



WASHINGTON STATE FERRIES

Electrification Program

Ferries Now Conference
Matt Von Ruden, Program Administrator
March 31, 2023



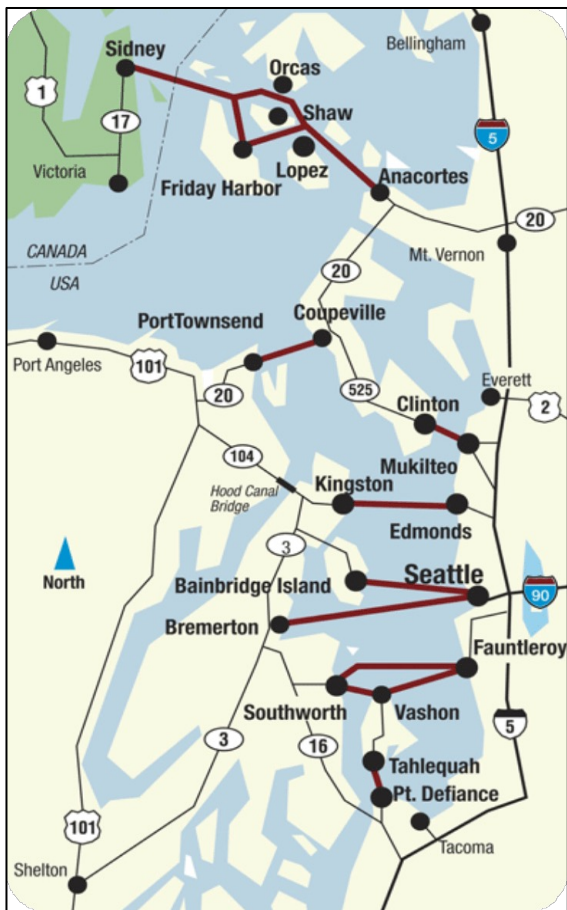
Briefing Topics

- Washington State Ferry System Overview
- Launching the System Electrification Program
- Benefits
- Infrastructure needs
 - Vessels, terminals, utilities, phased schedule
- Funding
- Challenges, barriers, lessons learned to date

Welcome to the U.S. West Coast

Washington
State Ferry
service area
in Puget
Sound
shown in box





Our Ferry System

Largest ferry system in the United States



21 auto-passenger ferries



10 routes serving 20 terminals



23.9 million riders in 2019



10.5 million vehicles in 2019



450 sailings per day

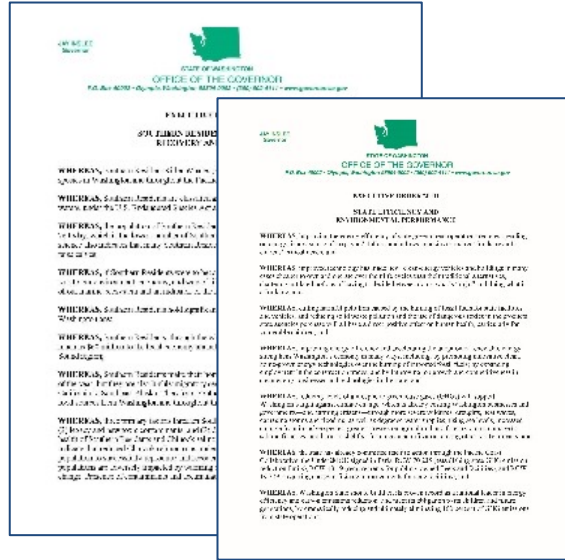


1,800 employees

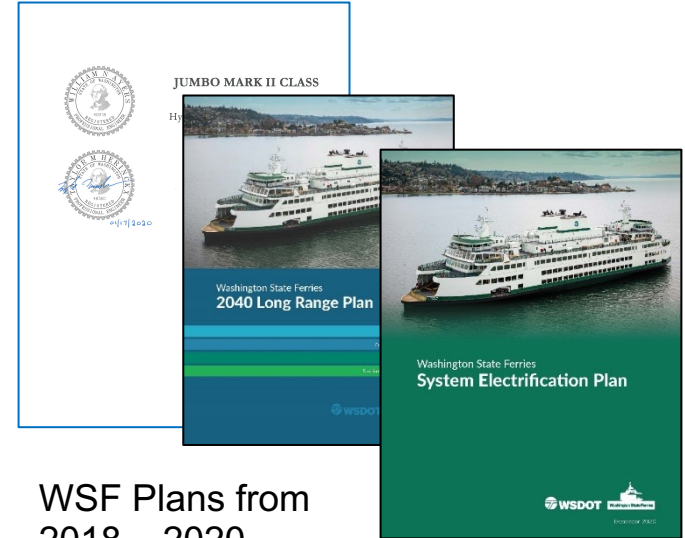
Launch of WSF Electrification Program



RCW 70A.45.050 –
Greenhouse gas emission
limits for state agencies
(2020)



