

Fox Island Bridge Marine Survey Report

Prepared for Pierce County Public Works Department

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Executive Summary

Purpose

The Fox Island Bridge, declared to be structurally deficient in 2013, is in need of replacement. In accordance with the recommendations of the 2012 USCG Bridge Program Reasonable Needs of Navigation white paper, the Pierce County Public Works Department has undertaken a preliminary study to determine appropriate bridge navigational clearance needs for the replacement of the existing Fox Island Bridge. Understanding the opinions those who use either the channel below the Fox Island Bridge or the bridge itself is key to making informed decisions about the project. As a part of this effort to get input from those affected by changes to the Fox Island Bridge, PRR, Inc., was commissioned to conduct a survey of marine vessel owners and local residents to learn their needs and preferences regarding potential height requirements of the replacement bridge.

Methods

PRR conducted an online survey (see Appendix A) of marine vessel owners and local residents using the *SurveyGizmo* online survey platform. Respondents either came from the general population of local residents and marine vessel owners or were provided by the market research company *Research Now*.

Research Now delivers survey responses by using an online panel (that is, a database of people signed up to take surveys online) and is able to selectively distribute surveys based on respondent characteristics. This survey was targeted at people who reported that they had recreational vessels and lived within a 20-mile radius of the Fox Island Bridge. The original research plan was to reach local boat owners through the Department of Licensing, but the DOL was not able to provide us with a list of boat owners in time for this project, so we chose to use *Research Now* as an alternative method.

Respondents from the general population of marine vessel owners were referred to the survey in several ways:

- A flyer was distributed via email and/or physically posted at 28 local marinas and boating associations located within a 20-mile radius of the Fox Island Bridge
- Email invitations were sent to the approximately 300 members of the Puget Sound Marine Exchange
- Survey invitations were included in the Coast Guard's Local Notice to Mariners (a weekly email newsletter of maritime information)
- An invitation was emailed to members of the Fox Island Community and Recreation Association (FICRA) and posted in the FICRA Facebook Group

The survey was programmed such that only marine vessel owners or residents of Fox Island or Gig Harbor were able to complete the survey. The survey initially drew 340 responses. However, based on our data quality control practices, 83 cases were dropped from the final analysis based on the following criteria:

- Providing vessel dimensions that did not make sense (for example: a sailboat with 5,000 foot air draft, 3,000 foot width, and 6,000 foot draft; a tanker with 4 foot air draft, 3 foot width, and 5 foot draft)
- Typing irrelevant comments or gibberish in response to open end questions

The survey ultimately yielded 257 complete and valid responses: 178 from the general population and 79 from the *Research Now* online panel.

Respondent Characteristics

Total n = 257

Residence:

- Resident of Fox Island: 45%
- Resident of Gig Harbor: 7%

Vessel type:

- Recreational boat owner: 75%
- Commercial vessel operator: 4%
- Both recreational and commercial: 2%
- No marine vessel, but resident of Fox Island or Gig Harbor: 19%

Analysis Notes

Because residents of Fox Island are uniquely dependent on the Fox Island Bridge to access the mainland, this analysis compares Fox Island residents with non-residents. Likewise, owning a boat has obvious bearing on one's bridge clearance needs, so we also compare boaters with non-boaters. Commercial vessel operators made up a very small proportion (6%) of the sample and had the potential to skew the data, so their results are reported separately (see page 14). Finally, 3 respondents were non-boat-owning residents of Gig Harbor, whom we ultimately decided to exclude because they were not stakeholders with regard to being dependent on the bridge or owning a vessel that could potentially use the channel.

The analysis thus considers four main sample segments:

1. Recreational boat owners who live on Fox Island (n = 66)
2. Non-boat owners who live on Fox Island (n = 46)
3. Recreational boat owners who do not live on Fox Island (n = 127)
4. All commercial vessel operators (n = 15) – *reported separately on page 14*

For survey data relating specifically to aspects of marine vessel ownership (such as vessel dimensions, use of the channel under the Fox Island Bridge, etc.), analysis will only include vessel owners and will compare vessel owners who live on Fox Island with those who don't.

Due to rounding, percentages may not add up to exactly 100. Response rates may vary slightly between questions, as respondents were not required to answer every single question. All reported relationships are statistically significant at the 95% confidence level.

