

Washington State Ferries LNG Fuel Application Seminars August 31, 2011



Background

- More than 22 million riders per year
- More than 10 million vehicles carried per year
- Fleet of 22 auto-passenger ferries, 34-cars to 202-cars
- Operates 20 terminals on 10 routes
- 450 sailings (900 arrivals and departures) per day



Background

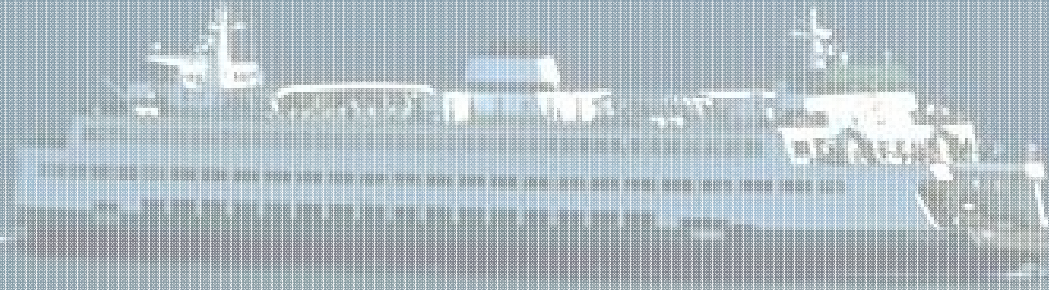
WSF wears many hats:

- Marine highway
- Transit agency
- Link in region's multimodal connections
- Mover of freight and goods
- Tourist attraction



WSF is a world leader

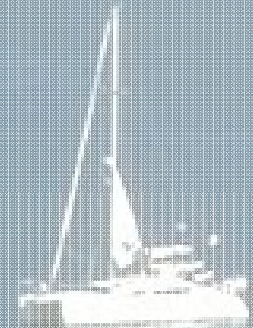
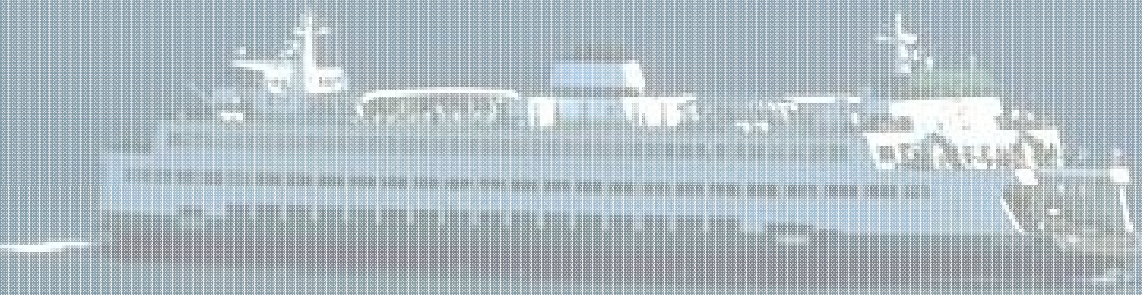
- Largest system in the United States
- Fourth largest carrier of passengers in the world
- Largest carrier of vehicles in the world



Financial picture

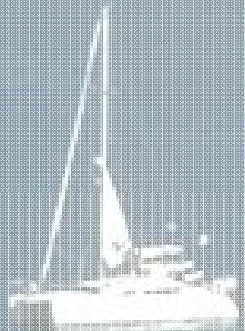
Total two-year FY 2011-13 budget \$751.1 million

