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## Part 4: letters from agencies, organizations, and other comments



May 14, 2018

Washington State Ferries  
Attention Ray Deardorf  
2901 Third Ave. Suite 500  
Seattle, WA 98121

### Comments for Washington State Ferries on Long Range Plans

Whidbey SeaTac Shuttle travels across the Mukilteo – Clinton ferry route a minimum of 18 times a day, 7 days a week, and plans to increase our daily ridership later this year. We will occasionally cross using the Coupeville – Port Townsend, Edmonds- Kingston and out to the San Juan Islands.

Before I discuss the long range plans, I would like to make two comments: first regarding the low tide issue with the current Mukilteo transfer span, There are multiple times a year the tides force us to limit the size of vehicles or cancel trips due to the high center “hump” that is present at low tide. I would like to express our hope that engineers have taken this issue in to account with the new dock and transfer span at Mukilteo.

Secondly I would like to request that walk-on’s to the ferry at Mukilteo-Clinton be limited to boarding after the vehicles load. With walk-on boarding taking place before and after vehicles load it adds to the delays in sailing. This simple procedural change would yield great benefits. I would like to express my desire to see a much early completion date for overhead passenger loading bridge at Clinton to coincide with the opening of the new Mukilteo ferry terminal. The sooner this bridge is integrated into the system the quicker the ferry boarding process will be expedited.

Our comments for the long range plan are:

1. For us the biggest priority for any route would be to have enough reserve ferries in the fleet to maintain the scheduled service and we fully support your efforts to increase the fleet size. However, with more boats come the need for adequate crewing; let’s not be held hostage again by union contrived staffing shortfalls resulting in sailing cancelations.
2. Our second priority would be to operate the ferries on-time, on schedule. Our comments to aid in this factor for the Mukilteo – Clinton route would be use both Clinton transfer spans, remove the Olympic class boats returning to the Issaquah class boats. I would supplement the peak times and evenings with a smaller boat that would be faster to load and operate. With a clean slate under the 18-01 executive order for zero emissions you could design the all-electric, single car deck boat for this.

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I would like to add that we very seldom see more than a quarter of the passenger cabin in use and many riders who drive-on never leave their car during the 15 minute crossing. We don't need Olympic class boats on this route. As you are aware the crossing times on the Mukilteo – Clinton route were thrown off when the Tokitae came on line and the time adjustment trials implemented last year did nothing but make matters worse.

3. Long Range planning considerations would be to see crossings 24 hours a day on the Mukilteo – Clinton route. If you had the 2:00 am departure from Mukilteo run year round and ran a 3:30 am sailing from Clinton you would have a daily customer on those crossings. We know this would be utilized from when you ran overnight sailings back in 2015 for the week the Deception Pass Bridge was closed overnight and your staff was surprised by the vehicle traffic. Additional justification can be found in your data about forecast ridership and population growth. There are no plans or thoughts about replacing the Deception Pass Bridge according state officials and legislators when we asked this question last year, as population grows this will become a bottle neck that will force an increase in ridership on the ferries.
4. I do take a little issue with your Level of Service measurements that were presented at the open house. A full vehicle deck should not be the only consideration in your measurements, you should also include the wait times and vehicle traffic back-up. With the Mukilteo – Clinton route travelers do have the option to drive around to access the island and you do lose customers when the wait time get over an hour. It is also not reasonable planning to permit three and four boat wait times for customers to be deemed acceptable.
5. Finally we strongly belief there should be a second transfer span design in the books for Mukilteo so if funding became available it can be implemented with the least possible delay.



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To view the current LRP go here: <<https://wsflongrangeplan.com/>>.  
To comment on it go to the comments page here: <<https://wsflongrangeplan.com/comment/>>  
or send them directly to WSF via the e-mail here: <[WSFLongRangePlan@WSDOT.wa.gov](mailto:WSFLongRangePlan@WSDOT.wa.gov)>.  
Additionally, they have a survey here: <<http://sgiz.mobi/s3/WSF-Long-Range-Plan-Survey>>

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**Doug Rauh**

**Bainbridge Island, WA**

**comments on Washington State Ferries (WSF) 2040 Long Range Plan** as of 2018 05 23.

WSF needs to plan for conversion of the current fleet of ferries to lighter, smaller ferries using less polluting propulsion systems, lower operating cost, lower Life-Cycle Cost ferries and increase utilization of technology.

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### **Ferries Classes:**

One class for routes with **large walk-on** demand and little capacity on the land side transportation system for vehicles. The other class would be for routes with smaller walk-on demand and **large requirement for vehicles capacity**. These routes have little land side restriction for additional vehicle demand. The ferry and terminal design should go back to basics of just moving people and vehicles across salt water. WSF primary goal should be transportation and everything else is optional.

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### **Routes:**

The (Bainbridge to Seattle) and (Bremerton to Seattle) routes are **vehicle limited** at the Seattle terminal. Both of these routes should have three smaller ferries with small vehicle decks and extra walk-on capacity. All other routes need larger vehicle space and smaller walk-on capacity. The Bainbridge to Seattle and the Bremerton to Seattle should have 3+ smaller ferries. The more frequent service would reduce the ferry traffic impact on the land side infrastructure like SR-305. This would also align the route capacity to the highway capacity and/or local policy on congestion.

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### **Ferry Weight:**

Any new WSF ferry should have a weight similar to the Norwegian "**Ampere**" ferry. Aluminum and **light weight material** should be used in construction in order to reduce the energy needed to move the ferry between terminals.

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### **Ferry Propulsion Energy Type:**

The current **Diesel** option creates a large amount of **Green House Gas**. The other available options are **Electric, LNG and Hybrid-Electric**. **Norway and Finland** have moved toward **Electric** because they have hydroelectric power similar to Washington State.

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### **Technology:**

**Autonomous** software for ferry routes, auto-**docking** software, automatic **mooring** and auto **electrical connection**.

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### **Ferry Propulsion System:**

Current WSF ferries do not use azimuth drive systems. Ferries using **azimuth propulsion** have better handling in current, wind and much **shorter turning radius**. During collision avoidance an azimuth system could turn the ferry faster.

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### **Ferry Maintenance:**

An aluminum hull does not require painting like steel and is lighter.

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### **Ferry Operational Life:**

The current design life of a ferry is **60 years WSF** policy.

The long life requires a mid-life upgrade.

Mid-life upgrades are expensive and takes the ferry out of service.

A shorter life that does not require a mid-life upgrade would be in line with what other ferry systems are doing.

Replacement ferry could be built while the ferry to be replaced continued service.

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### **Ferry Life Cycle Cost:**

The **Initial Cost** of a ferry has resulted in ferries that have **higher fuel costs** thus **higher Life Cycle Cost**.

**Higher operating costs** result in **higher fares** due to high fare-box recovery rate which reduces demand for the service.

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### **Ferry Price:**

Past ferry prices have been 2+ times the price paid by other ferry systems for similar boats.

**Construction and Financing Costs** need to be reduced.

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### **Ferry Fares:**

Ferry **deck space** needs to be charged by **actual space used**.

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### **Ferry Financial Model:**

Current WSF financial model is based on shifting a larger percentage of fare increases from people to vehicles.

**Will this vehicle biased revenue model be sustainable as autonomous vehicles replace privately owned vehicles?**

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### **Ferry System Demographics:**

As **Baby Boomer ferry users age out** of the work force will peak demand for service shift to mid-day?

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### **Terminal Automation:**

The **Vehicle Ticketing process from highway to holding** needs more automation.

All passenger **turnstiles need to accommodate commuters with computer roller cases** and travelers with luggage.

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### **Terminal to Ferry Loading:**

Needs to be **more efficient** and **safer** for both passengers and vehicles.

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### **Online Ticket sales**

**Seniors are not allowed to buy discounted senior ticket online per WSF policy.**

WSF ticket process should validate the **right to use** a particular ticket **at time of use NOT** at the **time of purchase**.

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## Everything below this point is Reference Material

In the same order as the comments points above

Comment Points are in bold and gray background

Doug Rauh's comments or emphasis in references are in yellow and/or bold.

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### Ferries Classes:

One class for routes with **large walk-on** demand and little capacity on the land side transportation system for vehicles.

The other class would be for routes with smaller walk-on demand and **large requirement for vehicles capacity**.

These routes have little land side restriction for additional vehicle demand.

The ferry and terminal design should go back to basics of just moving people and vehicles across salt water.

WSF primary goal should be transportation and everything else is optional.

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Both the **Bainbridge to Seattle** and **Bremerton to Seattle** would function more efficiently with three **smaller** ferries on each route.

These ferries should carry fewer vehicles (60-120?) and (1,000-2,000?) passengers.

Assume slower crossing speed with more frequent sailings.

Mid-day each ferries could skip a run and be fully recharged.

This would reduce large pulse of vehicles into the Seattle street system and its related congestion.

All other routes would use a ferry with a large vehicle deck and a smaller passenger space in order to match demand while keeping the ferry light and the crew size small.

The aluminum hull design for both ferries could be the same or similar.

<https://hiveminer.com/Tags/electricferry,ferry> pictures of Norway's Ampere all electric ferry



<https://www.siemens.com/innovation/en/home/pictures-of-the-future/mobility-and-motors/electromobility-electric-ferries.html>

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### Routes:

The (Bainbridge to Seattle) and (Bremerton to Seattle) routes are **vehicle limited** at the Seattle terminal. Both of these routes should have three smaller ferries with small vehicle decks and extra walk-on capacity. All other routes need larger vehicle space and smaller walk-on capacity. The Bainbridge to Seattle and the Bremerton to Seattle should have **3+** smaller ferries. The more frequent service would reduce the ferry traffic impact on the land side infrastructure like SR-305. This would also align the route capacity to the highway capacity and Seattle's proposed congestion toll.

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<https://www.seattletimes.com/seattle-news/transportation/seattle-mayor-wants-a-tolling-plan-to-reduce-traffic-congestion-greenhouse-gases/>

### Tolls on downtown streets? Seattle mayor pushes for plan to cut traffic, greenhouse gases

Originally published **April 4, 2018** at 6:00 am Updated April 4, 2018 at 11:06 am

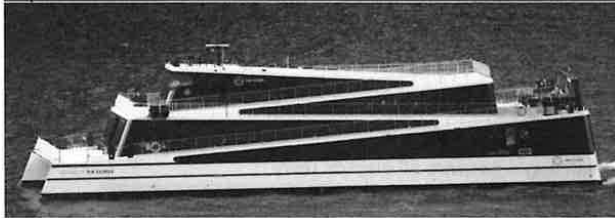
**If Mayor Jenny Durkan implements widespread tolling of city roadways, Seattle would be the nation's first city to establish such systemwide tolling.**

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### WSF could supplement a car ferry with an all electric passenger ferry similar to the Norwegian "Future of the Fjords" on the Bainbridge to Seattle route.

An all-electric ferry on the Bainbridge route would allow WSF to slow down the larger heavier vehicle ferries thus saving fuel and reducing Green House Gas.

<https://worldmaritimeneeds.com/archives/250388/zero-emission-passenger-ship-joins-the-fjords/>



### Zero Emission Passenger Ship Joins The Fjords

[zoom](#)Image Courtesy: The Fjords

Norwegian transportation company The Fjords has taken delivery of its zero emission passenger vessel, **Future of The Fjords.**

Featuring a length of 42 meters, the **all-electric catamaran** will begin operation in mid-May, making around 700 yearly round trips along the UNESCO World Heritage-listed fjord route between Flåm and Gudvangen. The Fjords said that this is the first vessel of its kind to offer **completely emission free** transport through the Western Norwegian landscape.

**Future of The Fjords** is the **sister ship** to **Vision of The Fjords**, a **diesel electric hybrid** launched in 2016. Although both ships are designed and constructed by Norwegian shipyard Brødrene Aa, they are very different.

"Vision of The Fjords was an important development for us, but we had the ambition to take it one step further and **replace the diesel electric propulsion with all-electric** – thus **eradicating all noise and emissions to air for the entire route**. Future of The Fjords does just that, minimising its impact on the environment while maximising the experience of passengers," Rolf Sandvik, The Fjords CEO, said.

The NOK 144 million vessel is propelled by **two 450kW electric motors**, enabling **cruising speeds of 16 knots**. Additionally, The Fjords has, in partnership with Brødrene Aa, developed a unique charging solution called the Power Dock.

With a length of 40 meters and a width of 5 meters, the floating glass fibre dock will sit in the water at Gudvangen, housing a 2.4 MWh battery pack. This charges steadily throughout the day via connection to the local grid network, which does not have the capacity to charge the Future of The Fjords directly.

The solution **allows the vessel to 'refill' in just 20 minutes.**

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### Ferry Weight:

Any new WSF ferry should have a weight similar to the Norwegian "Ampere" ferry.

Aluminum and **light weight material** should be used in construction in order to reduce the energy needed to move the ferry between terminals.

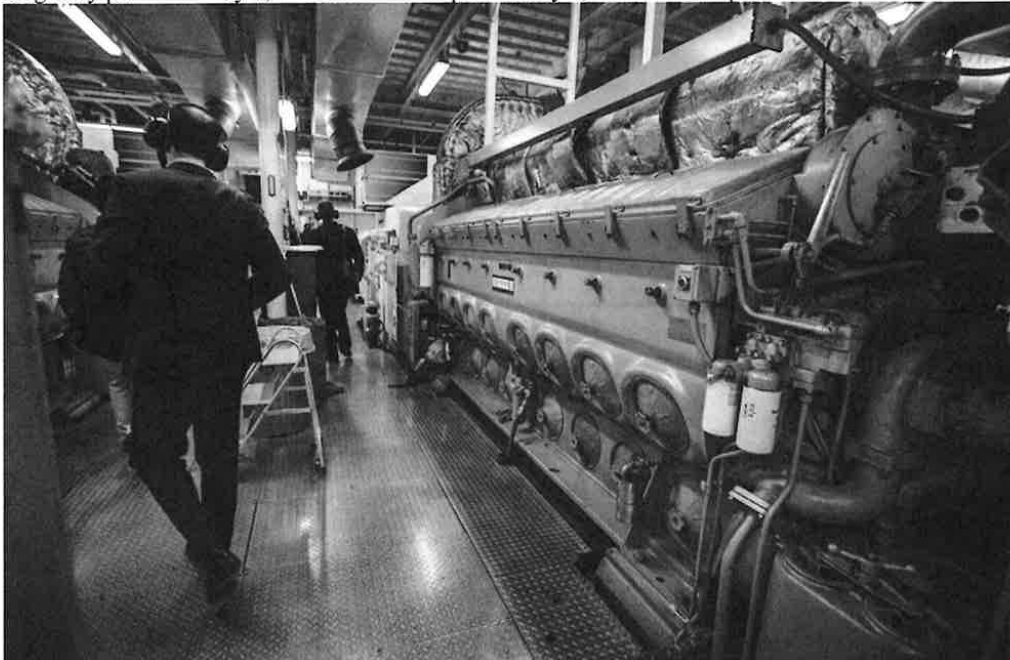
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**A WSF Jumbo Mark-II class ferry is ten times the weight of Finland's (electric) Elektra ferry and Norway's Ampere.**

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<https://www.seattletimes.com/seattle-news/transportation/washington-state-ferries-plans-to-convert-its-biggest-vessels-to-electric-power/>  
**Washington State Ferries plans to convert its biggest vessels to electric power**

Originally published May 4, 2018 at 6:00 am Updated May 4, 2018 at 12:42 pm



**This is one of the four main engines that help propel the MV Tacoma ferry. When converted to a hybrid system two of the four engines would be taken out of service and 100 tons of batteries would be added.**  
**Steve Ringman/The Seattle Times)**

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[https://en.wikipedia.org/wiki/Jumbo\\_Mark-II-class\\_ferry](https://en.wikipedia.org/wiki/Jumbo_Mark-II-class_ferry)

General characteristics

Type: auto/passenger ferry

Tonnage: 4936 tons

Displacement: 5398 tons ← estimated to need 100+ tons of Lithium batteries with a 4 year limited life

Length: 460 ft 2 in (140.3 m)

Beam: 90 ft (27.4 m)

Draft: 17 ft 3 in (5.3 m)

Decks: 2 auto decks/1 passenger deck/1 sun deck w/"quiet room" at each end

Deck clearance: 15 ft 4 in (4.7 m)

Installed power: Total of 13,200 hp from 4 x EMD 16-710 Diesel-Electric engines

Speed: 18-knot (33 km/h; 21 mph)

Capacity: 2500 passengers 202 vehicles (max 60 commercial)

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<http://www.finferries.fi/media/elektra-technical-data.pdf>

Length over all 97,92 m

Breadth moulded 15,20 m

Draught 3,55 m 5 lanes,

length of lanes 450 m

Passenger + crew 375 persons

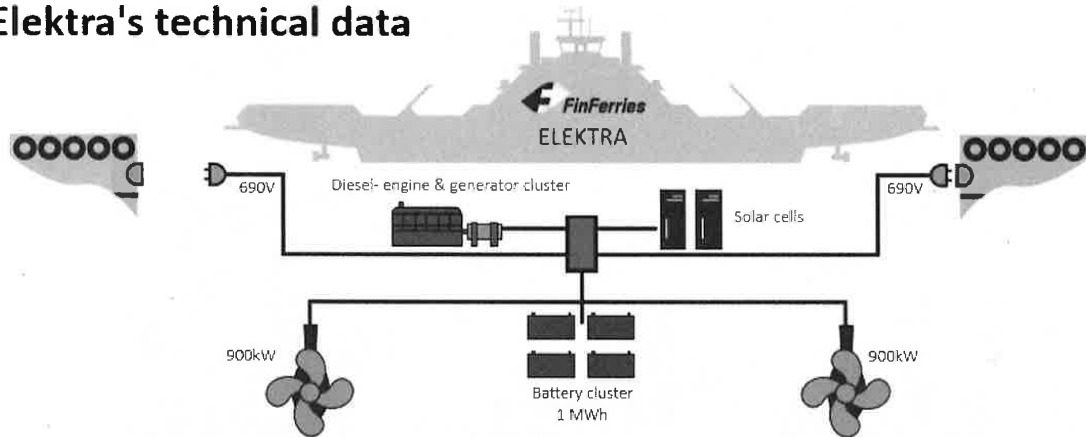
**DWT 525 t** Cars 90 ← uses about **10 tons** of batteries

Propulsion power 2 x 900 kW

**Batteries** all together **1 MWh**

Diesel generators 3 x 420 kW

## Elektra's technical data



[https://www.google.com/search?q=finferry+elektra&source=Inms&tbm=isch&sa=X&ved=0ahUKEwjiipdW63JfbAhVsyIQKHc7KCD0Q\\_AUICygC&biw=1536&bih=898#imgrc=VYpMHRHBcXDYJM](https://www.google.com/search?q=finferry+elektra&source=Inms&tbm=isch&sa=X&ved=0ahUKEwjiipdW63JfbAhVsyIQKHc7KCD0Q_AUICygC&biw=1536&bih=898#imgrc=VYpMHRHBcXDYJM): Finland Elektra electric ferry





**Ferry Propulsion Energy Type:**

The current **Diesel** option creates a large amount of **Green House Gas**.

The other available options are **Electric, LNG and Hybrid-Electric**.