Governor Inslee's Executive
Orders 2018-01 and 2020-01



WSF Plans from
2018 – 2020

GHG Emission Reductions

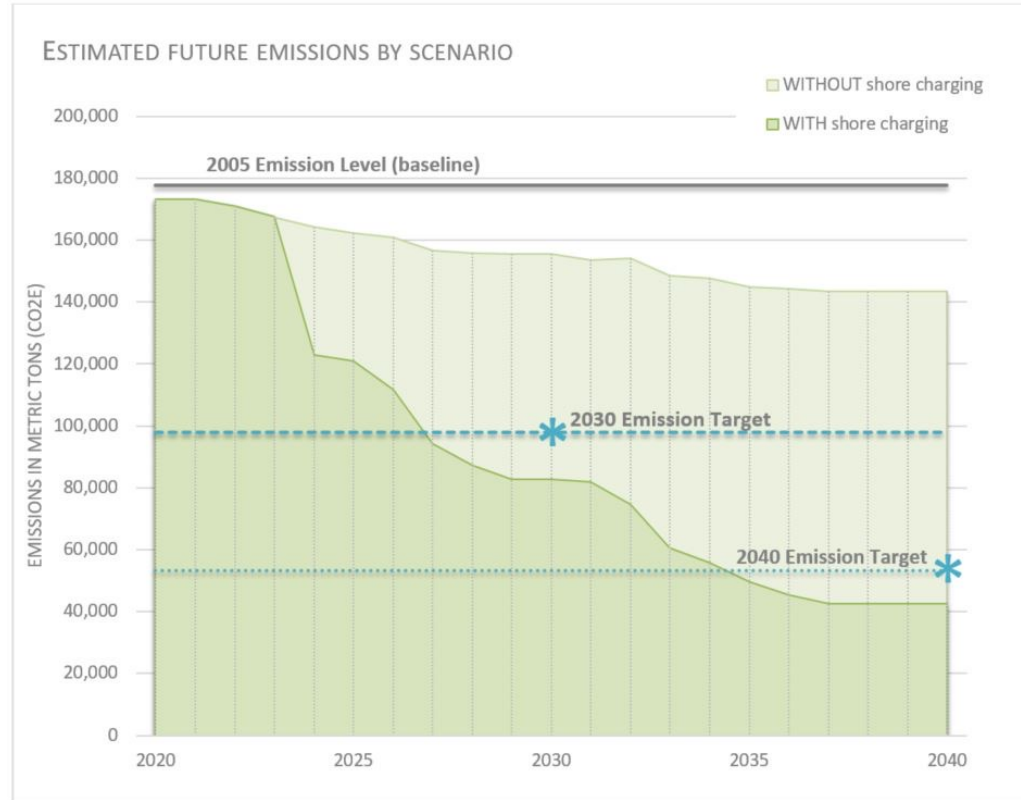
Two scenarios evaluated:

With Shore Charging

CO₂e reductions:
53% by 2030
76% by 2040
Meets requirements of RCW
70A.45.050.

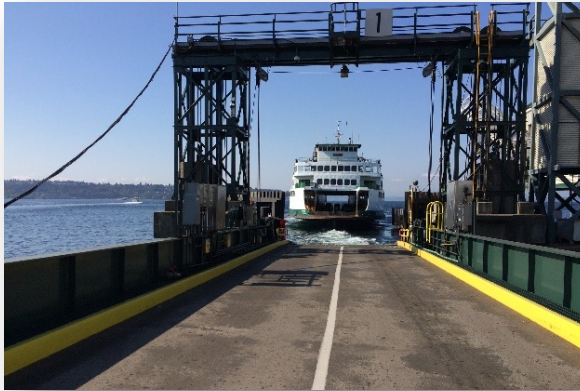
Without Shore Charging

CO₂e reductions:
20% by 2040
Not compliant with RCW
70A.45.050.