- \$467.8 million for operations and maintenance
- \$283.3 million for capital

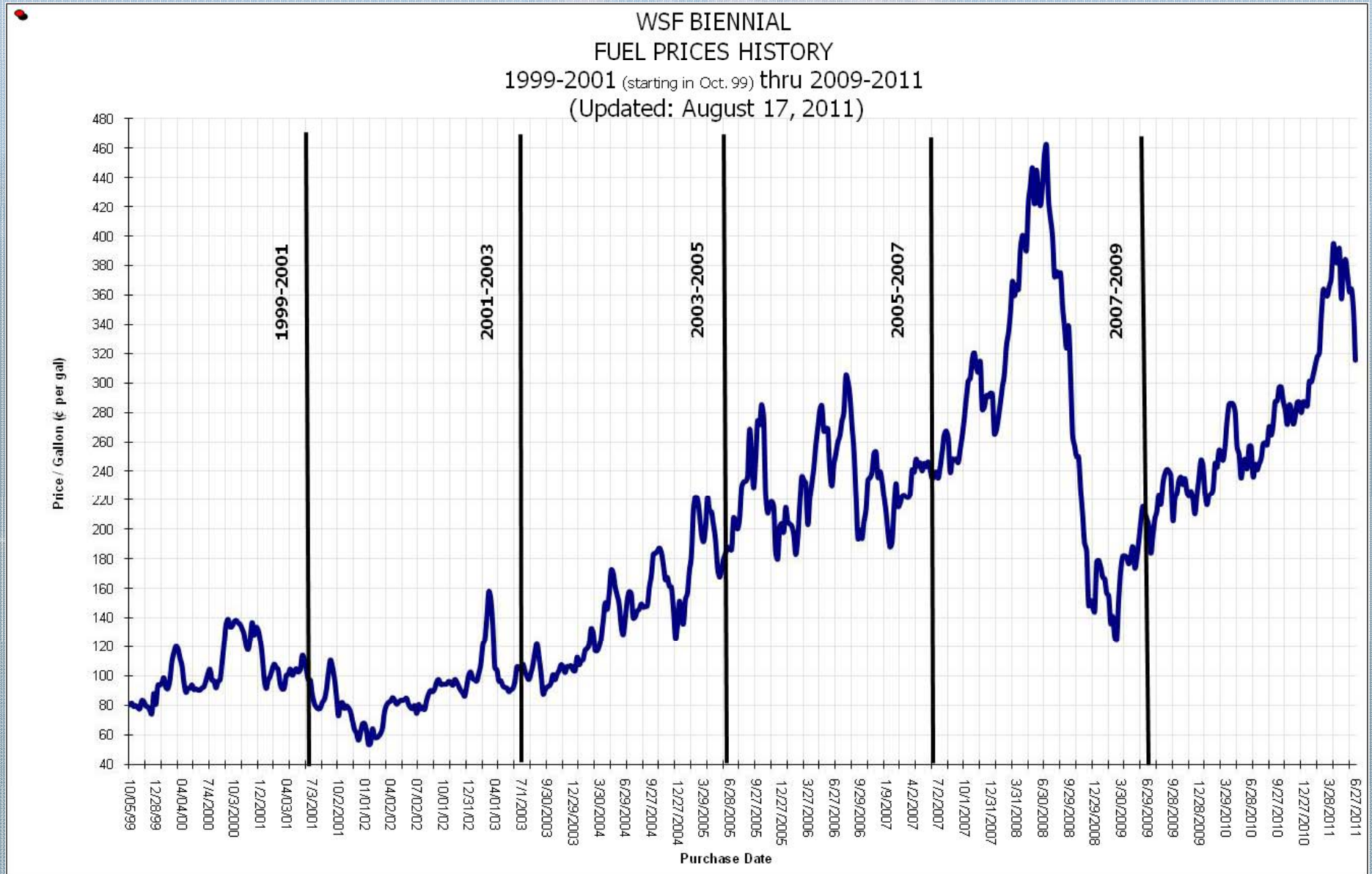


Fuel expenditures

- WSF burns over 17 million gallons of fuel each year.
- Fuel is the fastest growing operating expense.
- WSF's fuel budget is \$51.7 million more than it was 12 years ago



Fuel expenditures



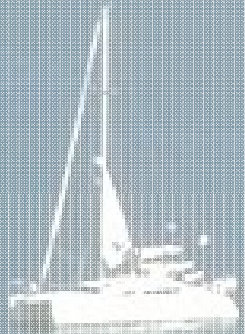
Reducing fuel consumption

- Slowing vessels
- Hybrid propulsion system
- Optimizing engines
- Reducing RPMs at dock



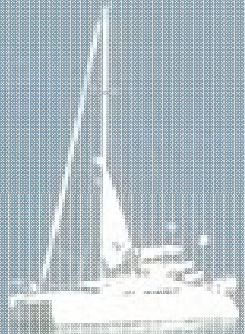
Why is WSF exploring LNG?

- To save money -- the delivered price of LNG to the vessel by tank truck has been quoted as \$1.05 to \$1.32 per gallon. As of Aug.15, the current price of ultra low sulfur diesel is \$3.37 per gallon. The fuel cost savings is approximately 40-50% at today's pricing.



Why is WSF exploring LNG?

- To reduce emissions -- the emissions reductions from a Tier 2 diesel propulsion engine to a natural gas engine are:
 - NOx – At least 90% reduction
 - PM – Approximately 100% reduction
 - SOx – Approximately 100% reduction
 - CO2 – Approximately 20% reduction



What is WSF proposing?

WSF has proposed to the U.S. Coast Guard to retrofit the propulsion system with new engines on the six, Issaquah Class vessels and re-design the new, 144-car ferry now in its final stages of detailed design development.



What is WSF proposing?



Return on investment

Retrofit of six Issaquah Class Vessels	\$65,000,000
Estimated Life	30 years
Annual fuel savings	\$9,771,400
Payback period	7 years
Total fuel savings, 30 years	\$293,140,000
Present value savings @ 5%	\$75,900,000

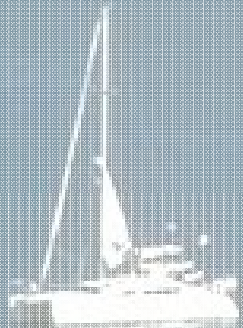
Challenges - availability

Natural gas is a widely available fuel across North America. However, LNG is in limited use in Washington State today.



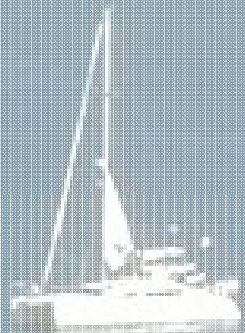
Challenges - regulatory

Since no LNG fueled passenger vessels have yet been built in the United States (other than small retrofit pilot projects), the U.S. Coast Guard does not have an established path for regulatory review.



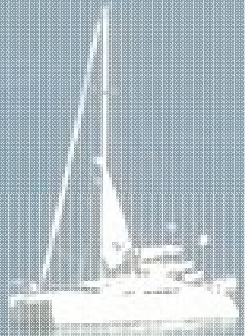
Challenges – public concern

There is a public perception that the use of natural gas may be unsafe.



Next steps – U.S. Coast Guard

- A regulatory review of the concept has been discussed with the U.S. Coast Guard Marine Safety Center in Washington.
- The U.S. Coast Guard has agreed to provide a design review of our preliminary arrangement with WSF's ultimate goal of obtaining design approval for both the 144 Car Ferry as well as the conversion of the Issaquah Class Boats.
- Locally developed operational procedures need to be reviewed by U.S. Coast Guard Sector Puget Sound.



Next steps - other

- Legislative study – The Washington State Joint Transportation Committee is studying the use of LNG. Report to be available for 2012 legislative session.
- Public outreach - Given the public perception of LNG, WSF will need to educate customers and communities on the benefits of the new fuel
- Industry – Improved infrastructure is needed, which involves a local and reliable source of LNG within 25 miles of Puget Sound.

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