**Norway and Finland** have moved toward **Electric** because they have hydroelectric power similar to Washington State.

[https://www.psrc.org/sites/default/files/tip2018-fhwa-wsdot\\_wsf-hybrid-electric-ferry-conversion\\_web.pdf](https://www.psrc.org/sites/default/files/tip2018-fhwa-wsdot_wsf-hybrid-electric-ferry-conversion_web.pdf)

**Phase 1**, the subject of this CMAQ funding request, is the vessel conversion component of the program.

Construction entails purchase of equipment needed for the conversion of the two JMII (Jumbo Mark II class) vessels to hybrid electric propulsion( the third Jumbo Mark II on the Edmonds-Kingston route would be converted after wards) and integration of battery storage technology into the existing diesel electric propulsion systems.

Specifically, the project scope includes the following elements:

- Installation of **lithium-ion battery banks totaling 6.3 MWh** in the existing shaft alley compartments on both ends of each of two vessels;

**Why does Finland’s 10 tons of Lithium store 1.0 MWh while WSF’s 100 tons of Lithium stores 6.3 MWh?**

**Shouldn’t WSF be getting 10.0 MWh’s of storage from 100 toons of lithium-ion battery banks?**

<https://www.wsdot.wa.gov/NR/rdonlyres/6C78A08B-19A1-4919-86E6-E9EF83E6376D/123052/HybridSystemIntegrationStudy.pdf>

**JUMBO MARK II CLASS**

Hybrid System Integration Study

Prepared for: Washington State Ferries

Seattle, WA

Ref: 17102-070-0 Rev. - February 8, 2018

**The fuel consumption was designed into the Jumbo Mark II and should emphasize the importance of designing for goals not initial price.**

**The Life Cycle Cost of the Jumbo Mark II’s is a disgrace due to the fuel consumption.**

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*Table 12: Jumbo Mark II Fuel Consumption*

Route	Gallons/ Hour	Hours of Operation	Gallons/ Day	Gallons/ Month
Seattle-Bainbridge	275	20	5,500	167,500
Edmonds-Kingston	225	20	4,500	137,000

MARK II VESSEL CLASS CONSUMPTION BY VESSEL, BY MONTH - LAST 12 MONTHS THRU OCTOBER 2017

	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	TOTALS
TACOMA	157,225	166,109	163,189	50,663	164,206	160,071	163,249	160,005	165,507	166,974	162,372	49,034	1,728,604
WENATCHEE	160,100	63,467	60,451	140,884	177,128	164,273	169,175	169,440	173,172	173,339	165,648	175,039	1,792,116
PUYALLUP	88,069	107,266	145,234	131,439	136,732	131,454	137,284	132,932	141,712	135,060	135,298	158,231	1,580,711
JUMBO MARK II FUEL	405,394	336,842	368,874	322,986	478,066	455,798	469,708	462,377	480,391	475,373	463,318	382,304	5,101,431

*Partial consumption month - vessel was undergoing maintenance at least part of the month*

*Figure 19: Jumbo Mark II Monthly Diesel Consumption, Last 12 Months*

Information from WSF indicates that a **Jumbo Mark II** will typically be **out of service an average of seven and a half weeks per year**. When the TACOMA or WENATCHEE is out of service on the Seattle-Bainbridge run, the PUYALLUP shifts to this route. Jumbo Mark IIs will be on the Seattle-Bainbridge run 365 days per year and 208 days per year on Edmonds-Kingston.

As a result, the **life cycle cost analysis** will estimate

**Jumbo Mark IIs annually consuming about 4,015,000 gallons at Seattle-Bainbridge (two vessels on run) and 935,100 gallons at Edmonds- Kingston.**

The vessels are assumed to operate with periodic usage of the onboard diesels **to avoid oversizing** the hybrid power system. **A necessary departure from the dock prior to a full recharge of the battery system might require a diesel generator to come online prior to docking at the other side.**

If the captain required accelerating above a certain threshold assumed in this...

**Norway added more batteries after running operationally because of a need for additional margin.**

**Does “to avoid oversizing” mean the Jumbo Mark II’s should have more than 100 tons of Lithium-ion batteries in order to provide enough margin for continuous operation?**

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### 9.3 Lithium-Ion Batteries

The TACOMA and WENATCHEE will each make about 7,200 crossings per year while the PUYALLUP will make about 7,800. Due to the PUYALLUP's larger amount of time on the Edmonds-Kingston route, the battery pack would incur a lower average DOD and support a higher projected cycle life. As a result, the TACOMA and WENATCHEE serve as the worst case for this report. With selected **target battery life duration of four years**, the batteries will need to supply 28,800 cycles at the previously discussed DOD for the more demanding Seattle to Bainbridge crossing. Clearly, this will be a high cycle count application.

**Does “target battery life duration of four years” mean during the 40 years of remaining life 10 sets of Lithium-ion batteries will have to be purchased?**

**How much will that cost?**

**Is battery replacement cost included in the life time savings being projected by WSF?**

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**Since new battery banks are planned every four years,**

**the variable costs will be left out of the LCCA as representing a replacement rate over a longer period....**

**How does the above statement build trust in the economic analysis of this proposed conversion?**

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*Table 18: Emissions from Electrical Usage – Puget Sound Energy w/o Green Energy Program*

Route	Energy per Trip	Annual Crossings (One-way) <sup>1</sup>	Annual Energy	Annual CO <sub>2</sub> Emissions
Seattle – Bainbridge	2200 kWh	8,395	18,470 MWh	8,630 MT
Edmonds – Kingston	1700 kWh	2,702	4,590 MWh	2,140 MT
		<b>Total</b>	23,060 MWh	10,770 MT

<sup>1</sup> Only Kingston and Bainbridge with PSE sourced charging

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While **WSF would not include the emissions from the sourced electricity in their GHG emissions inventories**, it is still important to consider. ...

**It looks to me like WSF is just buying a transfer of pollution from ferries generation to utility generation. No actual pollution reduction is actually occurring only how the pollutions source is attributed.**

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While the propellers and electric motors will still cause some noise and vibrations, the noise levels will be significantly reduced **without the use of the diesel generators.**

**There won't be any shore power for years so won't the diesel generators on the ferries still be running?**

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WSF produces **67% of WSDOT's total emissions and the three Jumbo Mark II vessels emit 26% of WSF's share of carbon emissions.** Given the late 1990's emissions standards that the Jumbo Mark II diesel engines were required to meet, the emissions savings is likely even greater in regard to NOx, SOx, and diesel particulate matter.

**This project would have enormous impact in meeting the 2020 emissions targets.**

**The utilities pollution increase due to WSF buying electricity will reduce this "enormous impact" which to me appears to be BS.**

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<https://www.bloomberg.com/news/features/2018-03-13/the-next-ship-you-board-might-run-on-batteries>

The **first zero-emissions ferry**, called the **MF Ampere**, started sailing between the villages of Oppedal and Lavik along the Sognefjord in 2015. Operated by Norled AS, it's made of light **aluminium**,

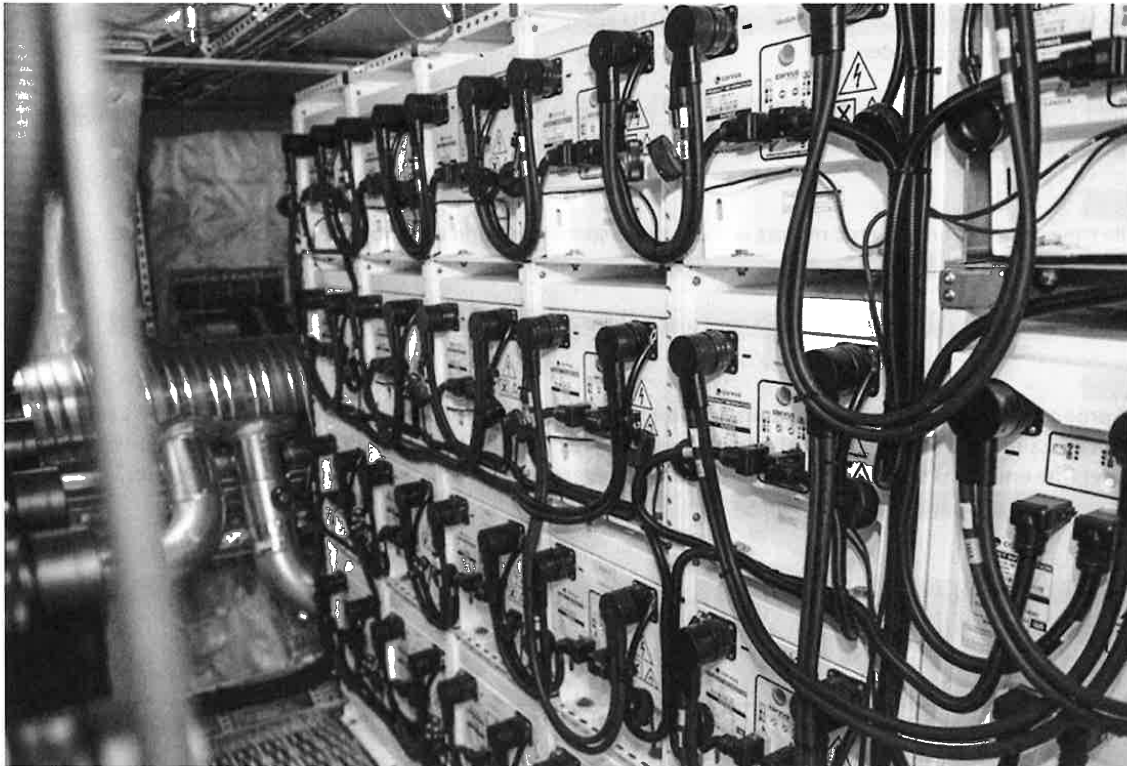
**runs on 10 tons of lithium-ion batteries** and carries up to **350 passengers** and **120 cars**.

After each 20-minute journey, it **recharges for 10 minutes**.

The ride is both **smoother** and **quieter** than on diesel-powered ferries.



The **MF Ampere**. Photographer: Carina Johansen



Cables connect to batteries in the battery room of the MF Ampere.

<https://fortress.wa.gov/ecy/publications/documents/1402030.pdf>

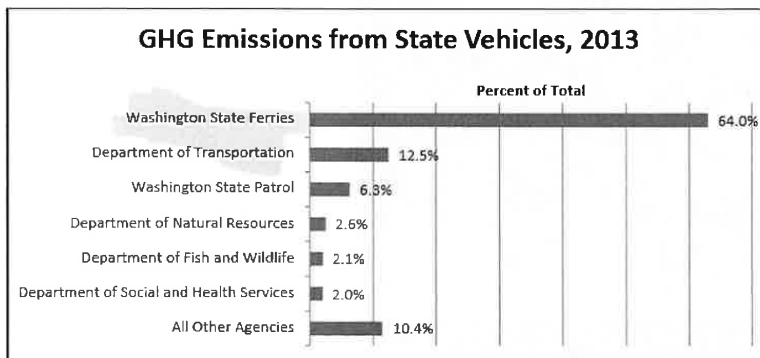
Reducing Greenhouse Gas Emissions in Washington State Government Third Biennial Progress Report

**December 2014** Publication no. 14-02-030

Page 12 State vehicle fleet

State agencies emitted about 268,445 MTCO<sub>2</sub>e from state-owned motor vehicles in 2013.

**About 64 percent of the 2013 transportation-related total is from the Washington State ferry system.**



**Figure 6:** GHG Emissions from State Vehicles, 2013

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## Technology:

**Autonomous** software for ferry routes, **auto-docking** software, automatic **mooring** and auto **electrical connection**.

<https://www.youtube.com/watch?v=epOAE8pudsg> ← 2 minutes video showing **automatic mooring** and **electrical** to Norway's electric ferry **Ampere**.

**Watch video to see how the mooring and electrical connection works.**



Automatic electrical connection **green arrow**.

Automatic mooring **red arrow**.

### MoorMaster™ automated mooring and Automatic Plug-in System

Discover how our combined automated mooring and **Automatic Plug-in System** **moors and charges** the world's first fully battery-powered catamaran ferry.

The system enables vessel operator **Norled** to **bring down operating costs**, improve safety, and decrease emissions.

<https://globenewswire.com/news-release/2018/04/20/1482333/0/en/Cavotec-signs-breakthrough-EUR-9m-orders-for-unmanned-mooring-of-electric-ferries.html>

### Cavotec signs breakthrough EUR 9m orders for unmanned mooring of electric ferries

April 20, 2018 03:30 ET | Source: Cavotec SA

Cavotec is set to revolutionise the operation of e-vessels by delivering and maintaining its automated, unmanned, mooring system MoorMaster™ for e-ferry ports across Norway. With these orders, **MoorMaster™** is now the leading technology to safely and efficiently moor e-vessels, a segment set for rapid growth.

The orders are worth approximately EUR 9m, of which EUR 4m was booked in the fourth quarter of 2017.

On completion of these projects, Cavotec will have equipped more than **40 e-ferry ports** in Scandinavia with MoorMaster™, thereby delivering substantial operational and safety benefits for ferry operators.

“These projects demonstrate the **unrivalled suitability of MoorMaster™ for e-ferry applications**, and the importance of the technology for this rapidly growing segment in Norway and beyond,” says Gustavo Miller, President Ports and Maritime Division at Cavotec.

MoorMaster™ is ideal for e-ferry applications because the units keep vessels in pre-programmed positions to maximise the amount of time available to charge ship battery units. The technology also reduces overall CAPEX for operators, and delivers substantial operational and safety benefits,” says Sofus Gedde-Dahl, Sales Director E-Ferries at Cavotec. Following its stated aim of reducing carbon dioxide emissions by 40 per cent, Norway has led the introduction of electrically powered and hybrid vessels. Cavotec has become a crucial partner in this effort through its development of innovative automated charging interface and mooring technologies.

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Cavotec systems have moored and charged the world's first fully **electric car ferry**, the **MF Ampere**, since it entered service in **2015**. Following the success of the MF Ampere application, Cavotec mooring and charging technologies have been introduced at a growing number of e-ferry berths in Norway, Finland, and Sweden.

To date, more than **260 MoorMaster™ units worldwide** have performed some 330,000 moorings at ferry, bulk and container handling, as well as lock and ship-to-ship applications worldwide.

"The rapid introduction of e-ferries in Norway has been the dominant driver for the wider adoption of MoorMaster™ in recent years, a development that we see being replicated in neighbouring markets such as Finland and Denmark," says Gedde-Dahl.

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**Doug Rauh Bainbridge Island comments on new technology in the 2040 WSF Long Range Plan. The WSF presentation to the WSTC on the next 20 year plan should include technology at least as advanced as what the Norwegians are installing on their ferries today.**

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[https://www.marinelink.com/news/autocrossing-rollsroyces436449?utm\\_source=MT-ENews-2018-04-17&utm\\_medium=email&utm\\_campaign=MT-ENews](https://www.marinelink.com/news/autocrossing-rollsroyces436449?utm_source=MT-ENews-2018-04-17&utm_medium=email&utm_campaign=MT-ENews)

### **Rolls-Royce's Autocrossing System for 13 New Ferries**

Posted by Michelle Howard April 17, 2018



Photo: Rolls-Royce

Rolls-Royce Marine has signed a deal to supply its **Autocrossing system** to a total of **13 new environmentally friendly ferries** for the Norwegian company Fjord1. The vessels are currently being built by three yards in Turkey and two yards in Norway. All contracts also include two azipull propellers for each vessel with accompanying propeller control system from Rolls-Royce.

With this contract, Rolls-Royce has sold autocrossing to a total of 18 new ferries to operate along the coast of Norway, of which **16 have been ordered by Fjord1** and **two** by another Norwegian ferry company, **FosenNamsos Sjø**.

Dagfinn Neteland, CEO of Fjord1, said, "Our passengers will be part of the most environmentally friendly and modern transportation concept ever seen in Norwegian fjords. The technology from Rolls-Royce enables us to deliver this promise."

Andreas Seth, Rolls-Royce, SVP Electro, Automation and Control, said, "We are proud to take part in the ongoing renewal program for ferries that connects communities along the long Norwegian coastline. The Government deserves praise for opting for both innovative and environmentally friendly solutions. It makes it possible for the maritime industry to deliver our latest technology."

The new generation of environmentally friendly ferries have strict yearly limits on energy consumption as part of the commercial agreement between the ferry operator and the

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Government. **The automatic crossing system provides safe, predictable and energy-efficient transit back and forth by automatically controlling the vessel's acceleration, deceleration, speed and track.**

The **two energy-efficient Rolls-Royce Azipull thrusters** respond adaptively to environmental conditions to ensure optimal behaviour and maximise efficiency.

The **vessel's captain will supervise the automatic system and intervene using traditional maneuvering systems if needed.**

If the captain is not, for some reason, able to take manual control, the system stops the vessel at a safe distance from the quayside and keeps it safely positioned automatically until further action can be taken.

Seth said, "Five of the new vessels will operate in one of Norway's two designated test areas for autonomous ship technology. This is a perfect location as the Autocrossing system from Rolls-Royce is indeed **a step on the journey towards increased autonomous and remote navigation.**

The **Automatic Crossing System** can today be installed as an **add-on** to any standard **Rolls-Royce azimuthing thruster.**

This means the system can be retrofitted to the existing fleet of ferries around the world.

Overview of shipyards building the 13 new ferries for Fjord1:

- Havyard Ship Technology, Norway = 5 ferries
- Fjellstrand, Norway = 1 ferry
- Tersan Shipyard, Turkey = 2 ferries
- Sefine Shipyard, Turkey = 3 ferries
- Cemre Shipyard, Turkey = 2 ferries

Earlier this year Fjord1 took delivery of three new ferries from Tersan, with Autocrossing installed, while the two ferries for FosenNamsos Sjø are under construction at Kleven's Myklebust shipyard in Norway.

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Doug Rauh's comments on **autodocking** system for ferries: WSF's should include in 2040 Long Range Plan.

[https://www.marinelink.com/news/autodocking-norwegian436844?utm\\_source=MT-ENews-2018-04-26&utm\\_medium=email&utm\\_campaign=MT-ENews](https://www.marinelink.com/news/autodocking-norwegian436844?utm_source=MT-ENews-2018-04-26&utm_medium=email&utm_campaign=MT-ENews)

### **Norwegian Ferry Tests Autodocking System**

**Eric Haun**, *Editor* web editor of MarineLink.com and contributor to Maritime Reporter...

April 26, 2018



(Photo: Wärtsilä)

A ferry owned by Norwegian operator **Norled** is the first in the world to experiment with autodocking technology.

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Equipped with **Wärtsilä's** innovative **autodocking system**, the 83-meter ferry Folgefonn concluded three months of testing with harbor docking trials in April.

The autodocking system **activates some 2,000 meters from the berth** and keeps the vessel transiting at its normal transit speed until it gradually slows down to activate the line-up and docking maneuver.

**The vessel operates completely automatically until secured at the berth.**

Full maneuvering of the vessel, including the steering and propulsion, is automatically controlled by the software, with manual intervention and control possible at any moment if need be. At no time during the tests did Folgefonn's captain need to take manual control of the vessel.

When the ship is ready to sail again, **the system may be used for the departure** procedure in an identical but reverse manner.

