







## Washington State Ferries: Vessel Construction Costs

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Larisa Benson, Director of Performance Audit  
Susan Hoffman, Principal Performance Auditor  
Carolyn Cato, Audit Lead



### Today's presentation

-  Why we did this audit
-  Overview/What we did
-  What we found
-  The Recommendations



## ? Why we audited WSF's Vessel Construction Program



## Today's presentation


? Why we did this audit

**i** Overview/What we did

🔍 What we found




💡 The Recommendations






## What we did

### Our audit questions:


-  How do construction costs for WSF's vessels compare to other purchasers?
-  What factors affect construction cost and total construction spending?
-  Does WSF follow leading practices to design and construct its ferries?



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## What we found

- It costs more to build a ferry when WSF is the purchaser.
- WSF has learned lessons and improved since building the Jumbo Mark II class.
- Vessel construction costs could be further reduced through better use of leading practices.
- Two regulatory requirements limit competition and increase construction costs.
  - Build in Washington laws
  - Apprenticeship Act requirements



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## WSF Vessels included in our analysis

Class – Passenger/vehicle capacity	Vessel name, year built
Jumbo Mark II – 2,500 / 202	<i>Tacoma, 1997</i>
	<i>Wenatchee, 1998</i>
	<i>Puyallup, 1999</i>
Kwa-di Tabil – 750 / 64	<i>Chetzemoka, 2010</i>
	<i>Salish, 2011</i>
	<i>Kennewick, 2012</i>



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## Ferry purchasers we visited


**These purchasers provided data on the 39 ferries in our analysis.**

Alaska Marine Highway System	Staten Island Ferries
North Carolina Department of Transportation	Texas Department of Transportation
Pierce County Public Works and Utilities	Woods Hole, Martha's Vineyard & Nantucket Steamship Authority
San Francisco Water Emergency Transportation Authority	Washington State Ferries

We also visited British Columbia Ferry Services. While they shared information on their new ferry construction program, we did not include their vessels in our analysis.




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 **What we did**

**Our audit methodology included:**

- Cost analysis
- Assessment of regulatory environment
- Leading practices
- Case studies
- Technical panel

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**Understanding vessel construction costs**

- What do ferries cost?
- How do WSF's ferry construction costs compare with other purchasers?
- What are the significant factors affecting construction costs?


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**Comparing vessel construction costs**

**The Island Home – Total cost \$48 million**  
(2011 dollars)



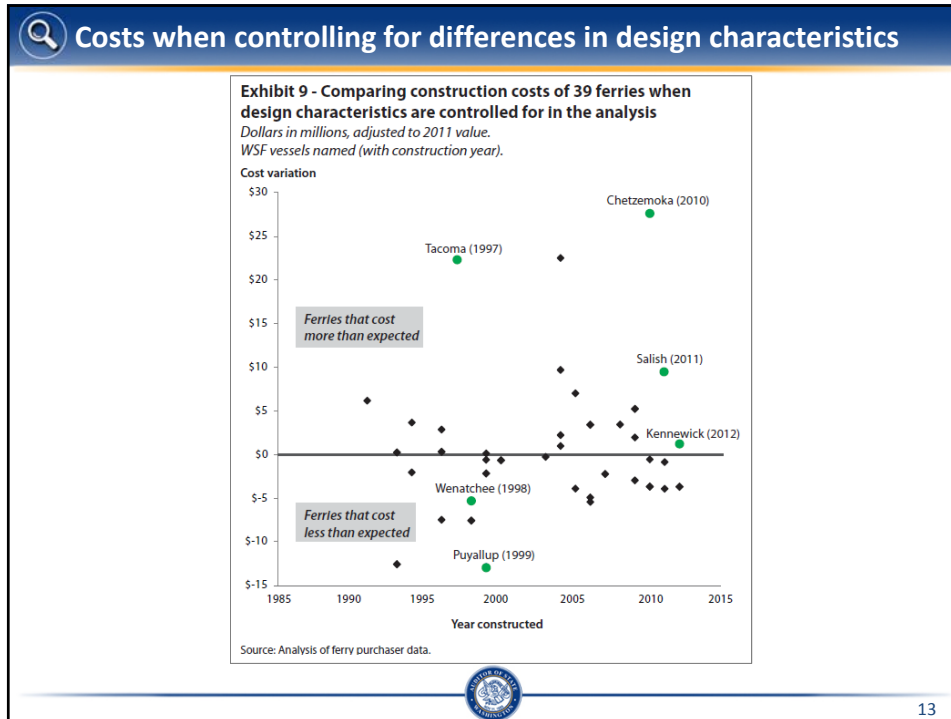
**The Chetzemoka – Total cost \$87 million**  
(2011 dollars)



<b>Chetzemoka</b>	<b>2010 dollars (unadjusted)</b>	<b>2011 dollars (adjusted)</b>
Final shipyard contract (total paid to shipyard)	\$76,374,673	\$79,676,538
Total cost *	\$83,641,508	\$87,257,536

\*Includes \$3.1 million for propulsion system costs.

