



PROJECT MEMORANDUM

Guemes Island Ferry Replacement Project

15 February 2019

TO: Skagit County Board of Skagit County Commissioners
FROM: Dan Berentson, Public Works Director
Paul Randall-Grutter, P.E., County Engineer
RE: Replacement Ferry Size

Overview

Skagit County proposes to replace its 40-year old diesel powered ferry, *Guemes*, with a larger electric ferry to serve the needs of the route for another 40 years. Glosten, Skagit County's naval architecture firm has completed concept design studies, including a vessel capacity study and a transportation system assessment, and has made the recommendation to the replace the *Guemes* with a 32-car ferry.

In order to progress with the next phase of design, a determination needs to be made to replace the 21-vehicle, 100-passenger ferry with either a 32 or 28-car ferry, both of which will carry 150 passengers. Glosten has prepared a program capital cost estimate for both options. We recommend proceeding with the 28-car ferry based on construction and operational cost savings, throughput limits, growth, and land use.

Figure 1 - Program Capital Cost Estimate

Design & Construction	32-Car Ferry	28-Car Ferry
Terminal	\$ 1,700,000	\$ 1,700,000
Electrical	\$ 4,200,000	\$ 4,000,000
Vessel	\$ 15,900,000	\$ 13,300,000
Total	\$ 21,800,000	\$ 19,000,000

Considerations

Capital cost is one of several considerations in selecting the vehicle capacity of the new ferry. This project memorandum addresses two remaining questions the Commissioners have regarding vessel size.

1. What is the difference in operating and maintenance costs between a 32 and 28-car ferry?
2. Will a 32-car ferry, if selected, meet the two round trips per hour design requirement?

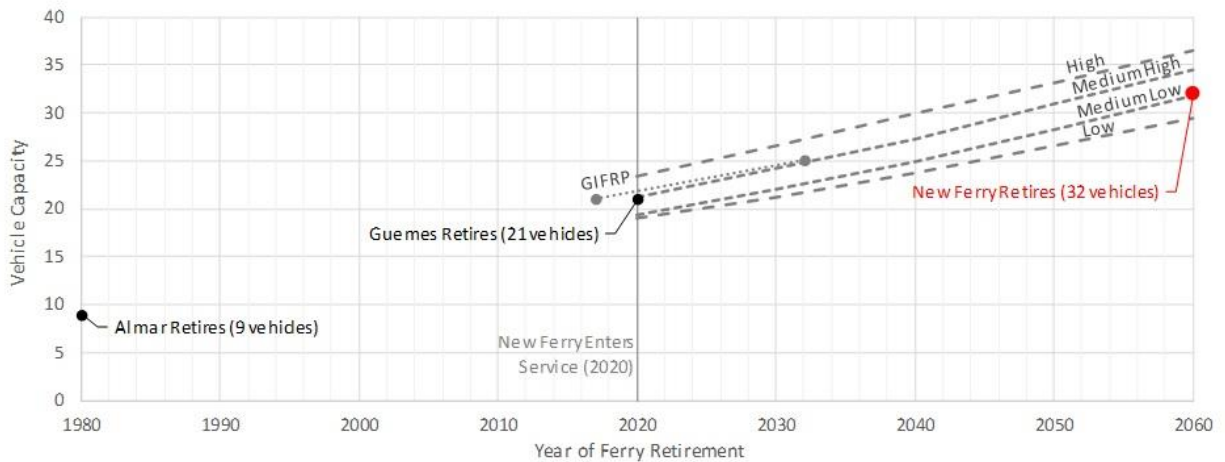
Glosten and Skagit County have provided two attachments to this memorandum to address these questions. The remainder of this project memo discusses growth and capacity projections.

Glosten, in the [Guemes Island Ferry Replacement Vessel Capacity Study](#), and Berk Consulting, in the [Guemes Ferry Replacement Environmental Assessment](#), analyzed growth projections to determine an appropriate vehicle capacity for the new ferry.