**Wärtsilä**, who received support for the autodocking pilot project from the Norwegian state-owned Innovasjon Norge (Innovation Norway), said developing intelligent vessels is central to its [smart marine ecosystem vision](#). In 2017, the same Wärtsilä team [tested remote controlling of a ship sailing in the North Sea from](#) its San Diego location.

The company believes autodocking technology delivers significant benefits to operators, including improved safety since there is less likelihood of human error and ship's officers can focus on situational awareness outside the wheelhouse. In addition, **greater efficiency in docking allows more time at berth**, and there is **less wear and tear on the vessel** since the thrusters are utilized more efficiently.

Norled has made the **Folgefonn** available for further development of a number of Wärtsilä's products and systems. Among the Wärtsilä technologies already installed and tested are its energy optimization system, the hybrid propulsion system, [wireless inductive battery charging](#) and [energy storage](#). The ferry can now be operated with automatic wireless charging, automatic vacuum mooring and automated docking.

"We [thank Norled](#) for their valued cooperation in this project. These tests represent an important element within Wärtsilä's overall smart marine vision. Autodocking can become a vital part of our offering to the ferry and other shipping markets, and will further promote our activities in leading the transformation into a new era of high efficiency and profitability for our customers," says Roger Holm, President, Wärtsilä Marine Solutions.

"We are pleased to support Wärtsilä's efforts for creating greater efficiencies for marine operators. Technologies that improve safety, reduce operating costs, and lower the environmental impact can only be good for our industry," says Sigvald Breivik, Technical director, Norled.

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### Ferry Propulsion System:

Current WSF ferries do not use azimuth drive systems.

Ferries using **azimuth thruster** have better handling in current, wind and much **shorter turning radius**.

During collision avoidance an azimuth system could turn the ferry faster.

<https://youtu.be/L6CIXYhYdrE> <-- minute video **Azimuth thruster in action**

<https://www.youtube.com/watch?v=pBbWBSu0Qc0> ← 2 minute video on permanent magnet thruster

WSF could improve maneuverability by using azimuth thrusters allowing safer docking during times of strong wind and/or current.

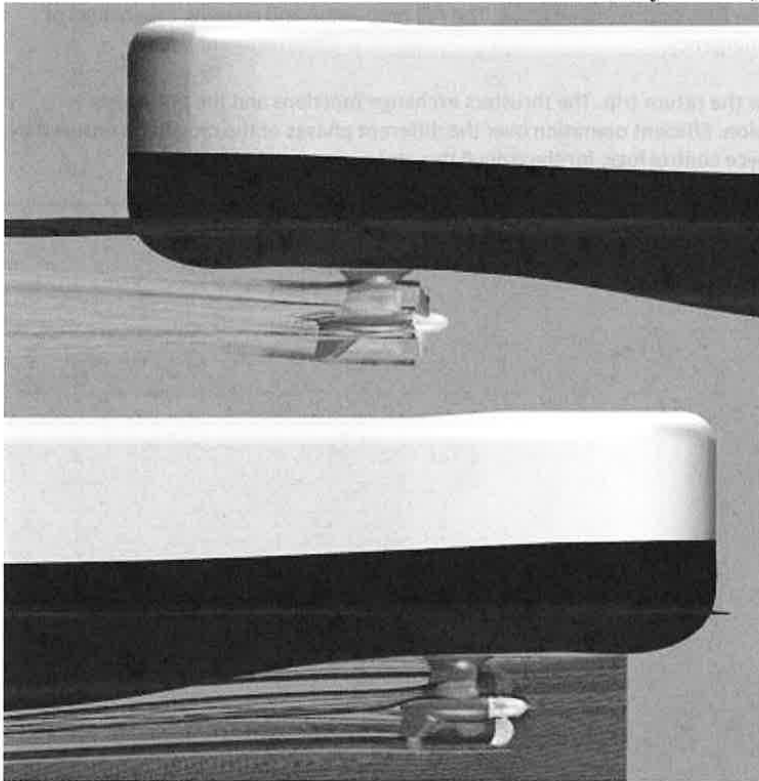
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<https://www.maritimepropulsion.com/blogs/post/optimizing-ferries-for-electric-power-52>

### Optimizing Ferries for Electric Power

Posted to Propulsion (by Eric Haun ) on May 5, 2017

**Two new zero-emissions ferries will enter service in Norway in 2018, both optimized for electric power.**



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CFD illustrates the **very low drag of the fully feathered bow thruster** and the efficient stern Azipull  
(Image: Rolls-Royce)

Batteries will be the sole power source for two new double-ended ferries being built for operations on Norway's west coast. The ferries, now under construction at the Tersan shipyard in Turkey and to be operated by Fjord1 and the Norwegian public roads authority Statens Veivesen, will produce zero emissions when they enter service in January 2018.

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Each ferry will carry up to **120 cars, 12 trailers and 349 passengers** on the crossing of approximately two kilometers between Anda and Lote, Norway. The battery vessels will replace diesel power, and the **lithium ion batteries** will be charged at each side of the crossing.

Rolls-Royce said it has been working closely with designer Multi Maritime to ensure that the Azipull thruster propulsion system and hull form minimize energy requirements and deliver sufficient low-speed thrust during bad weather, so minimizing battery size.

A single **Azipull AZP 85CP-F thruster** from Rolls-Royce will be located at each end of a ferry. The pulling propeller and the streamlined lower gear housing provide increased thrust through energy recovery, the manufacturer said. These also provide high efficiency with **low vibration**, making them attractive for a wide variety of vessel types. And for the new ferries in particular, the Azipull's controllable pitch and feathering propeller were deciding factors.

Studies carried out by Rolls-Royce for the ferry design indicated that in transit the lowest power requirement is when the aft thruster provides all the propulsion thrust and steering.

In this mode the forward thruster only represents drag, and the design enables this to be cut to a few percent of the total thrust by setting the CP propeller to the **fully feathered position**. The full propulsion and steering capabilities of both are available for maneuvering or in emergency.

This type of vessel does not turn around for the return trip. The thrusters exchange functions and the previously feathered idle unit provides transit propulsion. Efficient operation over the different phases of the crossing is ensured by combinatorics that form part of the Rolls-Royce control logic for the Azipull thrusters.

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## Ferry Maintenance:

An aluminum hull does not require painting like steel and is lighter.

<https://electrek.co/2018/02/03/all-electric-ferry-cuts-emission-cost/>

All-electric ferry cuts emission by 95% and costs by 80%, brings in 53 additional orders

Fred Lambert - Feb. 3rd 2018 1:57 pm ET @FredericLambert



The operators of the first all-electric ferry in Norway are starting to get some good data on the vehicle and it's nothing short of impressive.

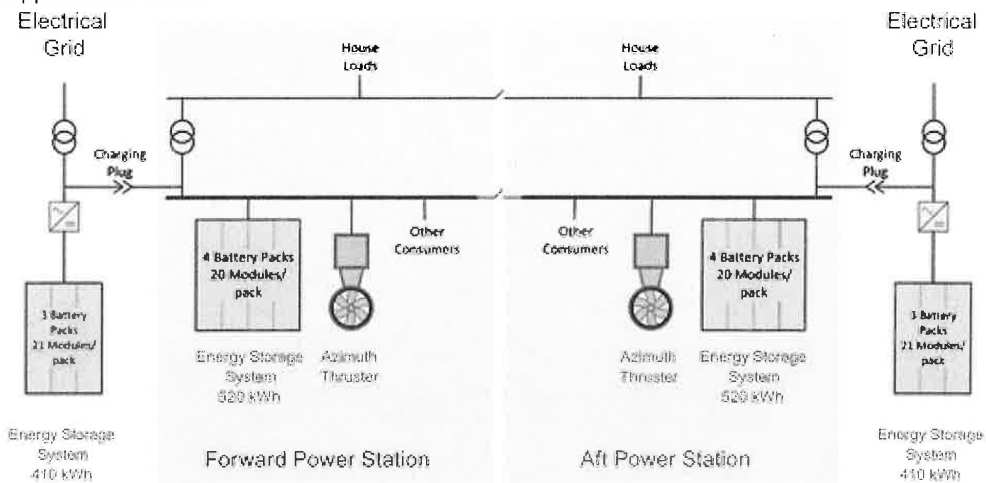
They claim that the **all-electric ferry cuts** emission by 95% and **costs by 80%** compared to fuel-powered counterparts and the results are attracting customers.

The ferry in question is called "**Ampere**" and it was put into operation back in May 2015 with the aim to reduce NOx and CO2 emissions, as well as **noise pollution** on the water.

It was the result of an extensive partnership between Norled AS, a shipping company and ferry operator, Fjellstrand Shipyard, Siemens AS, and Corvus Energy.

The last two developed the electric powertrain and battery system powering the ferry with **over 1 MWh of battery capacity** on board.

Here's a diagram of the system – including the two charging stations with battery packs installed in Oppedal and Lavik:



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It was already clear that the deployment of the all-electric ship was a success since they quickly commissioned another one, called "Elektra", that went into operation last summer.

But they announced at the Nordic EV summit in Oslo this week that the numbers are even more impressive than anticipated with CO2 emissions reduced by 95% and **operating cost by 80%**:

With those numbers, you would think that every ferry operators on the planet would be looking to update their fleet with those all-electric alternatives.

Sure enough, **they are seeing a lot of order with a reported backlog of 53 additional ferries.** Here's a video of the Ampere from when it was launched back in 2015:

#### **Electrek's Take**

As we have often discussed in the past, all modes of transportation are gradually being converted to electric propulsion and that includes maritime transport.

Ferries are a perfect place to start since they often travel only short distances and stay for relatively long periods of time at the same ports, where they can be charged.

That's exactly what they took advantage of and interestingly, they are charging the ferries through battery packs at each port, which helps maintain a high charge rate while reducing peak demand costs.

Now we are seeing more and more companies going electric for maritime transport.

Last year, Two massive ferries (even bigger than the Ampere) being converted to battery-electric – becoming the biggest all-electric ships in the world in the process.

New large all-electric container barges dubbed 'Tesla ships' are also launching this autumn and an new all-electric cargo ship with a **massive 2.4 MWh battery pack** recently launched in China.

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### Ferry Operational Life:

The current design life of a ferry is **60 years per WSF** policy.

The long life requires a mid-life upgrade.

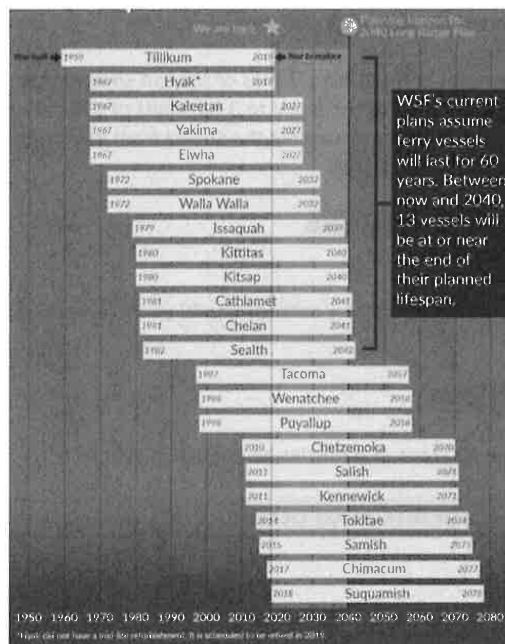
Mid-life upgrades are expensive and takes the ferry out of service.

A shorter life that does not require a mid-life upgrade would be in line with what other ferry systems are doing.

Replacement ferry could be built while the ferry to be replaced continued service.

<http://wstc.wa.gov/Meetings/AgendasMinutes/agendas/2018/April17/documents/0417-BP1-WSF2040LongRangePlan.pdf>

## Vessel Replacement



**Doug Rauh's comments:** If vessel life is reduced to a more realistic 40 year life then 16 ferries need to be replaced. If the Bainbridge and Bremerton routes were to convert to 3 smaller electric ferries on each route than another 6 ferries would need to be built.

If looks like one new small all electric ferries would need to be built every year forever.

WSF would need a \$1,000,000 a week for capital replace for at least the next 20 years.

The construction costs will have to come down to a more realistic \$50,000,000-\$60,000,000 per ferry.

It would be cost effective for WSF to replace one ferry every year with smaller aluminum electric/LNG ferries.

A smaller ferry would allow other ship yards beside Vigor to bid on the contracts.

By removing the current midlife overhaul the ferry would spend more time in service and less time in dry dock.

Changing the number of ferries on some routes from 2 to 3+ ferries would provide better service while maintaining the same capacity.

This would also reduce the peak traffic demand on the land side infrastructure due to the ferry loading and unloading.

A steady ferry construction process would reduce the cost of construction.

On a 3 boat route if one ferry is down the capacity is only reduced by 30% compared 50% loss of capacity with the current 2 boat route configuration.

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### **Ferry Life Cycle Cost:**

Using **Initial Cost** when purchasing ferries has resulted in **higher fuel costs** thus **higher Life Cycle Cost**. **Higher operating costs** resulting in **higher fares** due to high fare-box recovery rate which reduces demand for the service.

**Washington State requires Life Cycle Cost** be used for **long life Capital Equipment** like ferries.

Operational Costs are determined in the design and WSF should not be placed in the position of trying to save money after the design.

With all the noise today about conversion of the Jumbo Mark II's it should be remembered that when Representative Karen Schmitt (Ferry God Mother) forced low cost to be used instead of Life Cycle Cost thus the Operational Cost went up Forcing riders to pay higher fares while creating a lot of air pollution.

The Ferry God Mother didn't like the ceiling noise in the Jumbo ferries or the salt spray on the car deck. The design called for an increase in weight of 900 tons or the equal to 3 full loads of 200 cars weighing 3000 pounds. For almost 20 years WSF has been pushing that extra weight across the Sound from Bainbridge Island to Seattle. **Trades offs and goals are achieved in design not afterwards.**

**Converting the Jumbo Mark II's to hybrid electric is a bad idea, these ferries are too heavy for electric batteries.**

**If a Lithium battery set last 4 years WSF will need 10 battery sets for the 40 years remaining in the life of these ferries. That is 4,000 tons of Lithium per boat.**

**12,000 tons of lithium for the Jumbo Mark II class.**

Lithium batteries degrade over time, will the 100 tons of batteries be enough in year 4?

**Reassigning pollution generation from ferries to utilities does not reduce air pollution.**

### Ferry Price:

Past ferry prices have been 2+ times the price paid by other ferry systems for similar boats.

**Construction and Financing Costs** need to be reduced.

How come the world's largest containership costs \$150,000,000 and a 144 car WSF ferry costs \$144,000,000 or **\$1,000,000 per car**?

### How can B.C. Ferries buy 3 ferries for \$165,000,000 while WSF buy 1 for \$144,000,000?



<https://www.bcferries.com/about/projects/bc-ferries-newest-class-of-vessels.html>

BC Ferries has commenced work for the design and build of two new ferries to serve the Northern Gulf Islands. The first of the new vessels will be deployed on the Powell River – Texada Island route, replacing the 59-year old *North Island Princess*, which will be retired from the BC Ferries fleet. The second vessel will replace the *Quadra Queen II* on the Port McNeill – Alert Bay – Sointula route. The *Quadra Queen II* will become a relief vessel, allowing for fleet redeployments and the retirement of the 53-year old *Howe Sound Queen*.

These two new vessels are planned to enter the fleet by 2020.

Both vessels will be the same build to achieve optimal procurement, **low operating cost and interoperability**.

**Standardized vessels** help ensure consistent service across many routes.

### Vessel Class Overview

The two minor class vessels will have the capacity to carry at least 44 vehicles and up to 300 passengers and crew. They will have a number of key features that support BC Ferries' goal to be efficient and environmentally responsible throughout its system. Highlights include:

- A **hybrid diesel electric** - battery power generation and propulsion system that uses on board electric battery power for operation of the vessel. Electric propulsion is quiet, smooth and efficient compared to traditional diesel propulsion.
- Engines which operate on ultra-low sulphur diesel fuel, which has lower environmental impact than regular marine diesel oil.
- **Hull, propeller and thruster design that minimizes underwater radiated noise.**
- Arrangements to minimize shipboard vibration and airborne noise to improve conditions for communities, passengers and crew.
- A fully contained waste water handling system which eliminates discharges to the sea.



Artist rendering images

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## Concept Features

### Function & Design

- A double-ended hull with single vehicle deck, high bulwarks and enclosed ends.
- Proposed capacity of 300 (passengers and crew) maximum, 150 on a normal license.
- Roll-on/roll-off vehicle deck with minimum 44 automobile equivalents (AEQ\*) (approximately 270 meters of vehicle lanes) with either end capable of loading/unloading.
- **Standardized design for fleet interoperability and efficient training.**
- **Service life of minimum 40 years;** emphasis on sound structural design and effective coatings.
- Suitable for year-round service in coastal British Columbia on Near Coastal Voyages, Class 2 (NC2), and Sheltered Waters routes.
- Passenger lounge accessible from vehicle deck, meets accessibility requirements without elevators.
- Lounge outfitted with mix of tables, study carrels, comfortable seats, community bulletin board, tourism space and **charging stations for personal electronic devices.**
- Overhead sun deck with a **mix of tables and individual seats** protected by a transparent wind break.
- Sufficient speed to maintain and recover schedule when required.
- 

### Environment

- Overall design optimized for low noise, low vibration and minimal wake wash.
- Sea keeping suitable for winter transit in coastal British Columbia without excessive motion or spray.
- All systems designed for low energy consumption and clean environmental performance.
- 

### Safety

- Mechanical and electrical systems designed for simplicity, efficient performance and ease of maintenance.
- Propulsion to provide efficient transit and sufficient manoeuvrability for reliable docking in expected environmental conditions.
- Redundant systems for reliable performance.
- Modern safety and control systems.

**Doug Rau's comment: WSF seats should vary in height to match the various heights of their customers who vary in height from kids to tall adults?**

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<http://www.timescolonist.com/business/second-lng-ferry-underway-in-poland-1.1822577>



An artist's rendering of the **intermediate-class vessels** being built in **Gdansk, Poland**.  
Photograph By Joanne Whittier, B.C. Ferries



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### Second LNG ferry underway in Poland

Carla Wilson Times Colonist April 14, 2015 06:00 AM

Polish shipyard workers have started building the second of **three new intermediate-class vessels for B.C. Ferries**. The three ferries will operate on **liquefied natural gas**, considered a **lower-cost and cleaner-burning fuel**, but will also have the ability to use **low-sulphur diesel fuel**.

B.C. Ferries has contracted with the Polish shipyard to **build, design and deliver the three intermediate-class vessels at a cost of \$165 million**. Each will be **351 feet long** with capacity for **145 vehicles** and **600 passengers**.

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<http://www.seattletimes.com/seattle-news/transportation/a-parking-headache-whats-the-fix-for-crowded-park-and-ride-lots/>

**Q:** According to **state law, Washington State Ferries must be built in Washington**.

How much more does it cost to build the ferries here than it would other places?

— Christopher Hodgkin, Friday Harbor

**A.**

**It costs millions of dollars more on average to build a ferryboat in Washington than at an out-of-state shipyard.**

But according to a recent study by the Washington State Institute for Public Policy (WSIPP), if you weigh that cost against the loss of shipyard jobs and consumer spending by building elsewhere, the math isn't that definitive.