Key Findings

- More respondents owned powerboats than sailboats or other kinds of recreational boats such as kayaks.
- Vessel types and dimensions were similar regardless of whether or not the given boat owner lived on Fox Island.
- Recreational boat owners who lived on Fox Island were more likely to travel through the channel under the Fox Island Bridge, and to travel through it more frequently, than recreational boat owners who lived elsewhere.
- Recreational boaters' reasons for not using the channel were much more likely to be that they didn't travel in the area than that their vessels were too large for the passage.
- A decisive majority were satisfied with the Fox Island Bridge's current clearance of 32 feet. Locals and especially local recreational boat owners were the most likely to find the current height sufficient.
- Unsurprisingly, recreational boat owners' desired clearances were highly correlated with the air draft of their tallest vessels.
- Even among recreational boat owners who didn't use the channel at all, a majority still said the current clearance was sufficient for their use.
- Overall, respondents wanted the bridge replacement plan to avoid placing an undue cost burden on Fox Island residents, to widen the bridge for land traffic, and to maintain the current height of the bridge.
- Commercial vessel operators' preferences were mixed, but their opinions were overall neutral-to-positive regarding making the bridge taller.
- **Based on the results of this survey, the Fox Island Bridge's current vertical clearance appears to be sufficient for the majority of local boaters and residents. We therefore recommend maintaining the current clearance of 32 feet.**

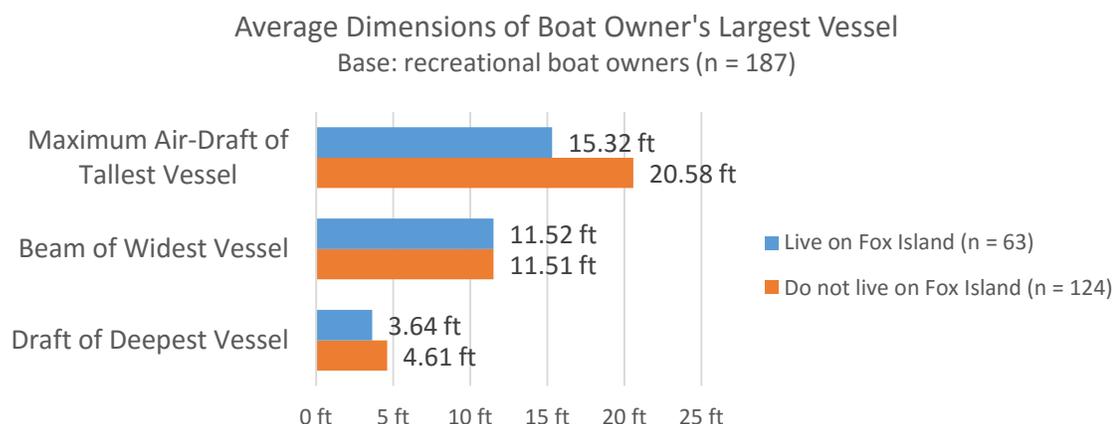
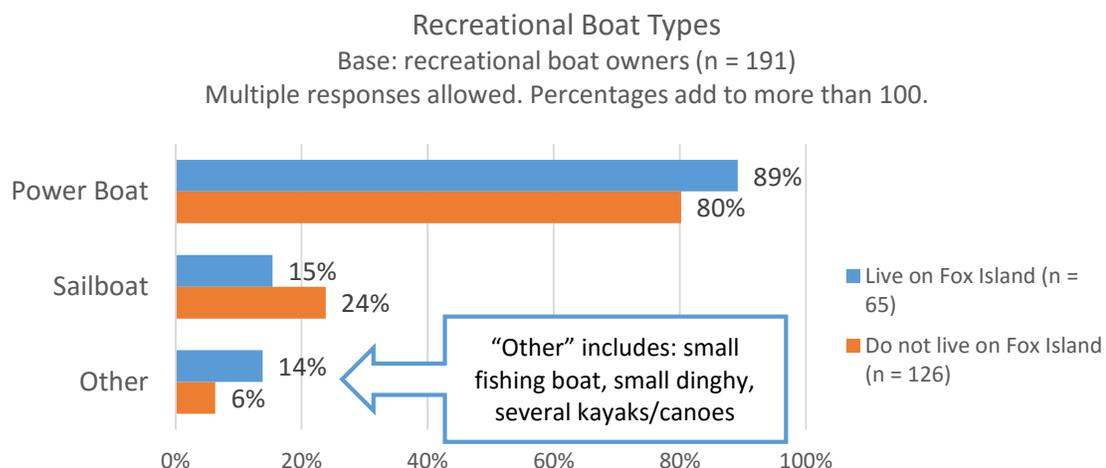
Detailed Survey Findings

Recreational Boat Characteristics

- More respondents owned power boats than sailboats or other kinds of recreational vessels such as kayaks.
- Recreational boat owners who didn't live on Fox Island were more likely than those who did live on Fox Island to own a boat with an air draft exceeding 32 feet, the current height of the Fox Island Bridge.