Glosten based their recommendation for a 32-car ferry on capacity history and a medium low growth trend over a 40-year planning period.

Glosten’s vessel capacity study concludes that, “There is no “perfect” capacity for the new Guemes Island Ferry. Historical ridership records indicate that there is almost certainly ongoing elasticity in rider demand. Given incentives and alternatives, riders have found a way to share *Guemes* harmoniously with more than twice the number of people who used it in its first year of service.” Ultimately, the Guemes Island Ferry’s future success depends largely on the way that riders decide to use it.

Figure 2 – Glosten’s estimated vehicle capacity



Berk Consulting, Inc. conducted an environmental assessment to evaluate a range of vessel alternatives: 32 cars (Glosten proposal), 28 cars (reduced ferry size alternative) and 21 cars (no action). Berk concluded that, “Growth trends do not support the idea that a ferry size induces growth. Growth trends and ridership analysis do support considering an alternative in the range that accommodates growth in the middle of the planning period for a medium or lower historic rate paired with demand management and transit measures.”

Figure 3 – Berk’s estimated vehicle capacity

Scenario	Vehicle Ridership R/T 2036	Vehicle Capacity Needed 2036	Vehicle Ridership R/T 2060	Vehicle Capacity Needed 2060
Historic Trends High	131,000	25	188,000	35
Glosten Vessel Capacity Study 2017			170,000	32
County Comp Plan Medium	119,000	22	158,000	30
Historic Trends Low	105,000	20	119,000	22

Berk further concluded that a 32-car ferry or a 28-car ferry would meet Skagit County’s Comprehensive Plan Policy Goal 8A-5 to maintain County ferry services. However, a vessel sized for a projected growth rate at a medium or lower level, or for the mid-point of the 2060 planning horizon, could reflect the following trends and uncertainties:

- Declining rates of ridership
- Changing nature of vehicle travel (e.g. driverless cars, car sharing), and
- Potential for additional demand management measures (pricing, parking, etc.).

If the apron is improved to permit concurrent passenger and vehicle loading, up to 33 vehicles can be reliably carried while operating on a schedule of two round-trips per hour (see Figure 3).



Figure 1 Transfer span components (Ref 2)

Figure 2 shows how the time segments of the average round trip are predicted by the throughput model for a 22-vehicle ferry.