We'll break it down.

The study is split into two parts: a benefit-cost analysis that addresses how an out-of-state builder would directly impact specific groups, and an economic-impact analysis that assesses indirect and long-term effects.

The benefit-cost analysis found Washington taxpayers could save \$10.5 million to build a 1,500-passenger, **144-car ferry** — like the Washington State Ferries (WSF) vessel called Tokitae — in another state. But that would mean losing \$7.25 million in shipyard-employee income for that project, the study says.

That pencils out to a benefit of \$3.25 million. For perspective, the **Tokitae cost \$144 million**.

The economic-impact analysis predicts that building elsewhere would have a more negative effect, including an average two-year loss of about 659 jobs and about \$68 million in consumer spending.

"Neither analysis predicts a substantial impact on Washington's economy (either positively or negatively) from keeping ferry construction in state or moving construction to out-of-state shipyards," the study says.

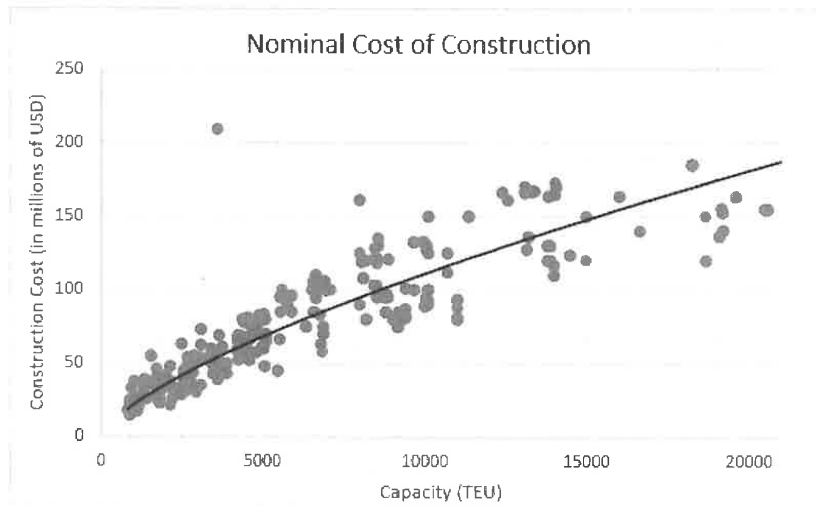
The Olympic-class Tokitae entered service in mid-2014 as part of a three-vessel deal with Vigor Shipyards in Seattle that totaled \$388 million.

Vigor has led WSF construction for the past 20 years, as the only company that meets all the state's building requirements, the study says.

This summer, a new Olympic-class ferry will launch on the Seattle-Bremerton route, and another new vessel will go into service next year.

WSF spokesman Ian Sterling said the agency has no official position on the out-of-state vs. in-state issue. The Legislature directed WSIPP, a nonpartisan think tank, to do the analysis in 2015. WSIPP is governed by a board of directors that represents the governor, legislators and public universities.

Material from The Seattle Times archives was included in this report. Jessica Lee: 206-464-2532 or [jlee@seattletimes.com](mailto:jlee@seattletimes.com). On Twitter: @jessleeST.



<sup>7</sup> Cost per TEU was calculated by simply dividing the construction cost by the TEU capacity; this does not consider the utilization of the vessel's capacity.

The **CMA CGM Benjamin Franklin** at **18,000 TEUs** would be about **\$150,000,000** compared to a **144 WSF ferry** at **\$144,000,000**

<https://www.porttechnology.org/news/inside-the-cma-cgm-benjamin-franklin>



Tonnage: **178,228 GT** 116,356 NT 185,000 DWT  
 Length: 399.2 m (1,310 ft)  
 Beam: 54 m (177 ft)  
 Height: 60 m (197 ft), 70 m (230 ft) over antennae.[2]  
 Draft: 16 m (52 ft)  
 Depth: 30.2 m (99 ft)  
 Installed power: MAN B&W diesel engine, (63,910 kW)  
 Propulsion: Single shaft; screw propeller Solid  
 Speed: 22.9 knots (42.4 km/h; 26.4 mph)  
**Capacity: 18,000 TEU**, Refrigerated connections 1,500 [2]  
 Crew: 27[3]

<http://media.gettyimages.com/photos/the-cma-cgm-benjamin-franklin-the-largest-container-ship-to-ever-call-picture-id502542222>

Saturday, April 28, 2018 Doug Rauh's Bainbridge Island comments on WSF 2040 Long Range Plan Page 24 of 43



The **CMA CGM Benjamin Franklin**, the **largest container ship to ever call at a North America port**, is docked at the Port of Los Angeles in San Pedro, California, after arriving before dawn on Dec. 26, 2015.

[http://i139.photobucket.com/albums/q309/ferrynutseattle/ferrynutseattle3/002\\_zps935fbb49.jpg](http://i139.photobucket.com/albums/q309/ferrynutseattle/ferrynutseattle3/002_zps935fbb49.jpg)



Vigor Industrial, Seattle, Washington

Operators: 2014–present: Washington State Ferries

Built: 2012–2018 (planned)  
 In service: 2014–present  
 Building: 1  
 Planned: 4  
 Completed: 2  
 Active: 2  
 General characteristics

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Type: auto/passenger ferry

**Displacement: 4320 long tons at design load waterline**

Length: 362 ft (110.3 m)

Beam: 83 ft 4 in (25.4 m)

Draft: 16 ft 6 in (5.0 m)

Depth: 24 ft 6 in (7.5 m)

Decks: 2 vehicle

1 passenger / 1 sun deck

Deck clearance: 15 ft 6 in (4.7 m)

Installed power: Total 6,000 hp (4,500 kW) from 2 x Diesel engines

Speed: 17-knot (31 km/h)

Capacity: 1500 passengers

**144 vehicles** (max 30 commercial)

Notes: All specifications are subject to change. Vessels in design and construction phase.[1]

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<file:///C:/Users/Doug/Documents/WSF/Triple-E%20class%20container/MSO%20OSCAR%20140%20million.htm>  
07.03.2015 - Wilhelmshaven. **MSC OSCAR world's largest Container ship**  
makes maiden call at EUROGATE Container Terminal Wilhelmshaven.

MSC Mediterranean Shipping Company's largest container ship ever built, the MSC Oscar, makes her maiden call at Port of Wilhelmshaven today. Since its inauguration in January at Daewoo's Shipbuilding and Maritime Engineering (DSME) Shipyard in South Korea, record-breaking MSC Oscar represents the first in its class and will be followed by additional vessels in the same class during 2015-2016.

In true MSC family tradition the vessel was named after Oscar, the son of Diego Aponte, MSC's President and CEO.

The **45,300 ton steel MSC Oscar, which cost US\$140 mio to build**, is 395 metres long, 59 metres wide with a draught of 16 metres.

The super-size MSC Oscar **is equivalent to the size of four combined football fields** and is now servicing the Albatross string on the new East-West trade routes between Asia and Europe.

History

**Name: MSC Oscar**

Owner: Mediterranean Shipping Company

Operator: Mediterranean Shipping Company

Port of registry: Panama[1]

Builder: Daewoo Shipbuilding & Marine Engineering (DSME)

**Cost: \$140m**

Completed: 2015

Identification: IMO number: 9703291[1]

General characteristics

Type: Container ship

**Tonnage: 197,362 DWT**

**Length: 395.4 m (1,297 ft)**

**Beam: 59 m ( 194 ft)**

Draught: 16m

Ice class: none

Installed power: MAN B&W 11S90ME-C two-stroke diesel engine; output: 62.5 MW (83,800 hp)[2]

Propulsion: Single five-blade propeller; blade length: 10.5 m (34 ft)[2]

Speed: 22.8 kn (42.2 km/h; 26.2 mph)[3][4]

**Capacity: 19,224 TEU**

Crew: Max 35[3]

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[https://youtu.be/Yfq\\_hDYW\\_6Y](https://youtu.be/Yfq_hDYW_6Y) ← 1 minute video of TESO new ferry (2016) with solar panels on the roof.

C-Job | New TESO double-ended ferry arrives in Holland for testing

C-Job Naval Architects Published on May 4, 2016

C-Job was responsible for the initial, concept & basic design for this double-ended ferry which will sail in spring 2016 between the beautiful Dutch island of Texel and Den Helder.

The ferry will be operated by locally owned organization TESO.

The challenge was to achieve an increase in 10% more cars without increasing the length (due to less maneuverability) and less wind pressure.

Due to the T-shaped design, the car capacity increased with 18% and although the lateral surface increased marginally, the **wind pressure was reduced** compared to the Dr. Wagemaker.

More info: <http://www.c-job.eu/en-GB/88/teso-tex...>

Drone video by Videolux Productions Texel <http://www.videolux.nl>

42 millones para financiar el nuevo ferry de La Naval . El ...

[www.elcorreo.com](http://www.elcorreo.com)

La construcción del ferry 'Texelstroom' por parte de La Naval para la compañía holandesa TESO recibió ayer el espaldarazo definitivo de financiación, que supone un total de 42 millones de euros, de los cuales 15 millones corresponden al Banco Sabadell Guipuzcoano.

La construcción del ferry 'Texelstroom' por parte de **La Naval** para la compañía **holandesa** TESO recibió ayer el espaldarazo definitivo con la firma del contrato de financiación,

que supone **un total de 42 millones de euros**, de los cuales 15 millones corresponden al Banco Sabadell Guipuzcoano, que dirige la operación.

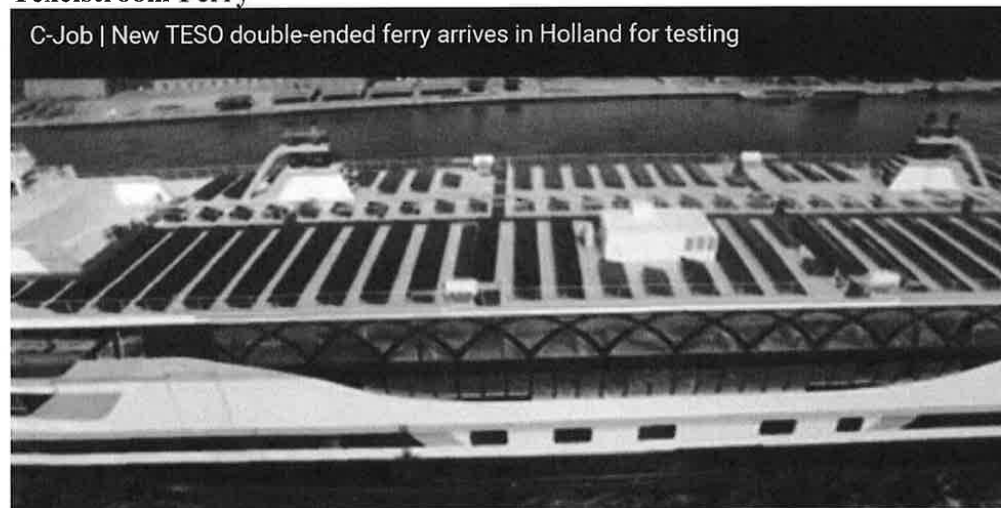
### Translation

The construction of the ferry 'Texelstroom' by **The Navy** for the company **Dutch** TESO yesterday received the ultimate accolade with the signing of the financing agreement.

that is **a total of 42 million euros**, of which 15 million correspond to the Sabadell Banco Guipuzcoano, which directs the operation.

42,000,000 Euro's equals **\$57,540,000 U.S. Dollars**

**Plus solar panels on the roof for about \$100,000,000 less than WSF pays for a 144 ferry. Texelstroom Ferry**





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## Texelstroom Ferry

PROJECT TYPE Dual-fuel ferry

OWNER AND OPERATOR Texels Eigen Stoomboot Onderneming (TESO)

BUILDER LaNaval Shipyard

KEEL LAID December 2014

Texelstroom is a sustainable, new-generation ferry built at LaNaval Shipyard, Spain, for its operator and owner Texels Eigen Stoomboot Onderneming (TESO). The ferry will operate between the islands of Texel and Den Helder, Netherlands.

The eco-friendly vessel is fuelled primarily by a **hybrid diesel oil or compressed natural gas (CNG)**, complemented by electric batteries and solar power. It is also capable of operating solely on diesel.

The ferry project was conceptualised in 2010, the design works were initiated in October 2012, the vessel's keel was laid in December 2014, and delivered occurred in June 2016. The ferry will start operations following the completion of commissioning.

The design phase of the ferry project formed part of the larger European Union's I. Transfer Program, which aims to make ferry transport more accessible and sustainable.

The [hybrid diesel electric-fuelled vessel](#) is classed by Lloyd's Register.

Texelstroom Ferry design details

The ferry is 135m-long and 28m-wide, and has the capacity to carry **1,750 passengers** and **350 vehicles**. It incorporates a 4,000m<sup>2</sup> main hall on the passenger deck, buffet areas, weather decks, service areas, two bridges, offices, a dining area, and other crew areas.

The most prominent area within the ferry is the crèche area, whose design is inspired by a sandy beach. The area features backlit decorative panels and a large artificial tree in one of the galleries.

Engines and propulsion machinery for TESO's new ferry

The double-ended ferry is equipped with two independent engine rooms. One engine room is fitted with Anglo Belgian Corporation's (ABC) two ABC 12DZC diesel engines, whereas the other engine room is equipped with two ABC 12DZD dual-fuel (diesel-electric (CNG)) engines. All the four engines have a rated capacity of 2,000kW.

The vessel is propelled by two Rolls Royce **azimuth propellers** each fitted at the two ends. It is capable of sailing at an average working speed of 10k and a maximum speed of **15k**.

Fuel supply for the Dutch hybrid ferry

The CNG fuel for the vessel is supplied by PitPoint and conveyed to the bunkering station at the island of Texel via a 7km-long pipeline. The fuel is then stored in two containers installed on the vessel's top deck.

Sustainability and safety features

Texelstroom is equipped with a heat recovery system, which recovers the heat from the engines' cooling liquid to boil a 90m<sup>3</sup> water tank to approximately 85°C. The recovered heat is then used to heat the vessel while at dock.

**"The eco-friendly vessel is fuelled primarily by a hybrid diesel oil or compressed natural gas (CNG), complemented by electric batteries and solar power."**

The vessel is also equipped with **700m<sup>2</sup> of photovoltaic (PV) solar panels on the rooftop**, with an installed capacity of **approximately 150kWh**, which is used to charge the electric batteries.

Other sustainable design features include the use of an **optimised hull design** to reduce water resistance and optimised ventilation system on the car decks, while smaller chimneys have been chosen and the wheel houses are arranged to be located in a lower position to improve the vessel’s stability and wind sensitivity.

The saloon-deck onboard the vessel is equipped with two fire curtains measuring 2.5m-high and 8m-long. The vessel is equipped with foam fire-fighting systems and fibre-optic-based fire-detection systems.

#### Contractors involved

The initial concept and basic design of the vessel was provided by C-Job, whereas the interior and exterior design was performed by Vripack, who further subcontracted Oliver Design to perform the fitting out works. The solar panels for the vessel were supplied and installed by Alusin Solar in collaboration with Bikote Solar. The foam fire-fighting systems and fibre-optic-based fire-detection systems for the ferry’s car decks were supplied by InnoVfoam, and the sliding doors for the public areas were supplied by Aluflam Marine. Bolidt supplied its proprietary flooring and decking components for the vessel. Natural gas supplier PinPoint was also involved in the engineering, procurement and construction (EPC) works for the bunker station at the island.

<http://www.marinelink.com/news/capability-managing-ferry413117.aspx>

### Ferry Capability is More Than Managing an Asset

By Trevor Dove

Wednesday, July 27, 2016



Fig 1. Capability Inputs (Source: BMT Design & Technology)

Ferry operations are extremely complex with a combination of inputs that will all impact the ferry’s ability to deliver effective operational capability – the asset itself forms only a small part of a system for transporting people and vehicles between two points. All inputs to the ferry transportation system need to be considered to deliver the system’s capability and ensure the service is successful.

**Too much emphasis is often placed on the acquisition of a ferry, rather than on the remaining operational inputs, resulting in an ineffective, inefficient and unsuccessful operation.** Only by robust management of all of the capability inputs can an operation be effectively maintained.

To develop a better understanding of the inputs to capability, lessons can be taken from organizations which operate complex systems, such as the defense forces. There are a range of available frameworks that define inputs to maritime system capability which may include the following elements: **personnel, logistics, equipment, infrastructure, policies and procedures, organization and training.**

Each of these elements forms part of a capability. The physical asset, in this case a **ferry, is just one of the seven inputs that needs to be considered.**

Although significant investment is made in equipment, **when considering the through life costs of vessel ownership, the remaining capability elements, as shown in Figure 1, represent a large portion of the overall investment.**

As such, **greater emphasis should be placed on this.**



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Beyond equipment, the operational coverage of capability elements includes issues relating to recruitment, retention, training and development of people; spares, administrative and training supplies; systems and infrastructure put in place to support an operation, such as transport; procedures and processes, security, command and responsibilities; those parts of the organizational structure which undertake critical tasks, other than operation and maintenance of the asset; buildings, docks, maintenance facilities, training facilities and wharves; and the maintenance of competency of the organization.

**Throughout the lifecycle of a ferry, a comprehensive understanding of associated costs is crucial for business planning and reporting.** For this reason, it's important for stakeholders to duly consider the capability elements aforementioned at all stages of the ferry's lifecycle. **Taking the time to understand these elements at the beginning of a project will allow organizations to manage the costs effectively throughout.** However, if there are major changes in capability this may trigger the need for a review.

A capability upgrade can not only trigger substantial, physical modifications to a ferry, it can mean additional, hidden costs related to the other capability elements, which in turn can become significant if not addressed and managed accordingly.

As an example, consider a ferry modification which has resulted in an additional five meters being added to its length to allow an extra 20 passengers to be transported. The costs associated with such a modification should not just centre on the physical asset itself – organizations must look at all of the capability elements and the impact of such a modification.

Considerations of associated cost issues could include crew numbers and ensuring competencies are sufficient in light of the upgrade; making sure adequate spares are available; other systems which may be affected by the upgrade (i.e. portable water capacity); whether sufficient wharf space is available; if there will be an increase in berthing fees; ensuring the maintenance facilities being used have capacity to deal with a larger vessel.

In addition to a capability upgrade, an assessment of capability elements is also critical when investigating the potential to extend the life of an asset. Although there may not be a change in the ferry's capability, **understanding the costs for a life extension period is important, given that any business case made at project inception has been made with an assumption of ferry life.**

If this assumption changes, **it is then necessary to assess the capability elements to help validate whether or not there is a strong business case for life extension and identify the costs of doing so.**

**Life extension studies are best used as part of the decision making process when considering a vessel's future, as it nears the end of its service life.** Organizations will be looking at two options: to dispose of a vessel at its designated end of service date and replace with a new capability or, extend the life of the current vessel and delay the purchase of a new capability.

In most cases, this decision will simply be down to whether or not it is more cost effective to carry out a replacement project or invest resources into a heightened maintenance regime or major upgrade – **it will not remove the need for eventual replacement.**

**Regardless of the decision, consideration of all capability elements is crucial in developing an accurate picture of costs.**

There are a range of similar approaches used by organizations around the world which could be considered suitable depending on the operation in question. Whether it is in consideration of capability upgrade, life extension or in gaining an initial understanding of the cost of ownership of a ferry, it is recommended that a holistic approach is taken to defining the operation, extending well beyond the acquisition of the asset.

