

Washington State Ferries Pursuit of Liquefied Natural Gas

Lynn Peterson
Secretary

Cam Gilmour
Deputy Secretary

Lynne Griffith
Assistant Secretary of Transportation, Ferries Division

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Introduction

WSF has conducted nearly 4 years of analysis, evaluation and detailed studies on (Liquefied Natural Gas) LNG.

- 2012 – Legislature appropriated funds for a design-build RFP to convert the Issaquah class fleet to LNG.
- 2013 – Procurement process resulted in non-responsive bids.
- 2014 – Legislature appropriated funds for new design-build procurement.



Current Status

- June 2014 – WSF submits version two of Waterways Suitability Assessment (WSA) to U.S. Coast Guard for approval
- January 12, 2015 – 60-day federal public comment period on WSA concluded.
- RFP is ready to be released pending U.S. Coast Guard approval of the WSA.



LNG Opportunities – Cost

- WSF burns more than 18 million gallons of fuel annually
- Fuel represents 23 percent of FY13-15 operating budget (compared to 11 percent in FY00-01)
- Moving from Ultra-low Sulfur Diesel to LNG could save about \$1 per gallon at today's prices.



Opportunities – Pollutant Reduction

- WSF is the largest single source of marine carbon emissions in Washington state government.
- Significant emissions reductions could be achieved in:
 - Particulate matter
 - Nitrous oxide
 - Carbon dioxide
 - Sulfur dioxide



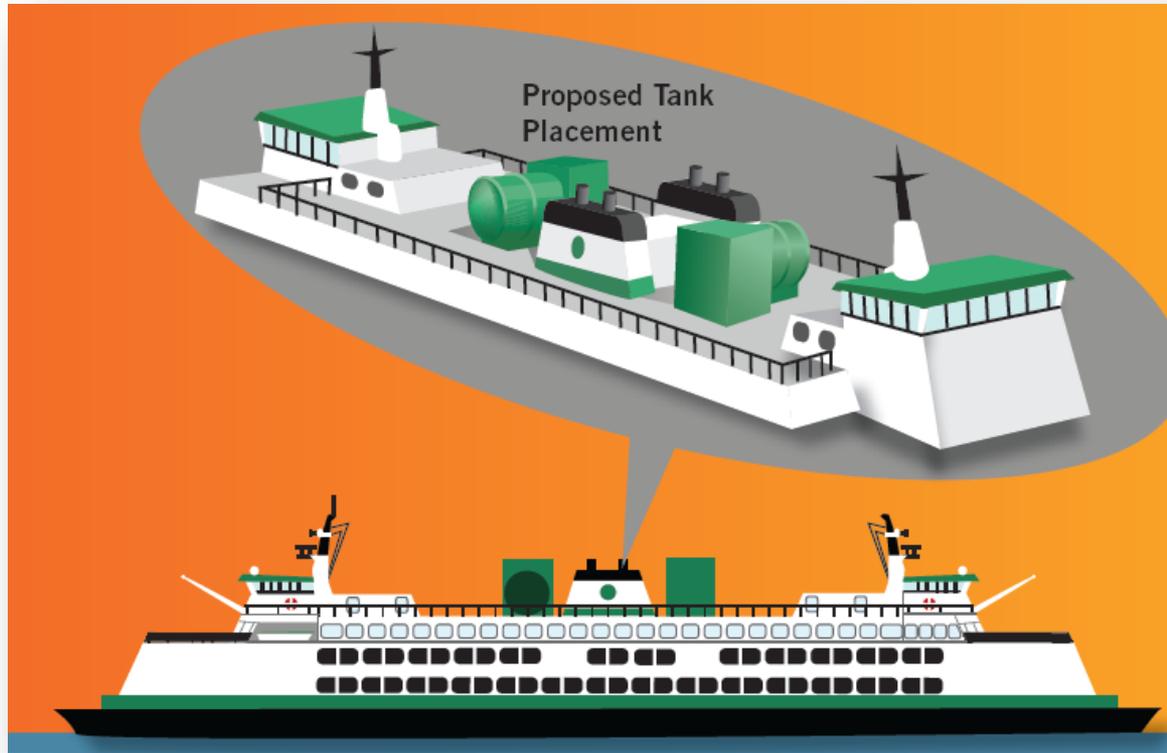
Issaquah Class LNG Conversion (per vessel)

Source: Puget Sound Maritime Air Emissions Inventory and Starcrest Consulting, 2012

Pollutant	Engine Type	Baseline	LNG	Reduction Tons	Reduction %
		2011 PSEI Tons	Conversion Tons		
NOX	Propulsion	78	27	52	66%
	All equipment	95	44	52	54%
PM10	Propulsion	5.00	0.50	4.33	87%
	All Equipment	5.50	1.00	4.33	79%
DPM	Propulsion	5.00	0.00	5.00	100%
	All Equipment	5.50	0.50	5.00	91%
SO2	Propulsion	0.05	0.00	0.05	100%
	All equipment	0.07	0.02	0.05	75%
CO2	Propulsion	5510	4297	1212	22%
	All Equipment	6754	5542	1212	18%

Conversion Proposal

- Retrofit 6 Issaquah Class vessels to LNG fuel:
- Phase one: Retrofit 1 ferry as a prototype for proof of concept
- Phase two: Exercise options to retrofit remaining 5 vessels



- Each tank is 100m³
- Approx. total LNG 50,000 gal

Next steps

- Awaiting approval of the WSA from U.S. Coast Guard (Letter of Recommendation)
- Issue RFP for conversion of one Issaquah vessel
- Contract award dependent upon public funding or private sector financing
- WSF is committed to LNG as a transitional fuel to save money and reduce emissions
- Continue to research alternative non-petroleum maritime propulsion fuels (hybrid, electric, solar, hydrogen)
- Evaluate LNG for new-build strategy
- Evaluate Dual-Fuel Strategy to optimize fuel savings



Questions?

For more information please contact:

Assistant Secretary Lynne Griffith

206-515-3401

GriffiL@wsdot.wa.gov

or

<http://www.wsdot.wa.gov/ferries/>

Issaquah Class – Six vessels



- Length: 328' (99.97m)
- Beam: 78' (23.7 m)
- Draft 16' 6" (5.0 m)
- Displacement: 3310 LT

- Horsepower: 5,000 HP
3,730 kW
- Service Speed: 16 knots
- Built: 1979-1982

