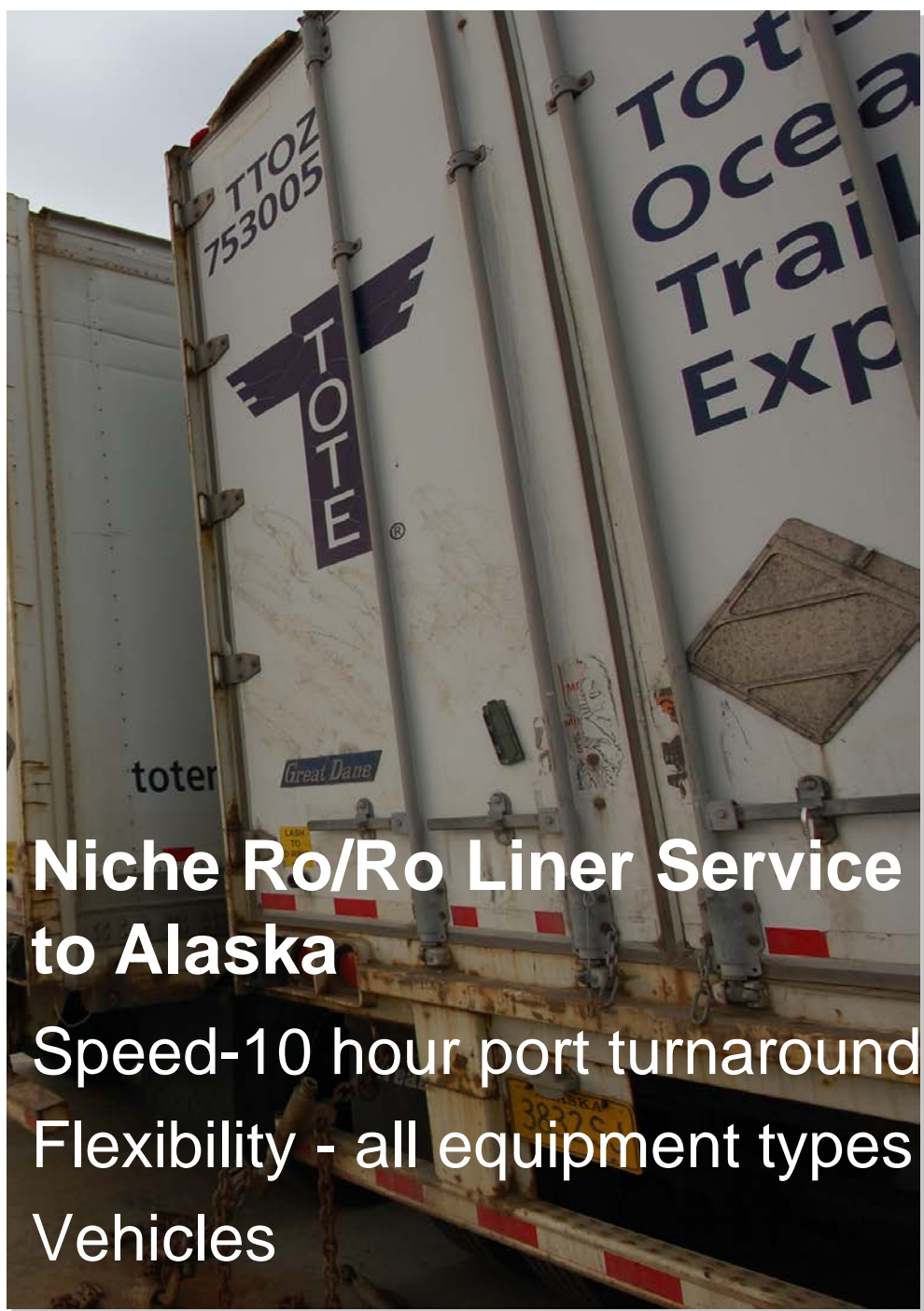
# TOTE LNG Conversion and Construction





# Saltchuk Resources, Inc.





# Niche Ro/Ro Liner Service to Alaska

Speed-10 hour port turnaround

Flexibility - all equipment types

Vehicles





# Dedicated Service

- Dedicated service between Washington and Alaska
- Weekly Round Trip







# The Problem

## The North American Emission Control Area (ECA)



 Coming Soon To Puerto Rico



# Possible Methods of Compliance

- Do nothing: Current pricing for compliant fuel is an increase of 40% over current fuel, more in 2015
- Install exhaust gas cleaning system: Scrubbers use existing fuel with added costs
- Convert to Natural Gas: Potentially lower fuel costs, meets current and future emissions requirements, cleanest of all options