BMT Design & Technology Pty Ltd (BMT) has recently completed a design project for the South Australian Government's Department of Planning, Transport and Infrastructure (DPTI). Working in partnership with the

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DPTI, BMT has developed a replacement design for ferries that operate on the River Murray, the third longest navigable river in the world, after the Amazon and Nile.

The steel hull, built by local firm Bowhill Engineering, was fit out by the Departments Morgan dockyard. The first ferry has now gone into service in Lyrup with another three scheduled for completion by July 2016, 2017 and 2018 respectively. **These ferries are heavily relied upon by the local communities** for safe passage across the River Murray. BMT delivered a robust design, a critical factor for a service that operates 24 hours a day, 365 days a year.

The team at BMT provided structural engineering and naval architecture services to deliver a detailed design which aligned with the customer requirements. BMT also carried out condition surveys on a further four timber hulled ferries which were nearing end of life. Following the surveys, the Department applied weight restrictions to help maintain the longevity of these ferries for safe operation until they are replaced. Constructed of steel and 22m long, these cable driven ferries can take two lanes of cars or trucks of up to 50 metric tons, or a maximum of 70 passengers.

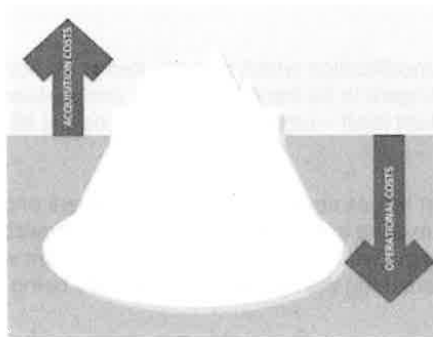


Fig 2. Iceberg Analogy for Vessel Operating Costs (Source: BMT Design & Technology)

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### **Ferry Fares:**

Ferry deck space needs to be charged by **actual space used**.

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**With technology vehicles can be measured as they enter the ticketing area.**

**Charging by the foot is more equitable due to the various lengths of vehicles.**

**This would encourage ferry users to use shorter vehicles.**

<https://bctrucking.com/bulletin/2015/02/06/horseshoe-bay-terminal-new-vehicle-classification-system-pilot>

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### **Horseshoe Bay Terminal: New Vehicle Classification System Pilot**

Posted on Fri, 2015-02-06 15:19

A six-month **Vehicle Classification System** pilot is in place at the **Horseshoe Bay terminal** until July 31, 2015. The VCS uses lasers and radar measurement sensors to measure the length, height, ground clearance, and classification of vehicles, including commercial trucks, buses, other over length vehicles (RVs) and trailers. The VCS is intended to speed up the ticketing process and provide consistent results. The system is installed just before the commercial vehicle ticket booths between lanes 1 and 2, and automatically measures approaching vehicles over 20 feet in length. BC Ferries says that all components are CSA approved and safe for people.

If you have comments about the VCS pilot, please contact BCTA's Policy Director, Greg Kolesniak, by e-mail at [gregk@bctrucking.com](mailto:gregk@bctrucking.com). There is information about this pilot on the BC Ferries [project site](#).



Site of VCS Pilot at Horseshoe Bay

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<http://www.nsnews.com/news/scanners-installed-for-oversize-vehicles-at-horseshoe-bay-ferry-terminal-1.1752862>

## **Radar and laser sensors measure oversize vehicles at ferry terminal**

Jane Seyd / North Shore News FEBRUARY 4, 2015 03:53 PM



Photo supplied B.C. FERRIES

Anyone driving a commercial truck, bus, oversize camper or towing a boat trailer departing from the Horseshoe Bay ferry terminal will now have their vehicles automatically scanned and measured before they get to the toll booth.

The move is part of a pilot project that starts Wednesday (Feb. 4) at the Horseshoe Bay ferry terminal and runs six months, until the end of July.

**A new scanner — which uses radar and laser sensors — will automatically measure vehicle length, height and ground clearance and provide an electronic display to ticket agents of vehicles over 20 feet in length.**

The scanner will be placed to measure vehicles on the approach to the commercial ticket booth between lanes 1 and 2 at the terminal.

The pilot project is intended to **speed up the process of ticketing for plus-size vehicles and trailers**. It is also meant to ensure consistent measurements and fares for those vehicles, according to B.C. Ferries spokeswoman Deborah Marshall. Currently, ticket agents either rely on the driver's word about their vehicle length or get out of their booths to manually measure the vehicles.

Marshall said there has been some suggestion in the past that some over-length vehicles may have been under-measured or reported and therefore under-charged. The ferry corporation is hoping the scanners will result in an increase in revenue, as well as faster service. Marshall refused to divulge the cost of the scanner, describing it as "commercially sensitive." If the pilot project works as anticipated, the ferry corporation will look to installing the measuring scanners at all of its terminals serving major ferry routes, said Marshall.

Marshall added the ferry corporation has no plans to start charging vehicles under 20 feet in length by measurement. According to the ferry corporation, the scanners have been CSA approved as safe for people. Marshall said if any driver has strong objections to the scanner, they can choose to go through a different toll booth and be manually measured.

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<http://www.sanjuanjournal.com/news/144057656.html#>

### Locked and loaded: Ferries now laser-equipped



A state ferry worker measures vehicle length using **WSF's new laser-equipped measuring device**.  
— image credit: *Courtesy of Washington State Ferries*

by SCOTT RASMUSSEN, Journal of the San Juans Editor Mar 24, **2012** at 12:00PM updated Mar 27, 2012 at 4:39PM

Have no fear. The lasers are here.

Washington State Ferries is going high-tech, swapping **measuring tape** for laser-equipped devices, as it embarks on a new era of ticket pricing.

WSF Director of Operations Steve Rogers acknowledges that Ferries found a few flies in the ointment when tickets began to be bought and sold for the new 14-foot-and-under category of vehicles. The 14-foot-or-less category became effective in October, along with a 2.5 percent fare increase, as did an extension of two feet on the standard vehicle category, which now measures up to 22 feet.

"I have to admit in the beginning we had a few difficulties to work out," he said. "I think we have things moving pretty smoothly now."

Saturday, April 28, 2018 Doug Rauh's Bainbridge Island comments on WSF 2040 Long Range Plan Page 35 of 43

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Rogers said that tape measures could prove imprecise in cases where it came down to inches, and the length of different auto models and brands may change from year to year. He added that owners' manuals generally measure a vehicle's length in inches while Ferries calculates it ticket prices in feet.

What Ferries found, Rogers said, was it needed more precision pumped into the system in order to clear up some of the confusion.

According to Customer Service Manager Susan Harris, WSF has refunded roughly 400 tickets to people — systemwide — who bought a 14-foot or under fare and then later found out that they're vehicle failed to measure up. About 25 to 30 of those refunds went to those who bought a ticket for a San Juan sailing, Harris said.

"We're talking about vehicles under 168 inches," Harris said. "When you say 14 feet that sounds pretty big. But when you say it as 168 inches, it doesn't sound quite as large. I think that's one of the reasons that people initially were confused." The solution? Apparently two-fold.

Rogers said a portable **"laser-measuring device"** was designed in-house by WSF engineers at the agency's maintenance facility in **Eagle Harbor**. The devices have been deployed to "measuring stations" throughout the system, including the Anacortes terminal, and he expects that the measuring process, if needed, will be more efficient and precise. Then, there's also a 14-foot-or-under sticker for your windshield. Have your vehicle measured by WSF and then receive a decal signifying which category your car belongs in and that can be displayed on the interior of your windshield. Rogers said Ferries "encourages" use of the sticker as a way to avoid delay or confusion at the ticket booth.

Harris encourages early arrival at the ferry terminal for those thinking or needing to have a vehicle measured, or schedule an appointment. In Anacortes, notify a ticket booth operator if you wish to have your vehicle measured.

A list of pre-approved 14-foot makes and models also can be found on Washington State Ferries website. Ferries spring sailing schedule goes into (went into) effect Sunday, March 25. It marks the third change in the Anacortes/San Juan sailing schedule with the 14-foot category in place. The cost of a car-and-driver 14-foot fare, from Anacortes to Friday Harbor, is \$41.25. The price of 14-foot or less is \$37.15. For more info about fares; visit, [www.wsdot.wa.gov/ferries/fares/](http://www.wsdot.wa.gov/ferries/fares/)

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### Ferry Financial Model:

Current WSF financial model is based on shifting a larger percentage of fare increases from people to vehicles.  
Will this vehicle biased revenue model be sustainable as **autonomous vehicles** replace privately owned vehicles?

Where one autonomous vehicle drops off a passenger at a ferry terminal and another autonomous vehicle picks that passenger up at the other ferry terminal.

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The introduction of autonomous cars and electric bikes/motorcycles will change **the space utilized on the ferry vehicle deck.**

Autonomous vehicles could deliver passengers directly to the ferry terminal and pick them up at the other terminal. Thus removing the need to take a vehicle onto a ferry deck.

Tourist going from Anacortes to Friday Harbor may prefer to use a shared autonomous vehicle compared to the hassle and expense of taking their own private vehicle.

<https://electrek.co/2018/04/27/harley-davidson-electric-motorcycles-younger/>

Micah Toll

Harley Davidson's upcoming electric motorcycles seek to expand to younger, urban riders

- Apr. 27th 2018 8:48 am ET



Harley Davidson's CEO Matt Levatich just confirmed that **the company is on track to meet its goal of releasing a fully electric motorcycle in 2019.**

According to Levatich, Harley Davidson wants to use the new line of electric motorcycles to help reach a younger audience focused more on utilitarian, urban transportation.

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Doug Rauh's comment as of 2018 05 01:

**“How would a 20% reduction in vehicles due to Congestion Pricing affect WSF financial model?”.**

<https://www.seattletimes.com/opinion/give-congestion-pricing-a-test-drive/>

**Seattle, give congestion pricing a test drive**

Originally published April 30, 2018 at 4:06 pm Updated April 30, 2018 at 4:19 pm

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**Once people figure out how to take the bus or ride a bike, many find they actually enjoy leaving their car at home.**

By [Sharon Shewmake](#), *Special to The Times*

SEATTLE would likely benefit from congestion pricing, which charges fees to drivers entering downtown areas at peak periods, especially if the city uses the revenues to fund public transportation. But before the city is asked to vote on any congestion-pricing plan, residents should be allowed to experience congestion pricing through a seven-month trial period.

Building more roads, tunnels and bridges, widening lanes, adding HOV lanes, or even expanding light rail does not relieve congestion in the long run. In the short term, there might be more space on the road and fewer delays, but multiple studies have shown that eventually drivers find reasons to take trips and traffic congestion returns.

**The only way to relieve congestion long term is to make driving costly.** Transportation economists advocate for congestion pricing because the revenues can be used to fund transit and provide an alternative to driving.

Stockholm dealt with this opposition by holding a seven-month trial where revenues from congestion pricing were invested into improved transit service. Before the trial, support for congestion pricing in the city was as low as 36 percent, but after the trial, the referendum passed with 53 percent of the vote.

Twelve years later, congestion pricing has become an accepted part of life in Stockholm.

**Traffic has decreased by more than 20 percent**, air quality has improved, and greater numbers of residents use well-funded public transit subsidized by those who still drive through central Stockholm. The charge was so popular in Stockholm that nearby Gothenburg emulated Stockholm's model despite being a smaller, less-congested city.

Seattle could benefit from congestion pricing too, but voters will have a hard time valuing congestion pricing without a direct experience. Psychology and behavioral economics research shows that humans are loss averse — overestimating the costs of a change in policy and discounting any benefits. This likely explains the change in sentiment cities like Stockholm have seen.

Another reason public opinion changed in Stockholm is that driving in traffic is more stressful than we realize. Directly after Stockholm's trial, traffic was still down 5 to 10 percent despite there no longer being a fee. Once people figure out how to take the bus or ride a bike, many find they actually enjoy leaving their car at home. The city benefits from fewer hours wasted in traffic, better access for emergency vehicles, improved reliability of travel, better air quality, quieter and safer streets and more money invested in the transit system.

Democracy only works if voters understand what they are voting for, and in today's political climate it is hard to know whom to trust. Seattle should run a seven-month congestion-price trial before having a referendum so voters can trust their own experiences. This will help answer many questions about congestion pricing and residents will see what reducing traffic congestion looks like.

Drivers will see exactly how easy or difficult it is for some to give up driving (meaning less stress and wasted time for those still in their cars). The city will have a chance to better understand how congestion pricing with improved transit will impact all residents.

Most important, at the end of the seven-month trial, residents will be able to have an informed vote on whether to keep congestion pricing.

**Sharon Shewmake**, an associate professor of economics and faculty member of the Institute for Energy Studies at Western Washington University, studies how housing and transportation policies impact our environment. London, Stockholm, Singapore, Milan, Gothenburg and other cities all have successful congestion-pricing programs, most of which faced fierce initial political opposition but have now become an accepted part of city life.



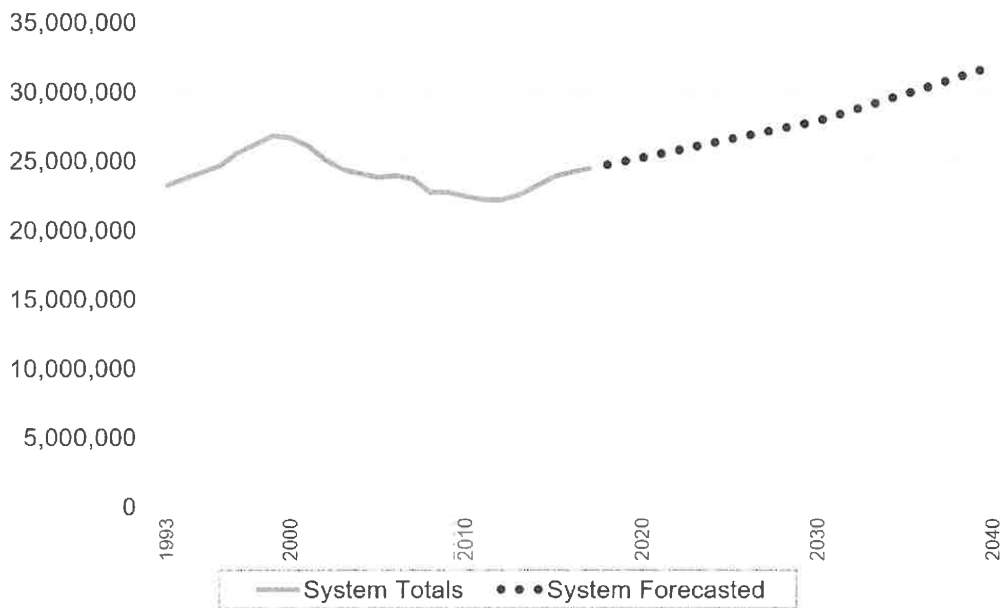
**Ferry System Demographics:**

As Baby Boomer ferry users age out of the work force will peak demand for service shift to mid-day?

<http://wstc.wa.gov/Meetings/AgendasMinutes/agendas/2018/April17/documents/0417-BP1-WSF2040LongRangePlan.pdf>



**WSF Ridership History (1993-2017) and Preliminary Forecast (2018-2040)**



Sources: WSF Traffic History and WSF Baseline Ridership Forecasts



Doug Rauh's comments on WSF Ridership:

**Why does WSF future ridership predictions only go up** when in the recent past WSF ridership went down for years?

**To me this graph is not realistic.**

There will be a recession in the next 20 years plus many of today's "Baby Boomers" won't be riding the ferry in 20 years.

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### **Terminal Automation:**

**The Vehicle Ticketing process from highway to holding needs more automation.**

All passenger turnstiles need to accommodate commuters with computer roller cases and travelers with luggage.

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**Old Coleman Dock turnstiles did not allow wheeled computer cases or luggage to go thru all but one special turnstile.**

Software Developer is the largest job title in Seattle.

**WSF needs to match their equipment to their customers.**

**The turnstiles may have been great for Disneyland but WSF Bainbridge route is the mass transit from the West Sound to the East Sound for Software Developers and other office workers.**

Many WSF customers (commuters, students, consultants, other) haul their computer in a roller case between home and office.

**WSF design of turnstile layout did not allow for ticketed passengers to pass thru the turnstile until the ferry was unloaded.**

**This only allowed 10 minutes for the loading passengers to pass thru the turnstiles.**

On the Bainbridge route peak period there could be 1,500 passengers waiting to load.

Any little glitch becomes a major problem and unnecessary stress for WSF customers.

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### **Terminal to Ferry Loading:**

Needs to be **more efficient** and **safer** for both passengers and vehicles.

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WSF passenger gangway at the BI terminal needs to **allow unload/offload** to both the North/South sides of Olympic Drive (SR-305) in order to **eliminated the need for pedestrians to cross** at traffic signal next to the toll booths. This is both a safety problem and an efficiency problem.

Sync the traffic signal next to the toll booths to the SR-305/Winslow Way traffic signal and disable the pedestrian override.

Convert the traffic signals from time of day (old) to the newer Adaptive Control which are capable of changing the signal timing based on demand.

Ferry traffic peaks just before and after a ferry arrives but the old style traffic signal do not adjust for the change in traffic demand thus making the highway infrastructure less efficient causing unnecessary congestion.

Change both lights to **Adaptive Control Traffic Signals** and **increase the green time** during the ferry unload. This could be funded under a Federal Highway Administration **Accelerated Innovation Deployment (AID)** Demonstration and/or Tiger Grant of the interface between marine/land transportation systems. <https://www.fhwa.dot.gov/innovation/grants/>

It appears as if WSF terminal operations designs inefficiencies into the process.

At Texel, Netherlands the TESO ferry loading process uses **automatic gates** and **traffic signals** to manage the vehicle loading and unloading.

This is all done from a single control building.

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<https://www.youtube.com/watch?v=s9U7UaIARxA>

Veerboot Ferry Boat Fähre Den Helder ~ Texel TESO Bootdienst 06 **2017**

**Unload reload 350 cars in 10 minutes** by loading both upper and lower decks simultaneously  
**WSF unload reload 202 cars in 20 minutes.**

Time efficiency is all in the design.

Teso is a private company while WSF is a government service subsidized thru tax revenue.



<https://www.youtube.com/watch?v=sOKZ2NLFvQQ>

**Texel Island dual vehicle loading ramps allows 350 cars to be unloaded and reloaded in less than 10 minutes.**

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Doug Rauh's Bainbridge Island comments on WSF 2040 Long Range Plan

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## Online Ticket sales

**Seniors are not allowed to buy discounted senior ticket online per WSF policy.**

WSF ticket process should validate the **right to use** a particular ticket **at time of use NOT** at the **time of purchase**.

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Using virtual ticket agents at the terminals would allow better coverage thus spreading the demand for tickets. At night a couple of ticket agents would be able to cover all the WSF terminals during times of low demand. Using remote audio/video WSF could provide language translation for those customers who do not speak and/or read English.