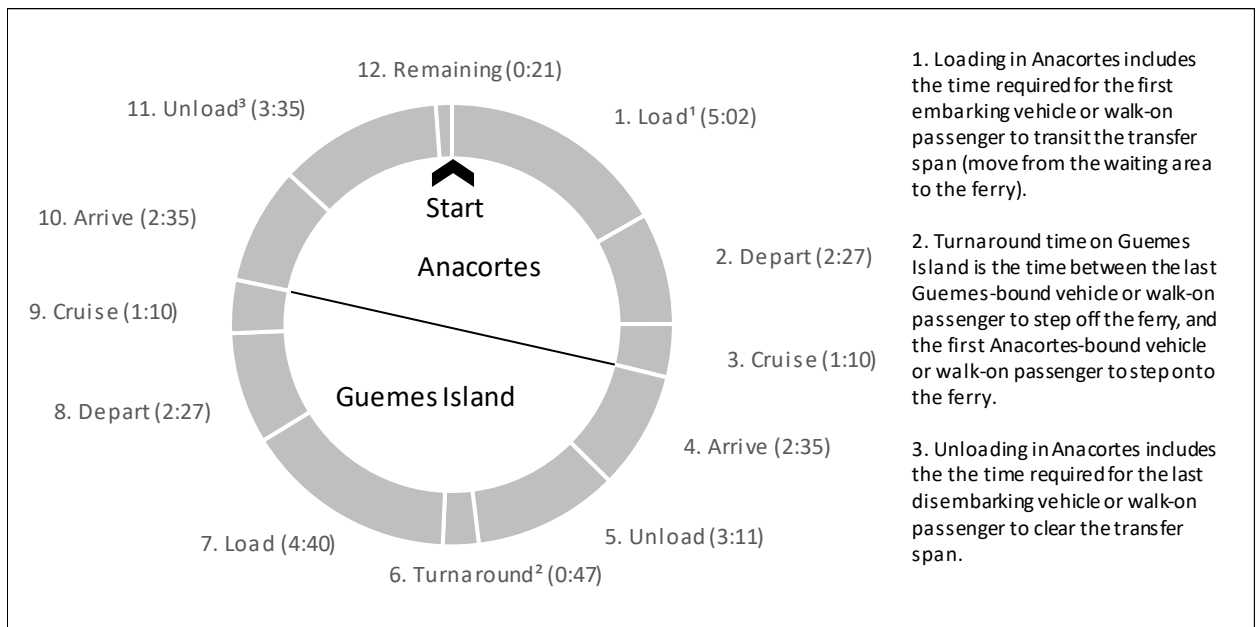


Figure 2 Typical round-trip transit: 22 vehicle ferry, existing loading operations (Ref 2)

Figure 3 shows how the time segments of the average round trip are predicted by the throughput model for a 33-vehicle ferry, assuming concurrent vehicle and walk-on passenger loading is enabled.

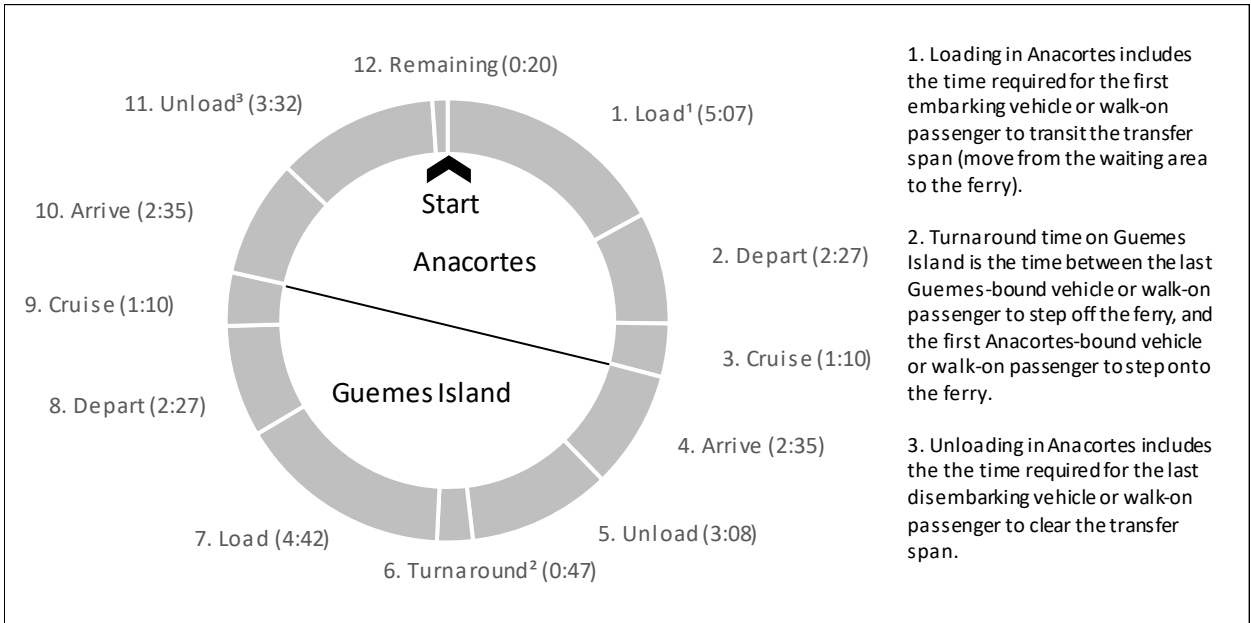


Figure 3 Typical round-trip transit – 33 vehicle ferry, concurrent passenger and vehicle loading (Ref 2)