Electrification Program Elements

Electrify 16 Terminals



Convert 6
existing vessels

Build 16 New Vessels



Jumbo Mark II Conversions



Reduce total WSF fuel consumption by 26% (5 million gallons/yr)



Comparable reduction in particulates



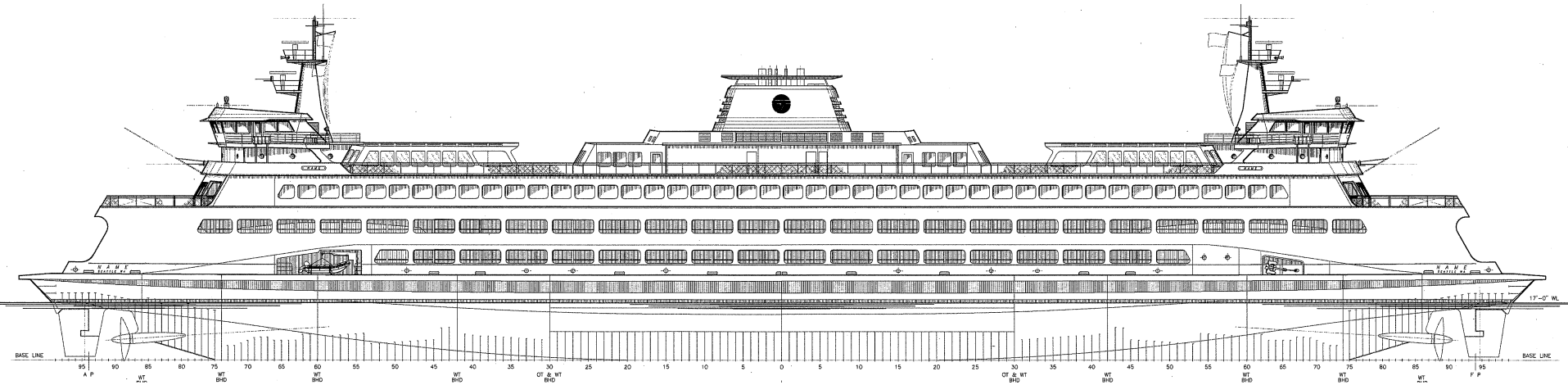
Reduced maintenance costs



Lifecycle cost savings of \$60 million for the 3 converted vessels



Jumbo Mark II Conversions



- Invitation for Bid (3 vessel conversion contract), spring 2023
- Dockside conversion (propulsion control system and hybrid electric)
- First vessel conversion begins fall 2023

Hybrid Electric Olympic Class



Flexible vessel design that can operate on most system routes, with or without shore charging



300 million gallons of diesel fuel saved over 60 years



\$55 million lifecycle cost savings for five new vessels



Passenger comfort (quieter operations in most vessel areas)



Upcoming RFP spring 2023 to build five vessels



Hybrid Electric Olympic Class

- Request for Proposal (RFP) scheduled release, spring 2023
- 2023 legislative bills that provide greater options in procurement
- Design-build or design-bid-build
- First vessel to be delivered 2027
- Hybrid electric
- Rapid charging system



Future Vessel Construction

Scope:

- Construct four 124-auto ferries
- Construct seven 144-auto ferries
- Convert three 64-auto ferries

Schedule: Construction 2031-2037

Cost: \$2.5B

Federal Funding Secured: None

Other Potential Federal Funding:

- Conversions eligible for FHWA, FTA and DOE grant funding
- New construction eligibility is contingent on legislative action