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<http://www.railwaygazette.com/news/technology/single-view/view/virtual-ticket-agents-aim-to-boost-ticket-machine-use.html>

### Virtual ticket agents aim to boost ticket machine use

22 Dec 2017



UK: Greater Anglia says it is the first train operator in England to roll out **Scheidt & Bachmann's FareGo ViTA 'virtual ticket agents'** across its ticket machines, **enabling passengers who have a query to press a button to contact staff via a two-way audio link.**

The 196 Scheidt & Bachmann ticket machines on the Greater Anglia network have been upgraded with a speaker, microphone, software updates and a connection to the **in-house call centre** in Essex which is **staffed by 13 ticket sellers and operates 24/7**. The ticket agent can give advice and information, and they can also **remotely control the machine on behalf of the customer**, with the exception of the card payment screen.

During the pilot phase from September 8 to October 29 the centre received an average of 250 calls per day, of which 30% came from London Liverpool Street station.

'We know that customers sometimes feel apprehensive about buying tickets from a machine as they are unsure of how it works or which is the best ticket for their journey, so being able to connect straight to a friendly voice who can help will really improve the service we offer', said Customer Service Director Andrew Goodrum. **'We hope it will result in ticket machines being used more, helping to reduce queuing time at ticket offices** and offering customers a better level of customer service, enabling them to buy with ease and confidence.'

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Doug Rauh's Bainbridge Island comments on WSF 2040 Long Range Plan

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<http://www.masstransitmag.com/article/12011573/cubic-displays-number-of-customer-ticketing-solutions>

## **Cubic Displays Number of Customer Ticketing Solutions**

ARTICLE OCT 20, 2014



The **Cubic NextAgent Video Ticket Office** can provide **out-of-hours ticketing** and **pool specialists skills such as foreign languages** or unusual ticketing requirements, **allowing customers to interact with a real ticketing agent remotely.**

**Photo credit:** Mass Transit

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<https://vimeo.com/112308494> 6 minute video showing how Next Agent works

### **Next Agent: The Next-gen Ticket Office, Call Center & Ticket Vending Machine**

**Cubic Transportation SystemsPRO** Published on Feb 5, 2014

Introducing the next generation of ticket vending machine: NextAgent by Cubic. Transport operators are continuously faced with pressure to reduce costs, to maintain excellent customer service and to look after staff...as well as deliver their regular travel services. At the same time, travelers want to know that they are buying the right ticket at the right price, and they want real-time, reliable information to help with their journeys whenever they need it.

**NextAgent by Cubic** is a blend of **traveler information center, call center and ticket vending machine,** designed to complement existing ticketing facilities.

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**Part 4: The comments below were submitted by agencies and organizations.**

**Griffith, Lynne**

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**From:** Charlotte Garrido <cgarrido@co.kitsap.wa.us>  
**Sent:** Thursday, February 05, 2015 3:26 PM  
**To:** Charlotte Garrido  
**Cc:** Robert Gelder; Edward E. Wolfe  
**Subject:** Kitsap Community Ferry Forum Report – December 2014  
**Attachments:** 2014 Ferry Report REV 020215.pdf

Hello,

Kitsap County commissioners often hear from ferry riders, so when Washington State Ferries (WSF) announced plans to update their Long-Range Plan late last year, we invited local participation on this issue. Kitsap County hosted five forums -- in Southworth, Bremerton, Silverdale, Kingston and Bainbridge Island; and invited opinions regarding ferry operations and future planning. As expected, Kitsap residents brought valuable insights to this planning effort. You will find a report of the meetings attached.

The perspectives from these sessions maintain that ferries are marine highways and plans for the future must include this method of travel as part of the Washington State transportation system. A great ferry system will certainly benefit communities east and west of Puget Sound.

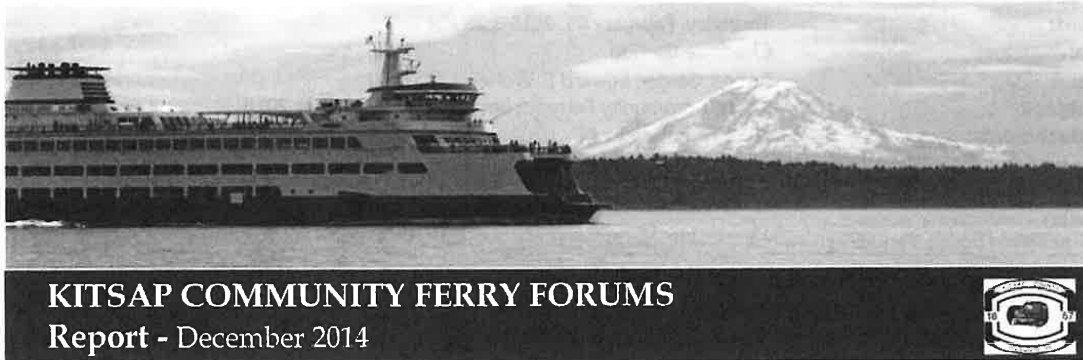
Kitsap residents stress that current runs must be sustained. Because ferry routes are tolled, riders desire stable fares along with information about how fare box recovery is reinvested within the ferry system. They recommend the WSF Long Range Plan update address issues relative to services and service delivery, communications, capital facilities, and more. I believe you will appreciate the suggestions made by customers of the Washington State Ferries.

Four Washington Department of Transportation highways end at the water's edge in Kitsap County and continue across Puget Sound via Washington Ferries. Incorporating professional and ferry riders' expertise can serve the public well and ensure the sustainability of this iconic transportation system into the future.

The Board of Kitsap County Commissioners shares your interest in a reliable Washington State Ferries system. We will continue to advocate for vital transportation corridors – including marine highways. Feel free to contact our office about this issue at any time.

*Charlotte Garrido*

Commissioner  
(360) 337-7080



## EXECUTIVE SUMMARY

Kitsap County held five public meetings to generate local discourse about the Washington State Ferries (WSF) Long-Range Plan Update. The forums took place in Southworth, Bremerton, Silverdale, Kingston and Bainbridge Island; and invited residents' opinions regarding the ferry system operations and future planning. As ferry riders, Kitsap residents offer valuable insights for this planning effort.

The ideas from these sessions assert that ferries are marine highways and part of the Washington State transportation system. Further, that a great ferry system will benefit communities east and west of Puget Sound. All modes of transportation depend on safety and reliability, and alternative vessels must be available to serve when needed.

Kitsap residents emphasize that ferries are marine highways and vital within a multi-modal transportation system for the Puget Sound region and Washington State; and current service levels must be sustained. They also desire predictable and stable ferry fares – including information about how fare box recovery is reinvested within the ferry system. Their recommendations for the WSF Long Range Plan update include:

- Develop a communication plan for travelers across jurisdictions and transportation modes.
- Coordinate with regional and local land use plans and multiple transportation systems.
- Organize more like a business, and manage the assets accordingly – while considering WSF's role in the overall transportation system.
- Embrace management tools within the agency. Suggestions include Lean process improvement, pertinent demographic data, useful public engagement methods, and third-party value stream mapping.

Understanding ferry riders' experiences and needs will help Washington Ferries serve the public well while ensuring the sustainability of this iconic transportation system into the future.

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## INTRODUCTION

Four Washington State Ferries (WSF) water routes serve the Kitsap Peninsula. Each extends from a Washington state highway and crosses Puget Sound via WSF services.

Washington State Ferries has begun initial steps to update their Long Range Plan during 2015. The purpose is to extend the planning horizon to 2040 and align with the PSRC Regional Transportation Plan. Operational and pricing strategies implemented since 2009 will also be incorporated. WSF indicates the major focus areas for the revision include:

- Market understanding. Revise ridership forecasts with new demographic information about riders.
- Adaptive management practices. Integrate lessons learned and identify new strategies.
- Operational paradigms. Explore ways to meet current and future demands for new vessels.
- Technology assessment. Consider innovative vessel, terminal and other operational investments to extend limited state resources.
- Key cost drivers and best practices. Review cost drivers for capital and operating programs and identify strategies (affected by policy, regulatory and management decisions) to reduce costs.
- Financial sustainability. Update the long-term financial outlook for the system.

Origin-destination surveys conducted by WSF provide data about passenger travel patterns. The 2013 Origin-Destination Travel Survey observes that ridership throughout the WSF system has decreased and that riders make less frequent trips than in the past – including the Central Puget Sound routes, which are the highest traveled. Yet there is no reference to how factors such as the economic downturn may have influenced this phenomenon.

Because Kitsap County is served by four ferry routes, our experiences as riders are fundamental to informing the long term plan. A Ferry Community Partnership (FCP) made up of interested citizens and some elected representatives meets regularly in Kitsap County to review issues of interest to ferry-served communities. In addition, Ferry Advisory Committees (FACs) exist for each WSF route in the system. For Kitsap County, these are Bainbridge, Bremerton, Kingston, and Southworth.

Issues of interest expressed by ferry-served communities relate to the values of 1) including rider and community experiences in WSF plans, and 2) quality service. Meetings in October 2014 with each of the local communities served by WSF sought the riders' perspectives to inform the Long Range Plan Update. A fifth forum in Silverdale is also included. The conversations addressed issues of communications and public involvement, vessels, fares and tariffs, schedules, and more. This document summarizes what was recorded at those meetings. The message in bold that opens each section captures the key statement for that topic.

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## PUBLIC SUGGESTIONS FOR THE WSF LONG- RANGE PLAN

### COMMUNICATIONS AND PUBLIC INVOLVEMENT

**Ferries are marine highways – and a part of the Washington State transportation system. A great ferry system will benefit communities east and west of Puget Sound.**

“Waterway Communities” must unite and speak out about the value this transportation mode offers in Washington.

We seek good working relationships and information sharing between ferry-served communities, Washington transportation leaders, and WSF. WSF needs to enhance public relations and plan for travelers across the jurisdictions served. For example,

- Inform riders and communities who to speak to on ferry issues
- Provide training for WSF employees (customer skills and the value of *good* public relations)
- A WSF marketing initiative is recommended

Current Condition: Communication is poor.

#### Suggested Communication Methods

**Notices** Post notices about community ferry meetings in terminals and on ferries

**Meetings** Convene aboard ferries; with legislators, Ferry Advisory Committees, and the Ferry Community Partnership

**Use Technology** Assure accurate and timely information, and improve the use of technology (website, phone apps, early alert systems, “Good to Go” and more. Note: highway message board for ferry delays “is not realistic”). Put passenger counts on the website (daily, weekly, monthly and annual).

#### WSF Surveys

**Questions** WSF surveys are perceived to have predetermined answers to the questions. Perhaps open-ended questions would result in more useful outcomes.

**Data** Use accurate metrics for ridership and vehicles; and present information in ways that lay persons can understand.

- Concerns about data for the 2015 plan, e.g., using 2013 survey, respondents to recent survey on social/recreational trips.
- 2006-7 WSF survey was at the height of the economic boom. More recent data as a baseline.
- Critique why ridership numbers are decreasing, impacts on system sustainability (e.g., effects of higher fares and economic downturn).
- Profile ferry commuters as a marketing tool.

---

## VESSELS

**Ferry routes are marine highways as well as public transit. We request that Washington State buy more boats to improve safety and reliability.** (Breakdowns cost money and lose fares.)

For safety, carry more lifejackets to add passenger capacity, & accurately count rider numbers. Set up a budget to follow critical maintenance needs. Also, schedule maintenance according to ridership (not chiefly in the summer).

Current Condition: The aging fleet has insufficient vessels to provide back-up service.  
[See Appendix 1: "Washington State Ferries Builds a Fleet"]

### Suggested Design Considerations

Service	Build vessels that provide consistent and reliable service (& can carry lots of people)
Speed	Consider speed and savings as well as low wake features in new ferries. Use vessel technologies that increase speeds where appropriate.
Longevity	Could improvements feasibly extend 60-year life on jumbos? In Europe, life span is 30 years for a vessel; rather than 60 years like here. Single deck, more and smaller boats, will offer smoother transitions on loading and off-loading.
Efficiency	Vessels should be built with natural gas.

### Suggested Maintenance Considerations

Complete maintenance in the off season.  
Set up budget to follow critical needs.

## FARES

**Fares need to be predictable and stable. Fare increases have reduced ridership, especially commuters.**

***When runs are cut or fares increase, it limits travel alternatives for ferry riders.*** (some feel that fare rates are a reasonable value, and many say that fares are high, The point is that local wages are not sustainable to support fares – especially for the younger generation.)

- There seems to be no ingenuity in operations, the focus is jabout money and fares.
- Consider demographics when setting vessel fares.
- Where is fare box income reinvested?

Current Conditions: Ferry fares have increased significantly in recent years.  
[See Appendix 2: "History of WSF Ferry Fare Increases"]  
WSF has a 70% fare box recovery rate of expenditures. ***No other transportation mode has as high a recovery rate as the ferries.***  
[See Appendix 3: "Historic WSF Recovery Rate"]

---

#### Suggested Funding Structure

- Sources** Ferry funding sources should be more sustainable.
- Treat ferries as a “floating highway” and allocate funds accordingly
- WSF represents less than 3% of transportation budget, yet Central Puget Sound routes have a 70% fare box recovery. Where is it spent (see above)?
- Where do the savings go when costs decrease for fuel and other cyclical expenses?
- Explore other funding opportunities, e.g., first responders, enterprise fund structures, etc.
- Would like to see more Federal funds allocated to assist WSF’s efforts.
  - Inform legislators and hold them accountable for fares, increases, new vessels.
- Decrease fares to encourage ridership in off-peak times.

#### Comments on Fairness and Access

**The ferry system is broken. Low income cannot afford the fares.** *Discussions of fairness at all community meetings were held regarding fares for seniors, families, students, varied size vehicles.*

## SCHEDULES

**More runs are needed. There is a desire for consistency in service and schedules across the routes.** Determining which route to take depends on factors such as number of sailings, waiting times, and traffic.

**Current Condition:** Concerns are expressed with parity across the system as well as with the reported on-time rates, which do not report “total passengers served” (e.g., the number of people waiting and the number of crossings).

#### Trip Duration Perspectives

**Reliability is key.** It takes 3 ½ - 4 hours a day to commute to the Eastside. Not a preferred transportation method.

**On-time performance measures departure times, but the need to arrive on time is the best performance measure.**

**Service is not dependable in summer –on-time watch changes are often the problem.**

Bremerton sailings used to be 55 minutes. Routes are longer today and alternates are available.

PM runs need additional vessels to address demand, as there are more backups than AM.

#### Schedule Priorities

**Where should added runs be? Can smaller vessels suffice at some times, such as at night?**

**Is there an equity issue for the various runs?**

People going to work should be considered high priority and schedule changes to accommodate sporting events, a lower priority.

Add extra runs for special events routinely and not a last minute announcement.

One person suggests a Bainbridge-Bremerton-Seattle triangle route.

---

## SERVICE

**Sustainability and reliability should be top priorities. Welcome people riding on ferries and make it a positive experience.**

Riders on ferry routes should not be competing with other ferry runs for service (galleys, crews, vessels, security). Riders/communities must present preferences in a unified voice regarding service.

Current Condition: Customer service is terrible. Cleanliness on some runs is unacceptable.

### Staffing

**Seek quality and friendliness as well as reliability. Provide adequate staffing, training for employees.** Offer training opportunities for staff e.g., public service, traffic control for loading/unloading protocols, cross training, work ethic, employee relations, crew changes (this is where disruptions/delays are likely to occur).

Riders “want efficient service – do not need flight attendant service levels, just competent individuals to make things operate smoothly.”

**Amenities** Add some amenities to enhance the ferry trip for travelers.

Update the galley as well as service worker uniforms; provide quality food options on board – or at least assure that there are vendors near where one boards the vessel. Consider musicians or other unique experiences such as acupuncture, meals, or nature talks during ferry crossings. *Perhaps this could be a revenue source for WSF.*

## PARKING

**Parking is a critical component when deciding to ride the ferries. Questions like “How much is available? How much does it cost? How does it relate to ferry fares?” are factors in deciding how to travel. If too expensive, people will drive.**

- When there is no parking, people are forced to drive onto the boat or miss a ferry run.
- The Sounder Train allows free parking for users. This is a good example of inter-governmental use agreements.

Current Condition: Parking availability impacts travel choices.

### Parking Recommendation

Parking must be considered in planning.

---

## TERMINALS

**As gateways to “the natural side of Puget Sound,” the Puget Sound terminals offer real estate that provides excellent potential for natural views, and each could entice locals as well as tourists. Some design suggestions to enjoy the vistas at each terminal include:**

- **Balconies**
- **Windows along the walkways from terminal to ferries**
- **A destination restaurant, which has the potential to generate revenue for WSF**

**Current Condition:** The terminals are functional, yet could be more inviting and informative.

### General Suggestions

Upgrade toll lines and signage, and provide a multi-ride toll booth for quicker entry.

Improve coordination between personnel at the ports and WSF, and between the ferry terminals.

### Traffic

Reduce traffic congestion -- Improve traffic flow into and from terminals by using a cadet police officer to assist access to the street.

### Technology

Improve WSF IT services

*Best Times to Travel* app has real time information and terminal conditions.

Motorcycle and automobile passes do not work at all terminals. One account for such items would be helpful.

### Safety

Drop-off near ferries is difficult if one has disabilities. (Bainbridge allows you to drop someone off at the entrance).

During the Seattle terminal construction and all other downtown construction activities, people with disabilities will need a safe passage. It's a long distance to the terminal and temporary construction entrance.

### Reservations

The reservation system is not perceived to be a solution to planning system issues for most users of Kitsap terminals at this time. Commercial reservations, however, would be considered an economic benefit.

### Amenities

Communication and information materials are needed at terminals. Tourists and occasional riders, in particular, would benefit from their availability.

Provide Smart Car at terminals.

---

## WSF PLANNING

***Ferries are marine highways. They are a vital element of a multi-modal transportation system for the Puget Sound region and Washington State.***

**WSF personnel should organize more like a business, and manage the assets accordingly – while considering their role in the overall transportation system. Issues to consider include:**

- Coordinate within WSF, with Ferry Advisory Committees and ferry riders, and with local/regional/state /transportation agencies and plans. For example, ferries reduce traffic on roadways
- Management tools such as Lean Process Improvement, demographic data, useful public engagement methods, and third-party value stream mapping.
- *Funding options*
- *Vessels*

Current Condition: WSF Long Range Plan emphasis is on updating existing metrics. Riders suggest the system planning would benefit from incorporating user experiences.

*Engage Broad Public Participation from Ferry-Served Communities*

Include rider and community experiences and recommendations for quality service in WSF planning processes and documents.

Develop a communication plan for travelers across jurisdictions and transportation modes.

Provide written “travel tips” recommendations for tourists, seniors, and people who are not regular users.

*Level of Service Standards*

Reset Level of Service standards -- perhaps include diverse routes, passenger ferries, and connections with other transportation modes.

- Use “total passengers served” rather than simply on-time (arrival) performance metric. Also consider measures like the number of people waiting/crossings. Focus on the lost opportunities from capacity of holding areas for cars and passenger capacity on vessels.
- Review lost capacity opportunities for car holding areas and passenger capacity on vessels.

Lean Process improvement should occur at WSF to improve efficiencies.

Recommend value-streamed mapping through a third party.