# The Solution

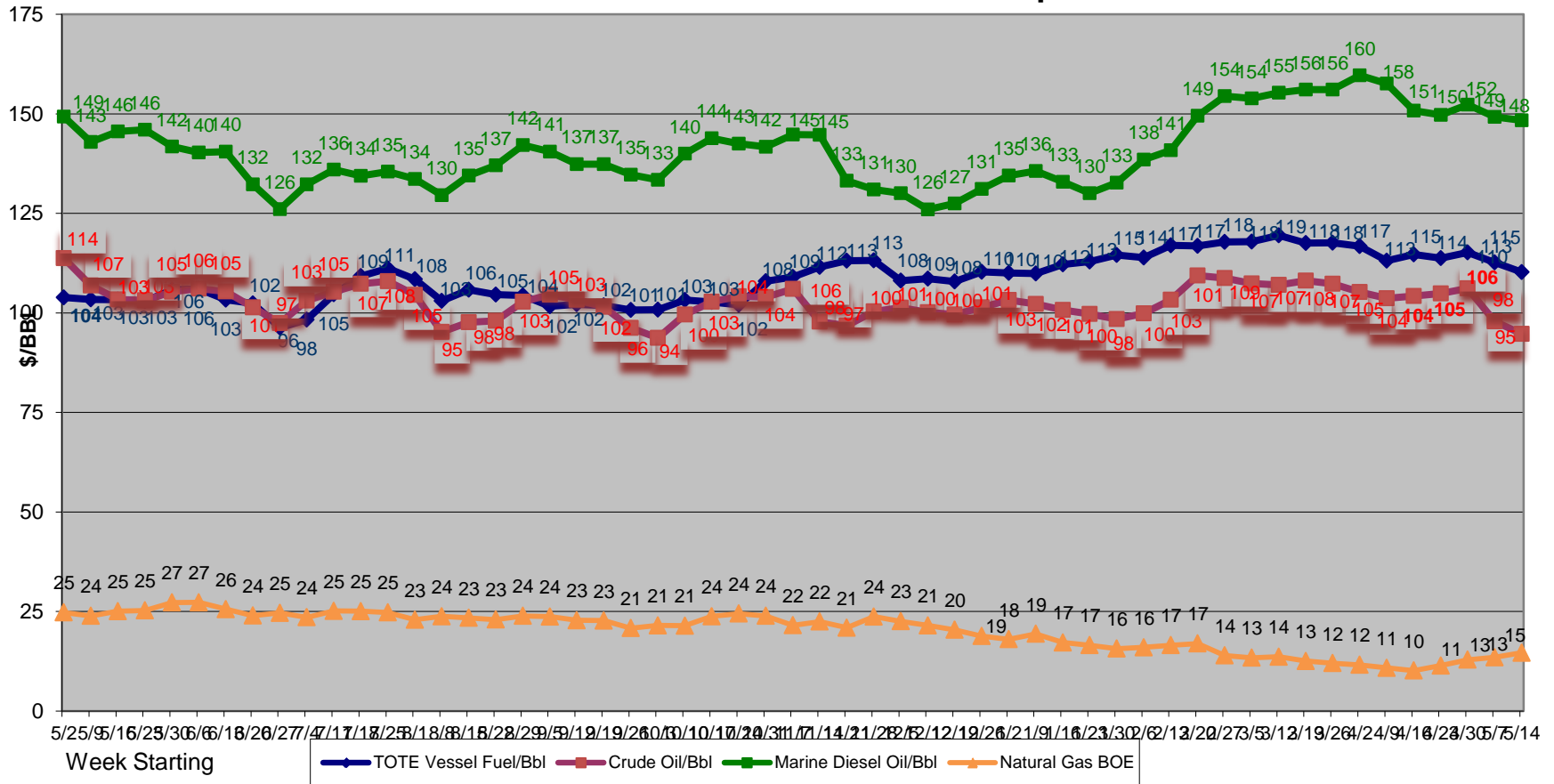
## Convert to LNG

- Secure, reliable fuel source
- Technically feasible with our vessels
- Cost saving over all other solutions
- Provides greater emissions benefits