Both segments of recreational boat owners (those living on Fox Island and those not living on Fox Island) largely comprised owners of power boats, as opposed to sailboats or other kinds of recreational boats. The local boat owners on Fox Island owned a slightly higher proportion of powerboats and a slightly lower proportion of sailboats, but this difference between the groups was not statistically significant.

Non-Fox Island recreational boat owners were significantly more likely to have boats with air drafts greater than 32 feet. Only 13% of Fox Island recreational boat owners reported air drafts greater than 32 feet (8 respondents out of 63), compared 25% of non-Fox-Island recreational boat owners (31 respondents out of 124).



Use of the Channel Under Fox Island Bridge

- Recreational boat owners who lived on Fox Island were more likely to travel through the channel under the Fox Island Bridge, and to travel through it more frequently, than recreational boat owners who lived elsewhere.
- Non-Fox Island residents' reasons for not using the channel were much more likely to be that they didn't travel in the area than that their vessels were too large for the passage.

Recreational boat owners' use of the channel under the Fox Island Bridge differed between those who lived on Fox Island and those who did not. The local Fox Island boaters were much more likely to use the channel, and, among users of the channel, used it a significantly greater number of times per year. Overall, the most common reason for not using the channel was not traveling in the area; respondents were over three times more likely to cite this reason than to say it was because their vessel was too large for the channel. The number of boat owners who lived on Fox Island but didn't use the channel was only 5, which means that the sample is too small to statistically compare to non-Fox Island residents, but the data suggest that local recreational boat owners were more likely than non-locals to be prevented from using the channel due to the size of their vessels.

"Other" includes: don't feel comfortable, no interest

	Number of respondents			Among those who use channel	Among those who do not use channel		
	Total	Use channel	Do not use channel	Times per year pass under Fox Island Bridge	Don't travel in area	Vessel too large for channel	Other
Rec. boat owners, live on Fox Island	66	61	5	18.25 times/year	1	4	0
Rec. boat owners, do not live on Fox Island	127	49	78	6.86 times/year	60	15	3

Bridge Clearance Preferences – For Boat Owners and Non-Boat Owners

- A decisive majority were satisfied with the Fox Island Bridge’s current clearance of 32 feet. Locals and especially local recreational boat owners were the most likely to find the current height sufficient.
- Unsurprisingly, recreational boat owners’ desired clearances were highly correlated with the air draft of their tallest vessels.

Although most respondents found the current bridge clearance of 32 feet to be sufficient, recreational boat owners who did not live on Fox Island were the least likely to say this. Fox Island residents who owned recreational boats were even more likely to say it was sufficient than Fox Island residents who didn’t own boats. The difference between these three groups is statistically significant.

The numbers of boaters and non-boaters from Fox Island who didn’t find the current clearance sufficient are too small to be able to statistically compare with non-Fox Island boaters, but among those who said the current clearance of 32 feet wasn’t sufficient, recreational boat owners who did not live on Fox Island had preferences for a slightly higher clearance than the other groups. Respondents’ desired clearances were significantly correlated with the air draft of their tallest vessels.

	Number of respondents			Average preferred clearance (among those who do not find current clearance sufficient)
	Total	Current clearance is sufficient	Current clearance is not sufficient	
Rec. boat owners, live on Fox Island	66	62	4	49.00 feet
Non-boat owners, live on Fox Island*	46	41	5	47.40 feet
Rec. boat owners, do not live on Fox Island	127	96	31	54.42 feet

*Although non-boat owners do not use the channel, we asked them these clearance-related questions to capture preferences that were driven by considerations other than fitting vessels under the bridge.

Bridge Clearance Preferences and Use of Channel – For Boat Owners Only

- Even among recreational boaters who didn't use the channel at all, a majority still said the current clearance was sufficient for their use.

In order to assess whether clearance needs for the Fox Island Bridge were different than for other bridges in the area, we also split the sample into recreational boaters who used the channel and recreational boaters who didn't. Those who used the channel were significantly more likely to say that the current clearance of 32 feet was sufficient. It is notable that even among recreational boaters who didn't use the channel at all, over two-thirds reported that the current clearance of 32 feet was sufficient.

Among those who didn't find the current clearance sufficient, the number who used the channel (n =9) is too small to be able to statistically compare to those who did not use the channel. However, the data suggest that non-channel-users had preferences for a slightly higher clearance than channel-users. The average ideal height was between 50 feet and 55 feet for both groups.