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### What factors impact total construction costs?

- Use of vessel design and construction contracting leading practices
- Regulatory environment

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**Leading practices**

We assessed WSF's use of the 15 leading practices we identified.

*(Please refer to the handout or page 10 in the report.)*

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**Leading practices**

**Four** additional leading practices – if implemented together - have the greatest potential to reduce costs:

- Use and adhere to a fixed price contract
- Complete vessel design before beginning construction.
- Use an independent owner's representative.
- Place ALL responsibility for project quality and delivery on the shipyard.

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## Leading practices

**Three** leading practices could be strengthened:

- Improve “lessons learned” activities by completing them in a timely manner, using performance metrics, and collecting information independently from all stakeholders.
- Do not include large contingency amounts in project budgets because they undermine the integrity of fixed price contracts.
- Effectively implement design-build contracting by only using one contract to cover vessel design and construction.



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## British Columbia Ferry Services

**What makes BC Ferries successful?**

- Established vessel replacement criteria.
- Adopted a ‘functional specification’ approach to vessel design.
- Opened procurements to shipyards outside BC.
- Used fixed price contracts.
- Required shipyard to assume all responsibility for design and construction of new vessel.
- Made changes to construction contracts by using:
  - Design-build contracts
  - Price de-escalation clauses
  - Performance guarantees
  - Warranties
  - Right of refusal on final delivery



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## Regulatory environment limits competition

- **Build in Washington laws**

Limit WSF to building its ferries in Washington shipyards.

- **Apprenticeship Act requirements**

Since 2007, further limits WSF to Washington shipyards with a state-approved apprenticeship program.

These requirements meant WSF received only one bid for the last two ferry classes built...



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## Economic impact of Build in Washington

To estimate the economic impact of Build in Washington, we used the following assumptions:

- Build two ferries
- Costing \$75 million each
- During fiscal years 2013 and 2014.

The results:

- An average of 322 jobs and \$28 million in wages **in the shipbuilding industry** in each fiscal year.
- An average of 1,335 jobs and \$90 million in wages **across all sectors of the economy** in each fiscal year.

*Our thanks to OFM for using their Input-Output model to produce these estimates for our audit.*



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 **Recommendations**




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## Recommendations to WSF

We recommend WSF continue to improve its vessel construction program by determining whether adopting the leading practices and suggestions for improvement provided would result in program improvements and/or cost savings, and implementing those with the greatest potential to provide benefit to the program.

- Fully adhering to fixed price contracts for ferry design and construction.
- Completing vessel design prior to beginning construction.
- Using an independent owner's representative.
- Shifting all responsibility for project quality and delivery to the shipyard.
- Timely completion and effective use of "lessons learned."
- Strengthen financial management of construction contracts.
- Improve use of design-build contracting method.



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## Recommendations to the Legislature

We recommend that the Legislature address the regulatory barriers that limit competition on WSF vessel procurements by:

- When insufficient interest or higher than expected bids are received from Washington shipyards, allowing WSF to use alternative strategies to encourage competition for its ferry procurements. One possible strategy would be to allow WSF to invite bids from out-of-state shipyards in these instances.
- Undertake a study of the Apprenticeship Act to identify and resolve barriers for prospective applicants, in particular shipyards with established training programs.



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## Contacts

### Larisa Benson

Director of Performance Audit  
(360) 725-9720

[Larisa.Benson@sao.wa.gov](mailto:Larisa.Benson@sao.wa.gov)

### Susan Hoffman

Principal Performance Auditor  
(360) 725-9719

[Susan.Hoffman@sao.wa.gov](mailto:Susan.Hoffman@sao.wa.gov)

Website: [www.sao.wa.gov](http://www.sao.wa.gov)

Twitter: [www.twitter.com/WAStateAuditor](https://twitter.com/WAStateAuditor)



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