Terminal Electrification

- 16 terminals, powered by 5 different utilities



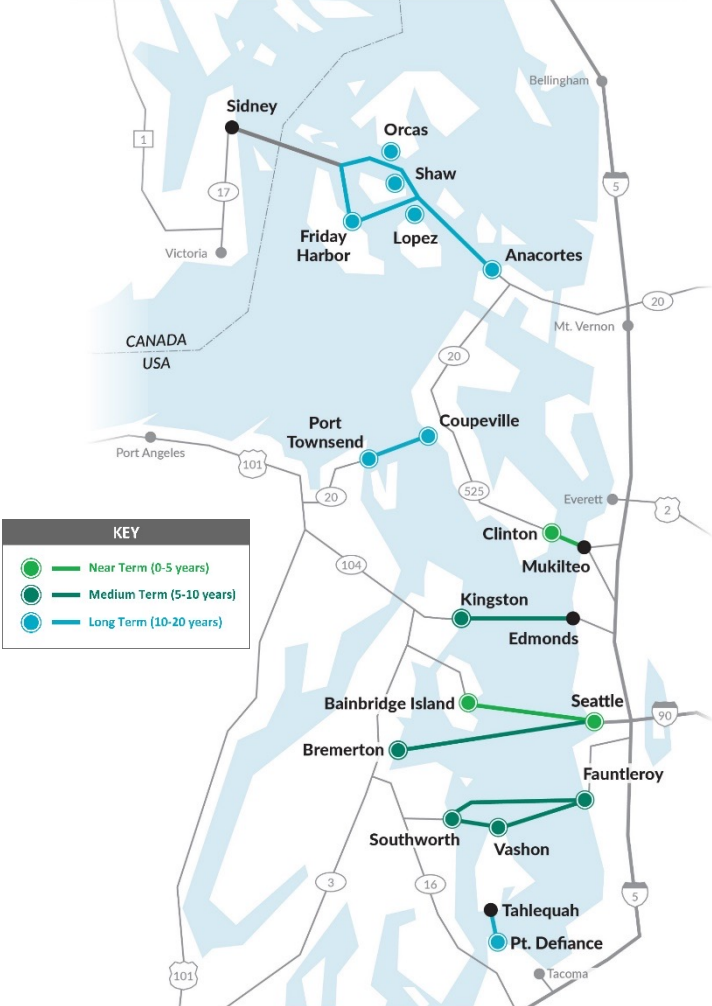
Seattle
City Light



PUGET
SOUND
ENERGY



KEY	
	Near Term (0-5 years)
	Medium Term (5-10 years)
	Long Term (10-20 years)



Terminal Improvements



Seattle



Bainbridge Island



Clinton (Whidbey Island)