- Provides greater community opportunities
- Began analysis of LNG in 2010



# Fuel Cost Comparison

2011 - 2012 Fuel Cost Comparison - \$/Bbl





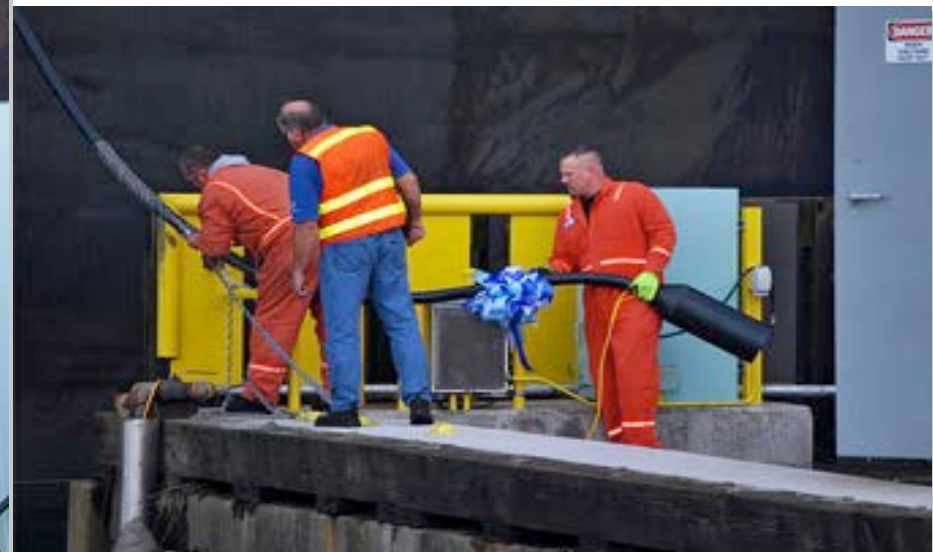
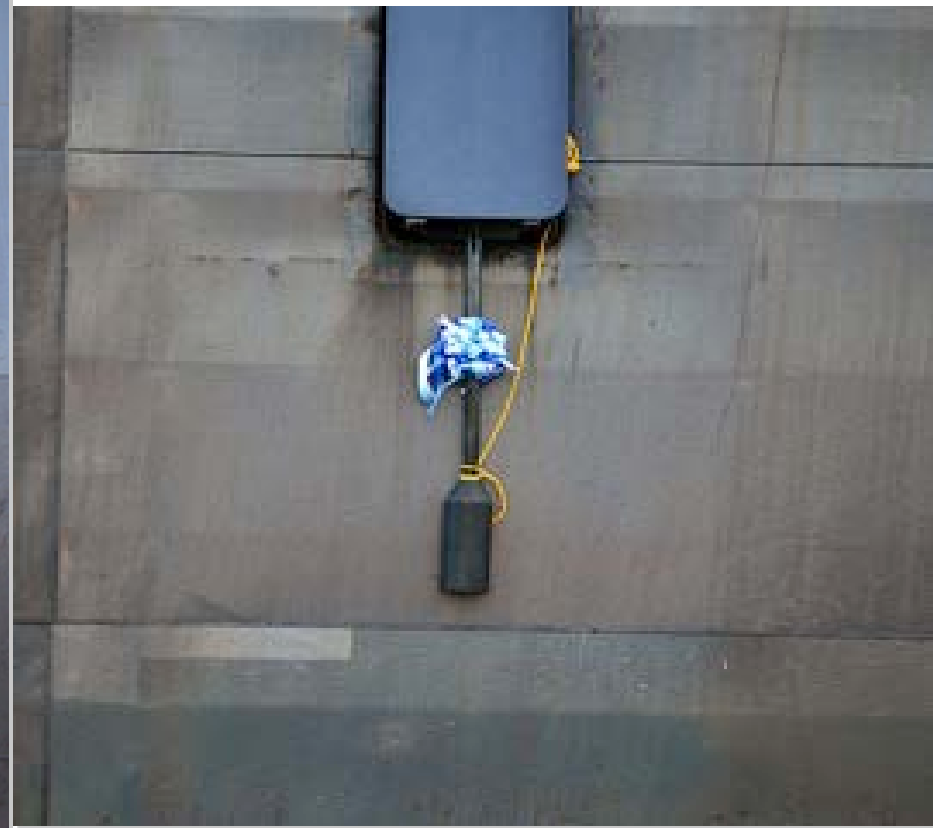


