

Hybrid Electric Ferries: Design-Build Contracting and Procurement

2023 JLARC STUDY

2022 Legislature directed JLARC to evaluate WSF's design-build contracting approach for hybrid electric ferries. JLARC staff worked with experts in marine engineering and procurement to complete the study.

State law requires Washington State Ferries (WSF) to use design-build contracts to acquire new plug-in hybrid electric vessels

Design-build contracts:

- Require one shipbuilder to complete design and construction.
- Transfer most project risk to the shipbuilder, which can increase the vessel price.

WSF's Long Range Plan: Increase the ferry fleet, shift to plug-in hybrid electric vessels



Statute does not allow WSF to use faster procurement approaches that still encourage in-state construction

- WSF cannot seek out-of-state bids unless the fixed prices from all Washington shipbuilders are more than 5% above the engineer's estimate.
 - This requires a second Request for Proposal (RFP) nationally, which adds time to the acquisition process.
- Other states use a single RFP and encourage in-state construction for various types of projects by applying preferences during the selection process.

Acquisition process required by state law

PHASE 1	PHASE 2	PHASE 3
WSF issues an RFP to WA shipbuilders. They respond to qualification questions. WSF selects WA shipbuilders for Phase 2.	WSF periodically reviews each shipbuilder's design, drawings, and specifications. Shipbuilders submit proposals. WSF develops engineer's estimate for each shipbuilder's design.	Shipbuilders submit price. WSF awards contract to a WA shipbuilder based on lowest bid price. <i>OR, if all responses are >5% above engineer's estimate:</i> WSF rejects all bids and issues new RFP nationally.

Source: JLARC staff depiction of Ch. 47.60 RCW.

Statute requires WSF to use a low bid selection. This may discourage shipbuilders from suggesting features that lower life cycle costs.

There are two common ways to select a winning bid:

1. **Low bid:** awards the contract to the firm offering the lowest price.
2. **Best value:** considers relative importance of price and non-price factors (e.g., life cycle cost, small businesses). Best value is used in federal projects and some Washington State Department of Transportation (WSDOT) civil engineering projects. WSF is part of WSDOT.

LEGISLATIVE AUDITOR'S RECOMMENDATIONS TO THE LEGISLATURE

The Legislature should consider amending state law to:

1. Allow WSF to use a best-value selection process.
2. Allow WSF to offer a single nationwide RFP that increases competition, offers in-state preference, and protects against the risk of a longer procurement process.

WSF cost estimates do not convey key assumptions and uncertainty

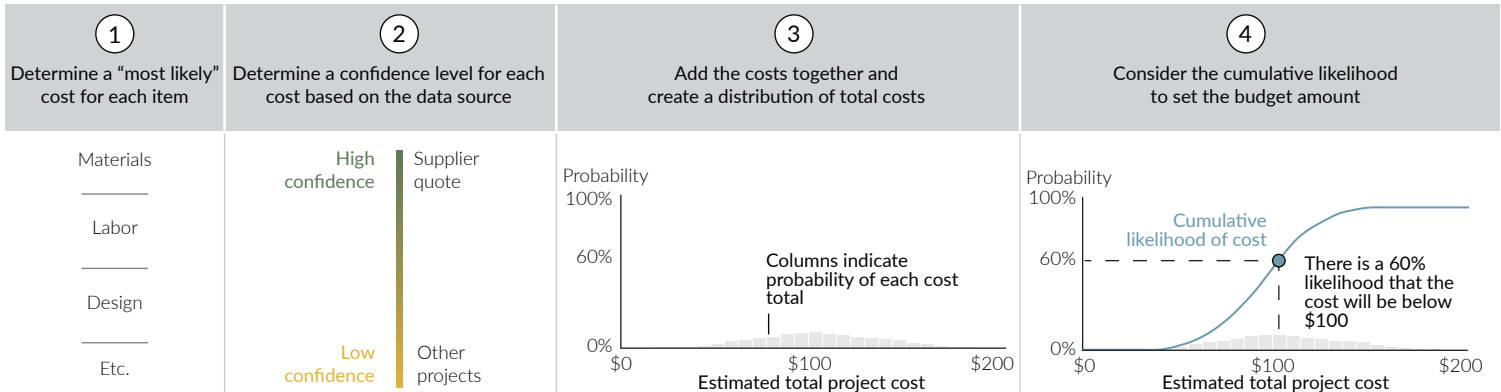
WSF

Uses standard cost estimating practices to produce single value estimates. Estimates for the first hybrid electric Olympic class vessel range from \$188 million (2018) to \$249 million (2022).

Does not clearly explain assumptions, data sources, or methods in estimates shared publicly. This leads to confusion about changes and whether estimates are comparable.

A probabilistic approach would show the range of potential cost estimates

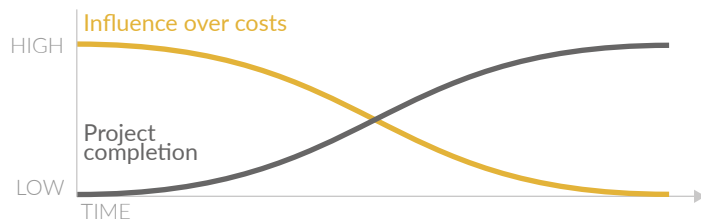
- Decision makers can set budgets based on the likelihood that costs will be at or below a certain amount.
- WSDOT uses a probabilistic approach for civil engineering projects valued over \$100 million.



Predesign studies that analyze life cycle costs can address cost concerns

Some of the best opportunities to control costs occur early in the project (e.g., in predesign)

- Predesign studies evaluate ways to meet a vessel's requirements (e.g., speed, propulsion).
- As required, WSF's predesign studies address life cycle costs for fuel efficiency and preservation. They do not address long-term staffing costs.
- The way WSF selects predesign studies may exclude topics that significantly affect life cycle cost.
- Experts estimate that 70% of a vessel's life cycle costs occur after construction.



WSF should improve its payment and documentation practices

- WSF pays shipbuilders through monthly payments that reflect estimated progress. Best practice is to link payments to major project milestones and measurable progress.
- WSF complies with laws governing ferry acquisitions and follows many best practices. However, its policy manual is outdated and does not reflect current law or best practice.

LEGISLATIVE AUDITOR'S RECOMMENDATIONS TO WSF

Washington State Ferries should:

1. Ensure that cost estimates provided to OFM, legislative staff, and the Legislature are clear and well documented.
2. Use probabilistic approaches in its cost estimates and clearly indicate the likelihood of the cost falling at or below the funding level requested.
3. Ensure predesign studies evaluate long-term costs as directed by statute and that the suite of studies for each acquisition project addresses the most significant potential life cycle cost drivers.
4. Tie shipbuilder payments to significant milestones or project progress.
5. Update its ferry acquisition policies and procedures to reflect current laws and best practices.