*Coordinate with Local and Regional Planning (and scheduling)*

**Inter-modal transportation planning is needed in Washington State.** Collaborate with regional and local long range land use plans, and multiple transportation systems (local public transit systems, as well as state and federal highway systems).

Revisit multi-jurisdictional travel, and consider a transportation “hub”.

Provide better circulation for vehicles and bicycles on local and state roadways.

---

#### Evaluate Economic Development Impacts

Ferries are an economic driver. They attract tourists to this area and are also a barrier to Kitsap tourism. It is also a paradox when all issues are included – like parking, waiting time, experience and fares. A distinction must be made between WSF as a tourist attraction and accommodating daily commuters.

## CONCLUSIONS

Discussions with Kitsap ferry riders near the four terminals (and Silverdale) in Kitsap County indicate that local residents are aware of constraints and opportunities. The forums were attended by individuals who commute to employment as well as to professional, academic and personal appointments. Some are occasional riders, like the mother who home schools and travels on educational excursions via ferry, and the many who attend recreational and cultural events. The ages of those at the meetings ranged from teens to seniors.

Issues of interest expressed by people in ferry-served communities relate to the values of including rider and community experiences in WSF plans, and quality service. All expressed a keen interest in the value of marine highways and transit to the Kitsap Peninsula. Attendees at each forum cited benefits of the ferry system to the entire Puget Sound region, and are proud to help reduce congestion on the I-5 corridor with this form of transportation. And the absolute need to depend on reliable schedules is as critical to their own responsibilities as travelers who drive or ride on asphalt highways. These riders acknowledge that circumstances such as weather events can impact movement on both land and marine routes, yet compare vessel maintenance to road maintenance.

The Washington State Ferry system is important to Kitsap riders. We care about the success of the system, observe benefits and problems, and want to contribute common sense solutions. The riders recommend broadening the scope of the Long Range Plan by including agency issues and data along with solutions from riders' perspectives. These insights can be applied to topics that include:

- *Communications and Public Involvement:* Ferry-served communities seek good working relationships with Washington transportation leaders and with WSF. Ferries are marine highways – and a part of the Washington State transportation system. A great ferry system will benefit communities east and west of Puget Sound.
- *Vessels:* Ferry routes are marine highways as well as public transit. We request that Washington State buy more boats to improve safety and reliability.
- *Fares:* The riders of Washington State Ferries provide an impressive fare box recovery rate. Fares need to be predictable and stable. Fare increases have reduced ridership, especially commuters.
- *Schedules:* More runs are needed. There is a desire for consistency in service and schedules across the routes.



- 
- *Service:* Sustainability and reliability should be top priority. Welcome people riding on ferries and make it a positive experience.
  - *Parking:* Parking is a critical component when deciding to ride the ferries. Questions like “How much is available? How much does it cost? How does it relate to ferry fares?” are factors in deciding how to travel. If too expensive, people will drive.
  - *Terminals:* As gateways to “the natural side of Puget Sound,” the Puget Sound terminals offer real estate that provides excellent potential for natural views, and each could entice locals as well as tourists. Some design suggestions to enjoy the vistas at each terminal include balconies, windows along the walkways from terminal to ferries, a destination restaurant (which could generate revenue for WSF).

Again, ferry routes are marine highways. They are a vital element of a multi-modal transportation system for the Puget Sound region and Washington State. An update to the Washington State Ferries Long Range Plan will benefit from expanding the scope to include issues of interest and perspectives from their customer base of riders. This is sure to enhance the delivery of marine highway transportation and the overall transportation system.

**APPENDIX 1**

**WASHINGTON STATE BUILDS A FLEET**

Class	Ferry	Year Built	Age
<b>Evergreen State Class</b> (87 cars, 983 passengers)	Evergreen State	1954	60
	Tillikum	1959	55
	Klahowya	1958	54
<b>Super Class</b> (144 cars, 2,000 passengers)	Elwha	1967	47
	Hyak	1967	47
	Yakima	1967	47
	Kaleetan	1967	47
<b>Jumbo Class</b> (188 cars, 2,000 passengers)	Spokane	1972	42
	Walla Walla	1972	42
<b>Issaquah Class</b> (124 cars, 1,200 passengers)	Issaquah	1979	35
	Kittitas	1980	34
	Kitsap	1980	34
	Chelan	1981	33
	Cathlamet	1981	33
	Sealth	1982	32
<b>Jumbo Mark II Class</b> (202 cars, 2,500 passengers)	Tacoma	1997	27
	Wenatchee	1998	26
	Puyallup	1999	25
<b>Kwa-di Tabil Class</b> (64 cars, 750 passengers)	Chetzemoka	2010	4
	Salish	2011	3
	Kennewick	2012	2
<b>Olympic Class</b> (144 cars, 1,500 passengers)	Tokitae	2014	0
	Samish	2015	NA
	Third Ferry	2016	NA

*Source: WA State Ferries*

**APPENDIX 2**

**HISTORY OF WSF FERRY FARE INCREASES**

1984 – 2014

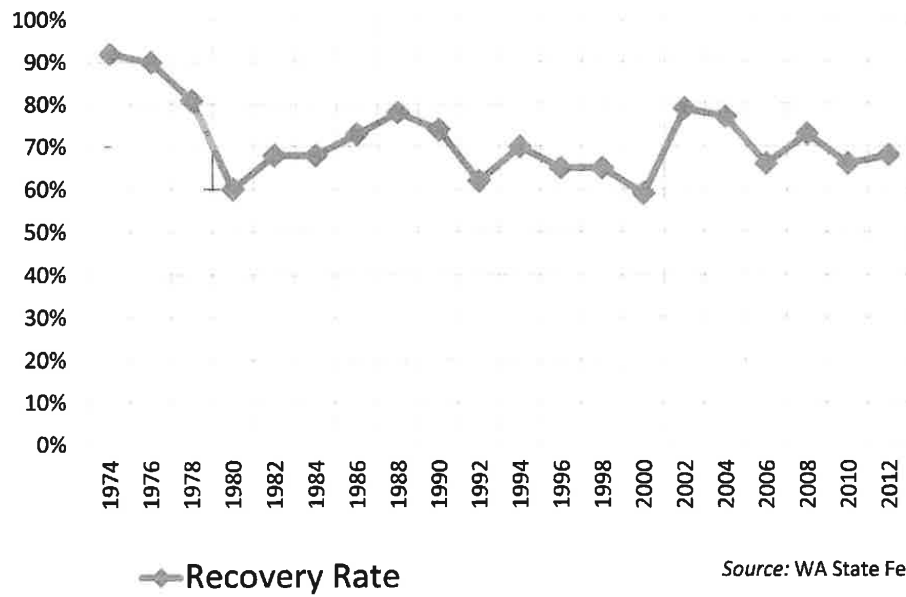
<u>Year</u>	<u>Percent</u>	<u>Comments</u>
1984	4.75%	
1987	3.0%	
1994	6.0%	First general fare increase in 7 years
1998	2.3%	
1999	4.4%	
2001	20.0%	First fare increase after MVET loss; TRE* begins
2002	12.5%	
2003	5.0%	
2004	5.0%	
2005	6.0%	
2006	6.0%	
2007	2.5%	
2009	2.5%	
2011	2.5%	January 1
2011	2.5%	October 1 - Includes vehicle category size changes, plus 25 cent per fare capital surcharge
2012	3.0%	May 1
2013	3.0% for vehicles 2.5% for passengers	October 1 - includes increasing the discount for youth fare from 20% to 50%
2014	2.5% for vehicles 2.0% for passengers	May 1

\*Tariff Route Equity, or distance based fares

*Source: Washington State Ferries*

APPENDIX 3

HISTORIC WSF RECOVERY RATES



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## THANK YOU

**Thank you to all who attended the public forums.**

*The conversations were spirited and offer up thoughtful guidance for this update.*

Thank you, too, to WSF staffers who attended each meeting.

*You participated in the conversations and answered numerous questions.*

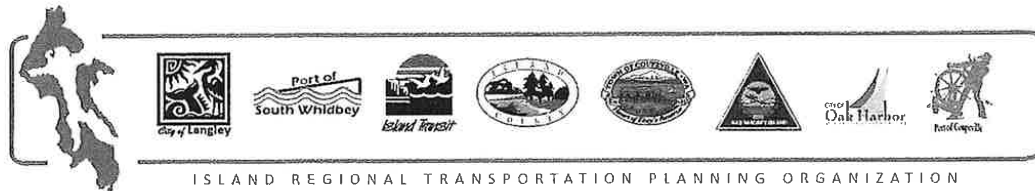
Thank you to those who provided meeting spaces

*so forums could be convenient for ferry riders near each ferry terminal.*

Kudos to Kitsap County staffers

*Your notes captured many valuable perspectives.*

For additional information regarding these public forums and responses, please contact  
Commissioner Charlotte Garrido at [cgarrido@co.kitsap.wa.us](mailto:cgarrido@co.kitsap.wa.us) or (360) 337-7080



May 4, 2018

Amy Scarton,  
Assistant Secretary  
Washington State Ferries  
2901 Third Avenue Suite 500  
Seattle WA 98121-3014

RE: IRTPO Input to the Washington State Ferries Long Range Plan

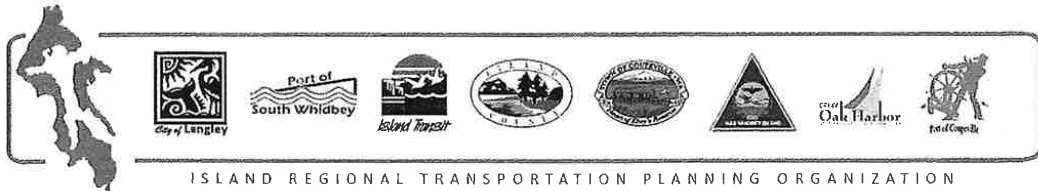
Dear Ms. Scarton:

Thank you for your extensive public outreach to local communities regarding the Washington State Ferries (WSF) Long Range Plan. The Island Regional Transportation Planning Organization (IRTPO) would like to provide the following input.

When reviewing your demand forecast for the Clinton-Mukilteo route we were surprised to find expected growth at only 16% by 2040. This number represents the lowest demand increase of all routes in the Washington State Ferries system, which is inconsistent with our observations and future expectations for this route. While the IRTPO understands the relevance of population projections in modeling, we are concerned that overreliance on these projections may fail to incorporate the full range of existing conditions and the impacts of a rapidly changing transportation context in the Puget Sound area.

When developing this long range plan, it is critical that WSFs closely considers trends, planning activities and current investments within the Puget Sound Regional Council (PSRC), given the significant influence the PSRC has on neighboring communities such as Island County. Some of the more proximate impacts include:

- Significant growth in Snohomish County
- Anticipated growth for the City of Everett resulting from:
  - It's designation as a PSRC "center" that receives a large portion of the future jobs and population
  - New commercial flight activity for Paine Field
  - Substantial marine port investments supporting business and tourism and connecting these to the central business district
  - Link Light Rail service during the WSF planning horizon
- Increased accessibility to Seattle and the Eastside via future Link Light Rail access, SWIFT Bus Rapid Transit, and potential service increases for Sounder commuter rail
- Proliferation of innovative, private transportation options such as car sharing, Transportation Network Companies (Uber), and bike share
- Longer-term parking options being developed in Mukilteo
- Increased efficiency of the Mukilteo ferry terminal
- Improvements to the Mukilteo waterfront



It is also important to consider developments in Island County that will increase rider demand, including:

- Recent improvements in Island Transit scheduling to coordinate with Ferry sailings including providing Saturday service and the potential for future Sunday service.
- Discussions regarding new, growth supportive, sewage management options for the communities of Clinton and Freeland
- City of Langley, Port of South Whidbey, Island County and Hat Island Ferry discussions aimed at establishing passenger ferry connections between Langley and the Everett waterfront

Collectively, the considerations noted above will drive demand for Island County’s lower-cost single family housing options and serve to increase the attractiveness of this route for visitors, commuters, and commercial travelers alike.

The most practical solutions will come as result of more focused planning studies. The IRTPO recommends that the WSF Long Range plan conditions large capital investments with requirements that local conditions are studied more closely. For the Clinton-Mukilteo route, studies should focus on:

- Understanding why travelers choose to use State Route 20 and Interstate 5 versus the ferry, and how the most sustainable option can be incentivized—such a study might be a joint undertaking between WSDOT and WSF to encourage better use of the system as a whole
- Looking at new models for Level of Service that better reflect excessively long delays for many runs due to conflicts between commercial traffic, commuters, and tourists
  - While LOS based on peak of the peak demand would be inefficient, current LOS calculations do not account for travelers who give up on the ferry option to drive around
  - LOS tied to a reservation system, coupled with a more nimble fleet that allocates vessels where demand is high, should be explored
- How creative reservation systems could provide more trip certainty as well as better use of service hours, such as incentivizing tourists to choose non-commute hour runs
- How off-system non-motorized access improvements would encourage more walk-on and bike-on travel
- How efficiency improvements such as overhead passenger loading in Clinton, might allow for increased vessel frequency
- Investigating ways that WSFs can support passenger-only ferry developments that establish important new connections (example would be connecting Whidbey Island directly to Downtown Everett)

These are both exciting and challenging times for transportation. More than ever we are seeing the links between land use and transportation planning, and to that we are adding a changing modal landscape that promises new options and efficiencies. Taken together, we must make careful, researched-based transportation investments that promote economic vitality and equity throughout the Puget Sound region and the whole of Washington State.

Sincerely,  
  
 Helen Price Johnson, Chair  
 Island Regional Transportation Planning Organization

Cc: Roger Millar, Secretary WSDOT

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### FAC Notes from Kingston Public Meeting 5/8/2018

Washington State Ferries held a public meeting in Kingston on May 8, 2018, to collect public input for development of a Long Range Plan. This occasion was also used by WSF to collect input on a proposed Kingston-Edmonds schedule revision and by the Kingston FAC to collect input from the community on problems being experienced with ferries per RCW 47.60.310. FAC members circulated among attendees asking what ferry related matters concerned them. Below is a summary of the public input that our FAC received as well as comments made by attendees on “sticky notes” in response to WSF questions. This does not include information collected by State Ferries on questionnaires filled out at the meeting.

#### Meeting Conduct

Attendees in general were appreciative of the information provided and opportunity to give written input. A significant portion thought that an interactive dialog with WSF was needed to discuss problems being experienced with the system, including ferry traffic issues, and any upcoming changes planned by WSF. The expectation was that this could be done in the fall.

#### Ferry Traffic.

This is the highest concern and priority and was universal to all attendees. The current overloading and backups on local streets is already a significant problem which has been left unaddressed in prior planning. With a projected 47% growth over the LRP plan period it is critical for the Kingston community that this be addressed, both on a long-term and near-term basis.

In the near term the following is needed:

- A public meeting for dialog with WSF and WSP on traffic handling procedures, including boarding pass systems.

- Better controls over the signage and notifications to drivers when the boarding pass system is and is not in effect.

- A review of holding lot procedures and utilization to reduce the number of times that traffic is backed up into town when the holding lot has available space.

- Installation of video monitoring from Lindvog Rd. to the terminal toll booths

In the long term.

- Continuation of the long-standing project to add a holding lot at Lindvog Rd. This will be essential to address the projected ridership growth.

- Initiation of a review to identify and address ferry-related traffic issues on the SR 104 corridor between Lindvog Rd. and the Bond Rd. intersection (Streibel's Corner).

#### Boats and capacity

Addressing the lack of capacity is a high priority as during the summer and holidays the route is already heavily overloaded. Recommendations include:

- Operating three boats for continuous service at Kingston and Bainbridge during peak seasons and holidays.

- When the Jumbos are due for retirement, replace them with three boats that together have greater capacity than the two boats that were replaced.

- Three-boat operations have the advantage of more frequent sailings to reduce traffic peaks.

- They also have the capability of shifting to smaller boats during low-demand periods.



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Concerns were expressed of what happens when fleet size is effectively reduced when Hyak and Tillikum are retired without a building program that will replace them. A reserve fleet of adequate size is needed to maintain uninterrupted service when boats are down or in for maintenance

Several comments were received on the lack of evidence of a plan to replace aged-out ferries. It appears that boats should be under construction now if vessels are to be replaced within their planned lifespan.

Comments were made that WSF should be considering both LNG and hybrid fuels, Not either/or as LNG will be able to be used on all the legacy vessels to eliminate emissions regardless of what type of propulsion is used in next-generation ferries.

#### Ferry maintenance and reliability

This was a high level of concern among attendees talked to. There is a concern that a degrading material condition of vessels will cause increased service reliability problems. While Jumbo reliability has been good, attendees were well aware of significant issues with other vessel classes. This situation appears due to a lack of funding for required maintenance and lack of boat availability. There was also concern over the scheduling of major maintenance which reduced route capacity during high-demand periods such as the Christmas and Thanksgiving holidays. Recommendations included:

- Having a larger fleet size to allow greater availability for maintenance, and to provide uninterrupted service when boats are taken off-line for unplanned repairs. To do this WSF should delay retirement of current ferries Tillikum and Hyak.

- Budget funding to stop or at least reduce the growth of overdue maintenance such that the thresholds are not reached where breakdowns are likely to occur over the planning period. Look into alternatives for maintenance including the maintenance of vessels in service by contractors working on board and at night, utilization of yards such as Dakota Creek for smaller ferries, and the utilization of the dry dock recently moved to Elliott Bay.

- To increase the number of vessels available to meet peak demand on summer weekends. For dockside maintenance work at the WSF Eagle Harbor facility, schedule work in increments (i.e. phases) that would allow a ferry in maintenance to be returned to service on all, or part of, the weekends.

Comments were made that there was a need to develop personnel for high-skilled maintenance jobs (i.e. electrical engineers) to keep boats running

#### Reservations

Attendees considered implementing reservations for commercial traffic was important to West Sound communities and should have a high priority. Non-commercial reservations were also considered to be highly desirable especially during overload periods in the summer and during holidays. Reservation business rules, e.g. percent of boat for standbys, time windows for various rider groups, and the like, should be developed with community input to meet the needs and constraints of our specific route.

#### On time performance

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In addition to collecting on-time departure data, arrival data should also be collected. This is important to assess impact of vessel speed reduction strategies and the ability of the ferry system to interface with local transit system service.

#### Proposed Schedule

Overall attendees found the proposed schedule to be desirable. There were no negative comments on the earlier start times. There was considerable support for the late night Sat/Sun sailing. There were still some concerns with the larger asymmetric gaps on some sailings however we understand that these have been addressed to as is feasible.

With respect to the loss of the Saturday early sailing there were some for whom this would present a difficulty as they start work at 6:00 AM. This would not be a problem if the 5:30 sailing could be moved up to 5:15.

#### Terminal facilities

While the terminal seismic upgrading was understood the question was asked whether WSF had a plan for how they would operate in event an earthquake did occur that disabled some terminals. Closely allied with the above was a question of how and when terminal staff did training and testing of back-up systems in the event of a power loss. This includes both back up generators and manual ramp operation. On Bainbridge Island, there was a situation where the back-up generator failed and the crew was also unable to manually operate the ramp.

A comment was made regarding the lack of information and way finding signs on how to bypass toll booth queues for vehicles with priority loading e.g. those with me

There were comments that the restroom in the Edmonds main terminal is not kept open through the last sailing. This is a considerable inconvenience to late-night riders.