# EPA & USCG Partnership

- Aug. 2012 - limited waiver from North American ECA during conversion to LNG
- First permit issued under Annex VI, Reg. 3
- Required completion Sept. 2016



# Shorepower





# Orca Class Inboard Profile





# The Conversion Project

- Procure a supply of LNG
- Convert the vessel to operate on LNG
- Receive regulatory approval to fuel and operate on LNG
- Improve public perception of LNG



# LNG



The Future of Domestic Shipping



## Low Cost Energy

- LNG costs 41% less than IFO-380

## Stable Pricing

- Large fixed capital costs
- Low feed-stock costs
- Domestic sourcing reduces volatility from geopolitical impacts

# Benefits of LNG

## Clean

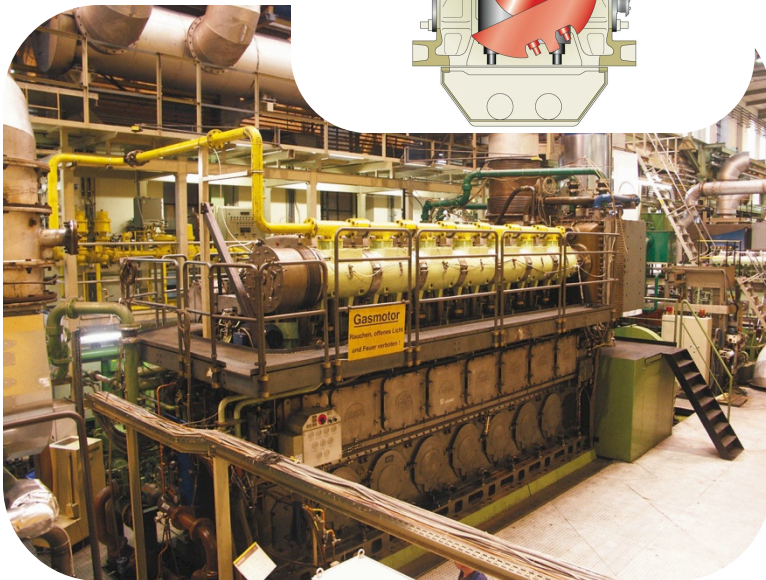
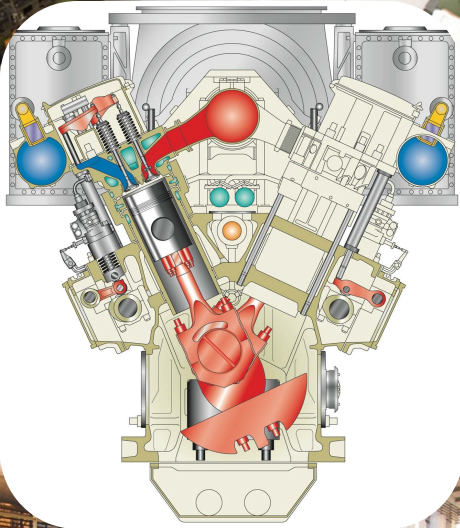
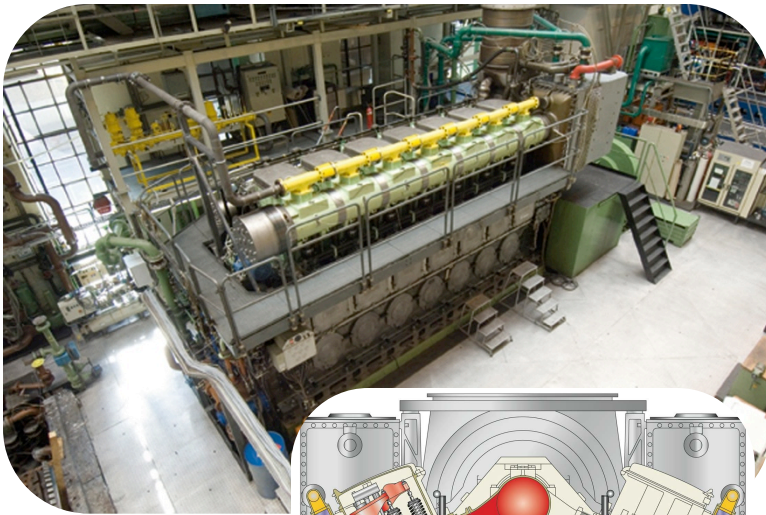
- Sulfur Oxide (SOx) emissions are 95% lower than ECA limits
- Reduces SOx, Particulate Matter (PM) and Nitrous Oxide (NOx) by almost 100%

## Safe

- Zero fatalities over the 40-year life of the industry

# Project Overview

- First conversion in the world of vessels of this type
- Eight MAN engines will be converted to dual fuel diesel – LNG propulsion
- Exchange four auxiliary engines for four dual fuel engines
- 4 year timeline
- Estimated \$80+ million budget for vessel conversion