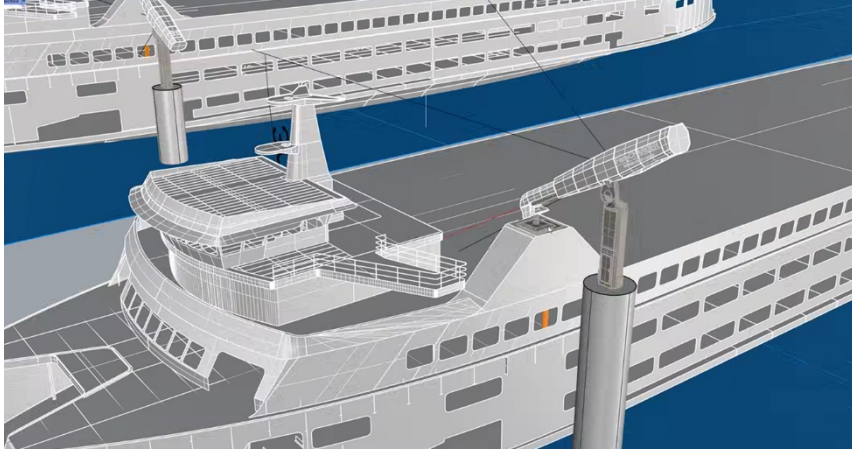


Bremerton



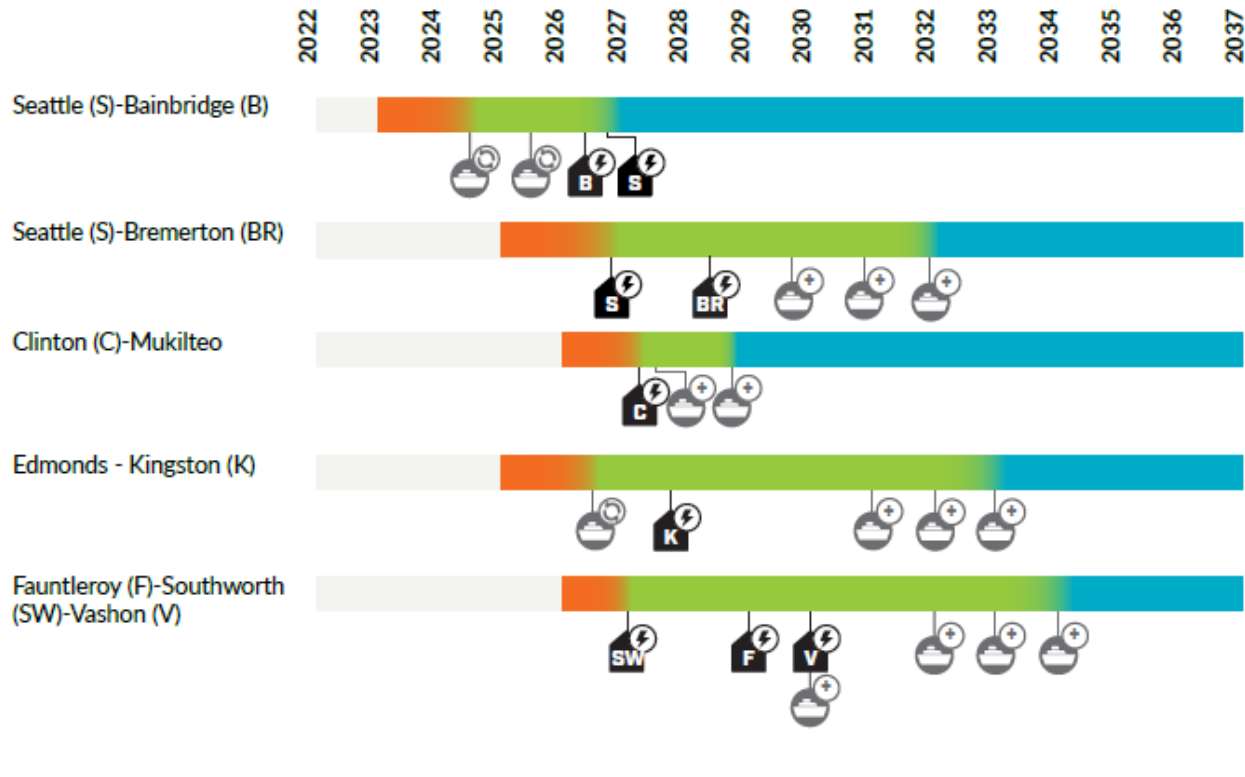
Kingston

Rapid Charging System



- Standardize across multiple vessels and terminals
- Automated rapid connection-charging-disconnect to accommodate vessel schedules (20 minutes)
- Reach requirements to accommodate 20 foot tidal range
- Power rating to match energy needs
- Passenger safety

Implementation Schedule*



Key

Construction*

*At least one component of route electrification is underway.

Partial electrification**

**At least one component of route electrification is complete.

Full electrification***

***All components of route electrification are complete.

Route Components



Electrified terminal

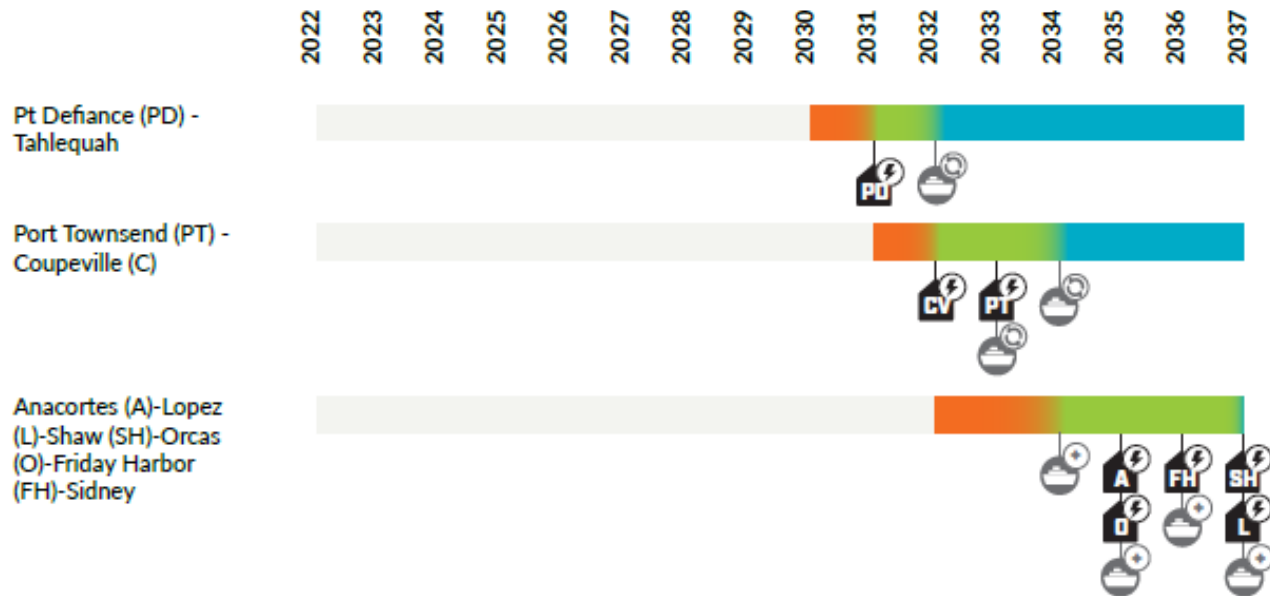


Vessel conversion



New vessel

Implementation Schedule*



Key

Construction*	*At least one component of route electrification is underway.
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Route Components