Comments were received that Pine St. in Edmonds is not routinely marked off with cones when there are overloads. This results in line cutting.

Comments were received that WSF planning should consider carts or similar services being made available to travelers with luggage as there are at airport terminals.

#### Transit and rail

Concerns were expressed by several that while rail schedules are reasonably well coordinated with ferry schedules, bus transit on the Kingston-Edmonds route, and perhaps other routes, is not.

Coordination is also needed between buses and ferries when either is off schedule. These issues need to be addressed if planning is to meet goals to increase multimodal walk-on passengers.

Presently this situation is a significant impediment.

Examples of significant schedule mismatches are being collected and will be provided separately

At the Kingston terminal action should be taken to allow buses to pick up and drop off passengers at the ferry dock. The terminal's layout would allow this.

#### Customer service

There were several comments that the removal of toilet-seat cover dispensers was unnecessary as they continue to be used elsewhere at WSF and that crews should have the equipment and training to handle needles wherever they may be found.

There was one comment that the Sharps containers could be located in a less obtrusive location to encourage use.

#### Foot ferry

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Comments were made that WSF and Kitsap Transit should coordinate bus access to the terminal when the passenger ferry service is established.

Other

A comment was made for WSF to look for ways to better use digitization and technology with respect to fare collection.

A comment was made that when electronic information signs are installed (George's Corner and West Kingston Rd.) they should be able to include revised schedule information when the boats are off-schedule.

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At the Long-Range Plan Policy Advisory Group (PAG) meeting on July 27<sup>th</sup>, Ferries asked the question: “What are your key interests for the Washington State Ferries 2040 Long Range Plan? ”.

The Ferry Advisory Committee’s Executive Council ‘s response is below. These planning items are in addition to WSF’s statutory planning requirements, a summary of which is attached. Individual FACs may also send in responses to the question that address the interests of their specific routes. Note that getting meeting materials and topics to be addresses out to the PAG early is critical to the effectiveness of our FAC participation. This allows us to get input from those whom we represent and has worked well in the FAC-T process.

### **Items for WSF’s Long Range Strategic Plan**

- Strategies are needed to implement WSDOT’s “portal to portal” multimodal transportation direction that includes ferries. This concept needs to permeate the entire plan.
- All riders do not have access to transit or they are traveling to an area that does not have transit service. The Origin/Destination survey shows this. As a result, non-transit alternatives must be included in the plan.
  - Parking needs should be identified for all routes and the facilities and in collaboration with local jurisdictions include strategies to meet projected needs.
  - Coordinated planning is needed with transit providers to address the availability of transit services on all routes. While dense urban centers have transit services at ferry terminals, transit is generally lacking at other terminals.
- Coordinated strategies (WSDOT, WSF, WSP and local governments) are needed to address ferry traffic usage and congestion at ferry terminals. This includes local government decisions that affect ferry riders.
- The Level of Service (LOS) definition was radically changed in the last LRP. As a result, true LOS is not being measured today. LOS must again be redefined so that the actual level of service to the end customer is measured, tracked and used as a management metric.
- Planning should address future terminal and vessel capacity to meet the region’s projected ferry demand for population and economic growth. Economic growth includes tourism projections.
- The plan should address the funding needed for its’ execution. This should include both capital and maintenance needs.
- The plan should address sustaining affordable fares for routine riders with the median income of ferry served communities. (Note that it appears that economists use total transportation costs of 10-20% of a family’s budget to be “affordable.” We are not sure how this relates this to the ferry portion of a family budget.)
- The plan should include strategies to contain and, where possible, reduce system costs. This should include setting and tracking business performance metrics and targets.
- Review the Passenger Vessel Association Final report for actions not yet taken by WSF that address cost reductions, increased vessel availability, and service reliability.
- The vessel replacement plan should be based on the continuation of the basic 144-car ferry design with variants to optimize meeting operational needs, such as a stretch version for high vehicle demand applications and increased commercial truck capacity where that is critical e.g. the San Juan Islands.
- The impact of demand management strategies on riders and the economic development of ferry served communities must be evaluated prior to implementing those strategies.

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- Vessel service, availability and reliability needs to be specifically addressed in the LRP. This includes both capital for new vessels and vessel maintenance funding.

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Kingston FAC input into the Long Range Planning Process 8/16/17

Principle interest areas

1. Affordable fares
2. Added capacity to reduce back-ups and to meet demand.
3. Reducing the near term and long term downtown ferry traffic congestion and its' impact on local traffic and business
4. Sustaining reliable service through operational strategies that address community needs, fully funded maintenance, back-up boats needed for planned maintenance, and standby boats for unplanned maintenance situations
5. Address improvement of business processes and cost reduction

Detailed input

1. Fares

- Stay at or below baseline 2 ½% per year increases. Manage operating costs to stay within inflation rate
- Using WSF's promotional fare authority, include strategies to increase rider usage
- Separate fare increases from demand management strategies

2. Capacity

- Include rider wait time as well as "percent boat full" in planning future service.
- Consider current and projected population growth and demand in planning future capacity. Add service to support local economic growth, projected population growth as well as increases in tourist/weekender traffic. We believe that direct to Seattle POF will result in growth that will also increase demand to WSF service.
- Plan to achieve three boats on Kingston Edmonds. Increased frequencies of sailings are needed to reduce traffic backups, improve dock management and customer satisfaction. It is preferred that this be two 200+ car ferries and one smaller e.g. 144 car boat. Alternatively three 160+ boats as a variant of the 144 car boats may meet projected needs.
- Conduct an analysis on whether to continue with a standardized 144 car boat or to build variants of the basic design with greater car capacity

3. Traffic congestion

- Include strategies to improve the holding area efficiency, utilization and capacity
- Support the relocation of SR 104 in Kingston
- Address the issues of traffic queued on the highway shoulders.
- Pursue prompt implementation of commercial reservations system wide
- Include WSDOT in strategies to address vehicle congestion at terminals

4. Service and reliability

- Build sufficient boats to support current and projected service needs, have maintenance reserve boats and standby reserve boats. This requires legislative and WSDOT participation, and needs to include consideration of population growth and economic growth, both current and projected as well as increases in tourist and weekender traffic
- Continue with the 60-year lifespan assumption. New vessels should be built to achieve this. Plan on funding the Life Cycle Cost Model (LCCM) maintenance needed to support that lifespan. Underfunding maintenance defeats a 60-year life assumption
- Implementation of operational strategies should be independently assessed for each route. An economic and community impact assessment before implementing operational strategies that significantly affecting riders and ferry served communities. Many adaptive management strategies are not-appropriate for regular commuters for communities where travel time and mode are not discretionary.
- Include on-time arrival and missed sailings as a performance metric
- Consider different approaches to in-house maintenance recommended in the PVA report.

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5. Business considerations

- .Continue to consider LNG fuel feasibility
- Have a competitive bidding strategy for ferry support functions
- Pursue and implement cost reduction measures, such as automation, outsourcing, LNG fuel, and more efficient labor allocation
- Have business/operations reports that keep the public advised of the Long Range plan and its' implementation
- Use the pause in ferry construction to evaluate the design and how ferry acquisition can be modified to reduce acquisition and life cycle costs



To: Amy Scarton, Assistant Secretary, WSDOT/Ferries Division  
Hadley Rodero, WSF Strategic Communications Manager

From: Deborah Hopkins Buchanan, Executive Director, San Juan Islands Visitors Bureau

Date: May 16, 2018

Re: WSF 2040 Long Range Plan Comments

The Board of Directors of the San Juan Islands Visitors Bureau represents 300+ tourism-related businesses on the four, ferry-served islands of Lopez, Orcas, Shaw and San Juan.

The Washington State Ferries are critical to the success of these businesses and non-profit organizations (community theaters, museums, parks, etc.) year-round, and most importantly from Memorial Day through September during your Summer Schedule. August, July, September and June – in that order – are our four busiest months according to lodging tax data.

The Board makes two simple, yet extremely important, requests for the 2040 long range plan:

1. Whether old or new, our ferries need to be reliable
2. We need at least one spare ferry available at all times

We know that WSF realizes how important these requests are to us, and that Washington State Ferries' budgets are limited by the Washington State Legislature.

We implore the Legislature to provide adequate funding to our 'marine highways' in order to support our requests and the 2040 long range plan.

Thank you.



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To: San Juan County Council  
From: Jim Corenman, Chair, SJC Ferry Advisory Committee  
Subject: WSF Long Range Plan Priorities  
Date: May 21, 2018 8pm

Council members,

This outline was prepared by the SJC Ferry Advisory Committee for submission to WSF as part of the current public input period for the WSF 2018-2040 Long Range Plan.

1) Vessels:

- a) Poor vessel reliability hurts everyone: residents, businesses, visitors, and WSF.
- b) Preservation and maintenance must be adequately funded.
- c) Additional spare/relief vessels are required to allow that maintenance.
  - i) A fleet size of 21 vessels with 19 in service has proven to be inadequate.
  - ii) The fleet was 24 vessels prior to the retirement of the Steel Electrics in 2007.
  - iii) Spare vessels must be able to operate anywhere, E-state and Kwa-di Tabil are limited.
  - iv) Our interisland and international runs have special requirements (single car-deck and SOLAS, respectively), for which appropriate spares must be available.
- d) Aging vessels must be replaced on a schedule that makes sense, 60 years is likely too long.
- e) Reservations system must be able to accommodate service disruptions

2) Terminals:

- a) Seismic updates are needed for the four island terminals (see also 4a).
- b) Anacortes:
  - i) Terminal building should be replaced or remodeled to increase size and improve comfort
  - ii) Customs pre-clearance in Sidney would greatly streamline operations
  - iii) Provide one additional vehicle slip: Three vehicle slips plus two tie-ups would facilitate operations and provide a spare slip for a relief vessel or transfers to/from DCI
- c) Friday Harbor:
  - i) A second vehicle slip is needed to facilitate interisland traffic (including crew transfers)
  - ii) Provide better separation of walkons and vehicles, consider overhead loading
- d) Orcas:
  - i) Improve traffic flow and pedestrian/vehicle separation
  - ii) Consider overhead access for walkons to parking area
- e) Lopez terminal needs significant improvement for safety, comfort and efficiency:

Revised 2018-05-21 Jim Corenman

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- i) Absent eastbound reservations, queues can be very long with no practical access to bathrooms, food or water.
  - ii) Consider eastbound reservations with associated parking/queueing improvements.
  - iii) Separation must be provided for vehicles, bicycles and pedestrians, and for drop-off and pickup.
  - iv) Make food service available at the terminal parking/queueing improvements.
- f) Shaw:
- i) Consider eastbound reservations and associated parking/queueing improvements.
  - ii) Install back-up generator.
- g) Sidney:
- i) Customs preclearance to streamline operations and allow mixed domestic traffic on Sidney vessels as well as traffic between Sidney and other islands.
- 3) Systems:
- a) Reservations system must be able to accommodate disruptions and contingency schedules.
  - b) Ticketing system must be integrated with reservations and allow more flexible pricing and integrate tickets with reservations.
  - c) Data collection (and access to data) is critical for planning by communities as well as ferries, including ridership and schedule (on-time) measures, reservations statistics including unmet demand, location data (e.g. zip codes) for travelers, etc.
  - d) A multimodal integrated transportation system is critical to making better use of limited ferries resources. While challenging in rural areas, WSF will work with local and regional transit authorities to develop transportation connections including integrated payment options.
- 4) Emergency management:
- a) Update all island terminals to at least 100-year survivability (see also 2a).
  - b) Continue to berth at least one vessel overnight in Friday Harbor (with an available crew) to be able to respond to emergencies within the county.

Revised 2018-05-21 Jim Corenman



Improving Lives Through Bicycling

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To: Washington State Ferries  
Date: May 24, 2018  
Re: Issues identification and priorities for WSF Long Range Plan

Cascade Bicycle Club (Cascade) appreciates the opportunity to identify issues and priorities to incorporate in the Washington State Ferries (WSF) 2040 Long Range Plan. Cascade has approximately 15,000 members around the Puget Sound and statewide, many of whom look forward to having easier access to use the state ferry system for commuting, just getting around, as well as for recreation and tourism.

As a member of the Policy Advisory Group and a stakeholder that sees the opportunity for making a more multimodal WSF, Cascade offers the following comments and suggestions:

As the **Ferry Fleet expands** and updates, make the fleet more bike friendly:

- Ensure that the ferry fleet can adapt to allow more bicycles onboard, that components allow for adding additional bike parking capacity, and that signage is intuitive for bike users.
- If electric vehicle charging is added to ferry boats, ensure its adaptability to support e-bike charging, as well.
- On some runs, it will likely be necessary in the future to allocate some of the space currently devoted to cars to accommodate bike parking. Plan to determine the most space-efficient way to store large numbers of bikes on the boats. Encourage continued growth in bike-on passengers due to the public health benefits and reduction in demand for drive-on space, by implementing enhanced accommodations over time.

Take actions to preserve and upgrade **terminals** so that they integrate with the surrounding communities, and support staging for bicycles and new modes of travel:

- Coordinate with local transportation departments to ensure that more all ages and abilities bikeways allow for easy access for all people who choose to ride a bike.
- Align active transportation needs for ferries with WSDOT-owned and -managed facilities that feed into terminals, so that people regardless of their age or abilities feel safe and comfortable accessing WSF terminals by bike.
- Coordinate with adjacent jurisdictions through their planning processes so that more ferry-oriented development (upzoning, and other land use policies that encourage dense

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living near transportation) can be built to make it easier to use the ferry system by walking and biking.

- Build terminals that have easy and comfortable (e.g., covered) waiting for people biking.
- Expand short- and medium-term bicycle parking options at or near terminals so that bicycle commuters can store their bikes safely and securely at ferry terminals.
- Plan for additional space allocation on the dock for people on bikes in future years. WSF planning period projections show a significant increase in the number of passengers biking, particularly on the Seattle-Bainbridge run and less so on the Seattle-Bremerton and Fauntleroy-Vashon-Southworth routes. Especially due to the volume of passengers on the Seattle-Bainbridge run, WSF needs to prepare to accommodate this growing group of bike-on passengers for this run, both on the boats and at Colman Dock. The proposed configuration changes at Colman Dock begin to address this issue, but WSF needs to continue to expand this planning work
- Explore and implement demand management strategies, as well as other approaches before adding additional vehicle parking at terminals. Adding more parking should be seen a last-resort strategy as it is costly and space inefficient.
- Improve wayfinding and clarity for how bicycles should stage at terminals should be explored.
- If electric vehicle charging is added to terminals, ensure its adaptability to support e-bike charging, as well.
- For adjacent parking at terminals (for walk-ons or otherwise), WSF should explore partnerships for more dynamic parking management to encourage parking turnover and the efficient use of valuable parking facilities near terminals.

**Demand management strategies** - if planned and executed correctly - have great potential to create a smarter and more sustainable ferry system for Washington state:

- Cascade encourages WSF through the Long-Range Plan to explore dynamic pricing to manage demand and soften the peak periods. This strategy will provide the added benefit of providing more predictability for ferry users.
- System-wide reservations have the potential to reduce the amount of valuable space needed for car storage at and surrounding terminals. We encourage the expeditious adoption of this at most, if not all terminals, but particularly at Colman Dock where vehicle storage is now project to intrude into the public space of the Seattle waterfront.

Additionally, the WSF Long-Range Plan offers great opportunities to:

- Foster new partnerships with partner transportation entities to facilitate more active transportation to and from terminals and ferries
- Support new tourism opportunities by making it safer, easier and more comfortable to arrive at terminals.
- Work with surrounding jurisdictions, as well as state agencies, to find new grant and investment opportunities to build trails and bikeways between terminals and employment and residential centers. Two notable opportunities include the Guemes Channel Trail, which links the Anacortes Ferry Terminal to Anacortes, and the Sound to Olympics Trail,

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which will begin to provide more active transportation opportunities to the Bainbridge Ferry Terminal.

- Incorporate health impact assessments in the planning that WSF does as it evaluates competing investment and policy decisions. For example, will certain investment and policy decisions encourage less healthier forms of travel at the expense of active transportation and transit use? Tools exist to quantify these benefits and impacts and Cascade encourages WSF to begin using this lens.
- Incorporate a planning a lens to support improving equity, diversity, and inclusion in its practices, planning, and decision-making.

Cascade looks forward to continuing its partnership with WSF as a member of the Policy Advisory Group, as a partner on signature events like Chilly Hilly, and as a community stakeholder that sees the incredible potential of an increasingly multimodal ferry system for travel and tourism in Washington state.

Please feel free to contact me with questions.

Sincerely,



Blake Trask  
Senior Policy Director  
Cascade Bicycle Club

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**Subject:** COBI comments

Carmen,

Following up from yesterday's WSDOT/WSF Long Range Plan Policy and Technical Advisory Group meeting with comments from the workgroup sessions

**Vessels:**

- 1) COBI Public Works supports the modified plus alternative. This alternative is the only alternative that provides the number of reliable vessels necessary to ensure reliable service at all routes. It also allows the most flexibility to accommodate unforeseen delays scheduled maintenance and/or delivery of new vessels. Note that "Funding vessel maintenance and replacement reserves" are identified issues on page 7-3 of the City's Island-wide Transportation Plan that was recently adopted with the Comprehensive Plan.
- 2) The failure of the Legislature to provide adequate funding to ensure that the necessary maintenance was provided for the Issaquah class and other vessels has resulted in reduced reliable service life for vessels. While regrettable, with changing technology this may be for the best. There is an opportunity to build new vessels that will reduce carbon emissions and more specifically harmful diesel particulates significantly improving air quality in Puget Sound region. Now is the time for the legislature to modernize the fleet.

**Operational Service:**

- 3) Potential strategies; For the "Increase Vessel Capacity" icon please include the language "Add foot and bicycle passenger capacity". Note that bicycle parking accommodation on vessels is an important issue for our community.
- 4) Potential strategies; Please include "Three mid-size vessels". Note that this is identified in on page 7-4 the City's Island-wide Transportation Plan that was recently adopted with the Comprehensive Plan.
- 5) Potential strategies; Please include promote mode shift. Both WSF and COBI are making substantial capital investments in non-motorized facilities that are integrated with the co-located ferry terminal and Kitsap Transit Bus Station. This includes the upcoming Overhead Loading reconstruction and Olympic Drive Projects, and a future Olympic Drive Phase 2 project that fronts the Bus Station and Bike Barn.
- 6) Potential strategies; Please include traffic/ terminal operations management. Signal improvements are needed at Harbor drive to sync ped crossing and the signal at Winslow Way. Also, an auxiliary signal is needed to manage reserve shoulder parking along SR305 north of the Winslow Way intersection and prohibit right and left turns from Winslow Way onto Olympic Drive. These functions currently require State Patrol officers to manage and should be automated.
- 7) Planned Near Term Improvements: Please include the OHL replacement.

The format for the meeting worked very well. Appreciate the opportunity to be informed and participate.

Many thanks,



K. Chris Hammer, PE, PMP  
Engineering Manager- Capital Projects, System Planning, and Right-of-Way Permitting  
Designated Traffic Engineer  
Public Works Department  
206.780.3740 (office)