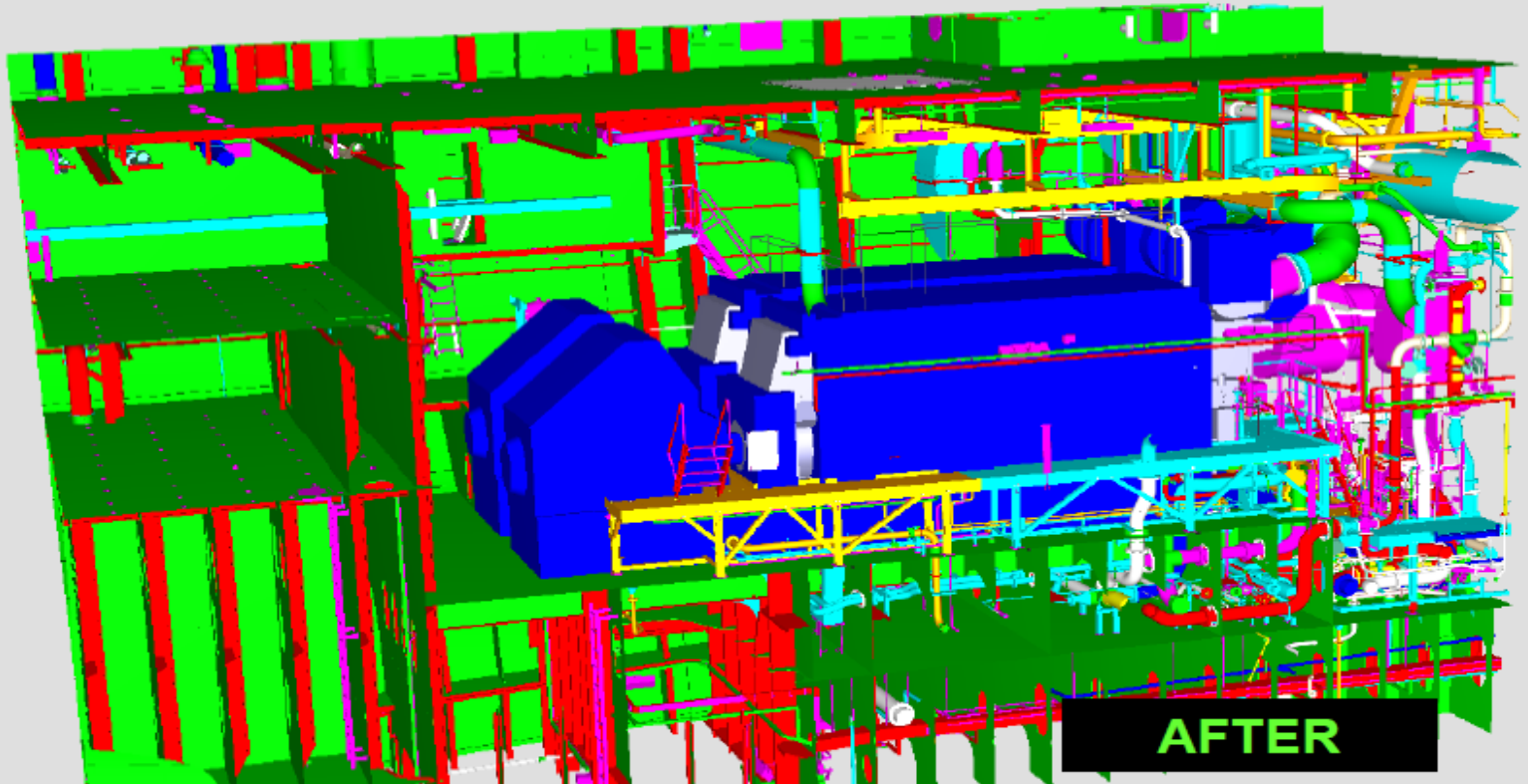




# New Auxiliary Diesel Generators

## New Auxiliary Diesel Configuration

MAN 9L Engine in Modified Compartment (AFTER)





# Phased Project

35-40% of work will be conducted underway, limiting the out of service time to regular dry docking schedule

Structural components built during regulatory dry docking in Q1 2014

Use of regularly scheduled single-sailing weeks

LNG available for in-port use in Q2/3 2014





# Shore Side Capacity

- Project helps establish long-term supplies of LNG for use by other sectors of the transportation industry in the Puget Sound







# Gas/LNG Supply

## **Puget Sound Energy is preferred provider**

- Local company with good reputation
- Cost of capital and returns are based on utility model
- LNG pricing model is built up from cost, not down from the price of diesel



# Breaking Barriers

- Environmental benefits will extend throughout the region
- Break through supply barriers that have constrained the growth of LNG in the transportation industries





# New Vessel Project





# New Vessel Project

- Replace existing steam vessels with new motor ships
- First container ships using LNG as fuel, not the first cargo ships fueled by LNG
- First application of slow speed, diesel cycle dual fuel propulsion engine
- Providing all of the benefits previously mentioned



# New Vessel Design







# Project Drivers

- Need to replace existing vessels
- Emission control area coming to Puerto Rico, eventually to the entire Caribbean
- 2020 world wide fuel sulfur limits for vessels of .5% (1/2 percent)
- 2016 tier III engine requirements limiting NOX for large displacement marine engines



# Thank You

## Questions?

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