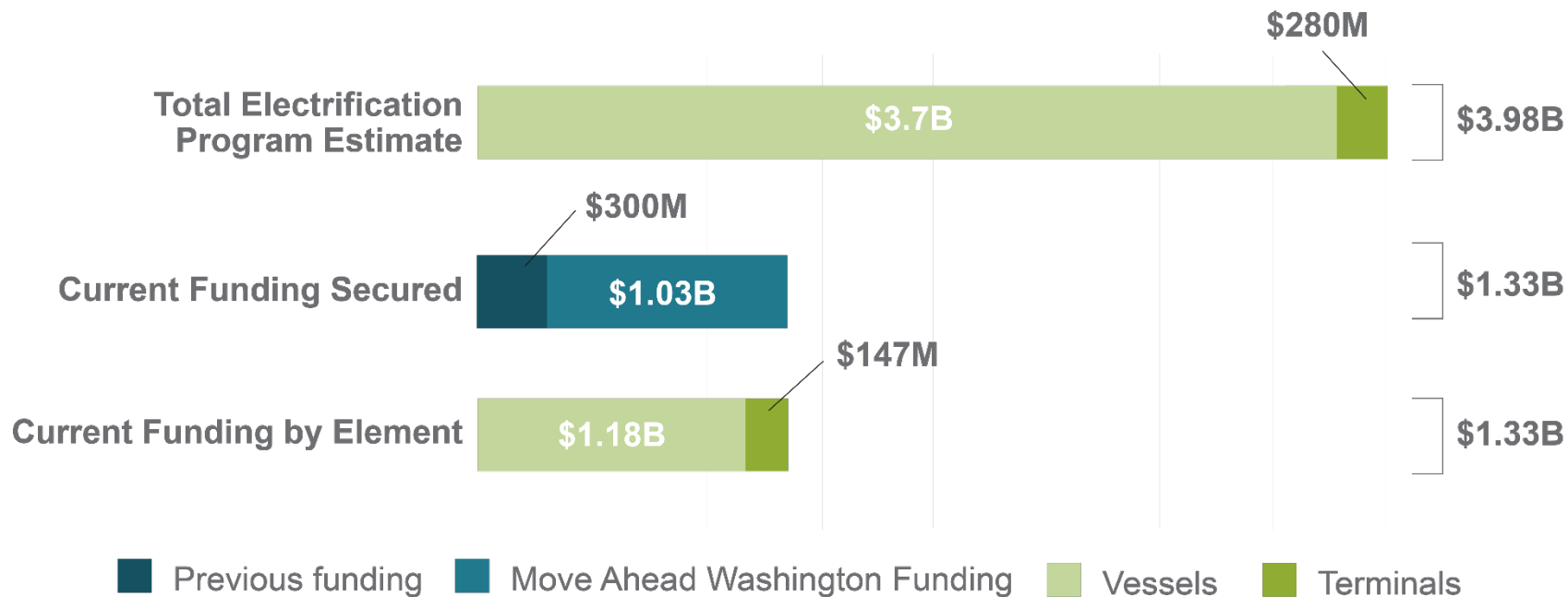
- Electrified terminal
- Vessel conversion
- New vessel

Funding

- With the passage of the 2022 Move Ahead Washington transportation package, the program received \$1.03 billion
- With \$1.33 billion secured to date, the program has funded the following elements:
 - ✓ 5 hybrid electric Olympic Class vessels
 - ✓ Up to 4 vessel conversions
 - ✓ Central Puget Sound terminal electrification



Funding



Challenges and lessons learned

1. **Analysis of routes and current technology**...is electrification the right solution for the system?
2. **Educate and coordinate with elected officials** and build key partnerships
3. **Plan, plan, plan**...what is an achievable roadmap?
4. **Identify potential funding sources** that align with project
5. **Develop engineering options** that can be reviewed and refined over time—from both project and full system perspective
6. **Build the right team** for each phase of the project

Questions?



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