	Number of Respondents			Average preferred clearance (among those who did not find current clearance sufficient)
	Total	Current clearance is sufficient	Current clearance is not sufficient	
Rec. boat owners, do use channel	110	102	8	50.50 feet
Rec. boat owners, do not use channel	83	56	27	54.78 feet

Written Comments Provided

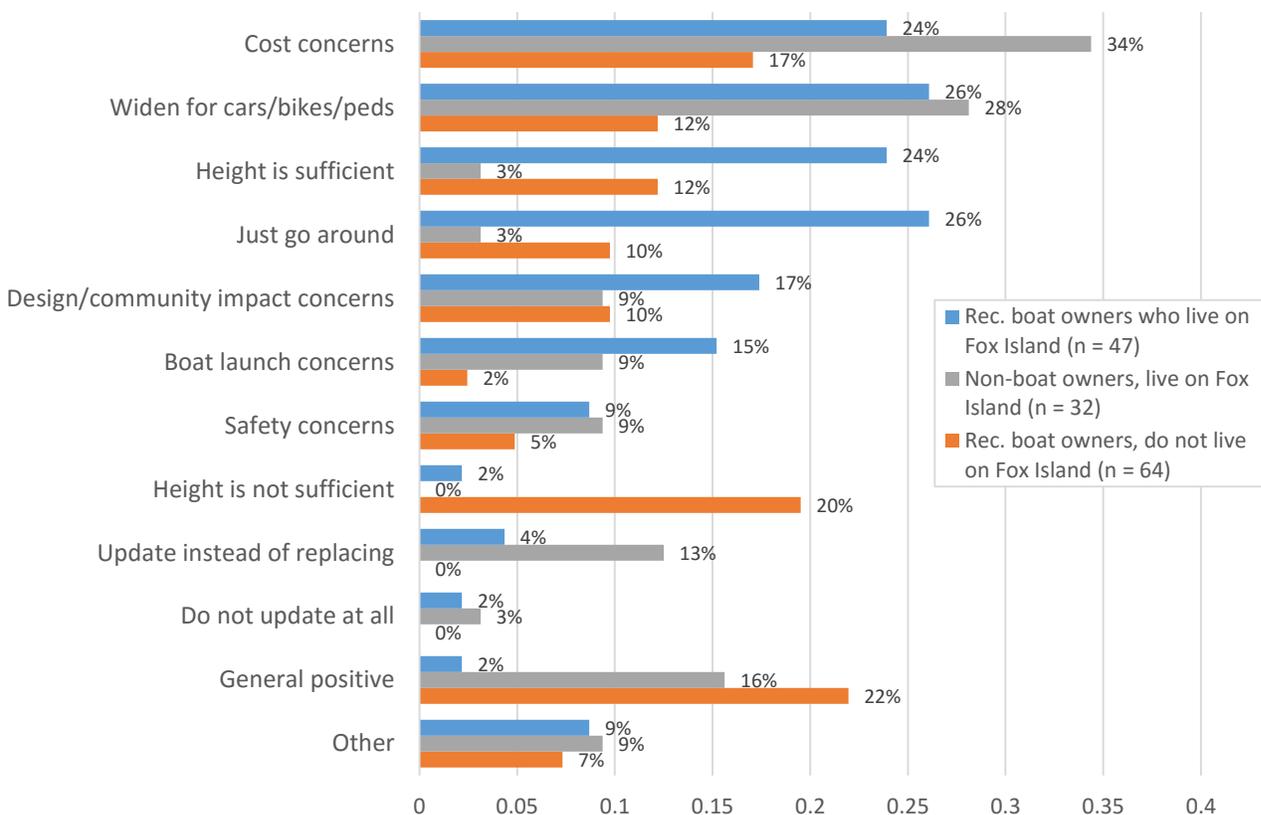
- Overall, respondents wanted the bridge replacement plan to avoid placing an undue cost burden on Fox Island residents, to widen the bridge for land traffic, and to maintain the current height of the bridge.

Cost was the most frequently discussed topic overall, particularly among Fox Island residents, who were concerned that they would be the ones bearing the burden of paying for the bridge. Locals also frequently requested that the bridge itself be adapted to accommodate increased traffic from cars, bicycles, and pedestrians; suggested solutions included widening the bridge and providing additional lanes. Some recreational boat owners who didn't live on Fox Island were supportive of making the bridge taller, but many local recreational boat owners said that they were satisfied with the current height and it wasn't difficult for tall boats to simply go around the island.

Secondary themes included the belief that increasing the height of the bridge might damage the visual charm of the area, the concern that construction would disrupt the day-to-day life of the residents of the Fox Island community, the desire that the project include relocating and improving existing boat launches, and the preference for upgrading the existing bridge instead of replacing it entirely.

Please provide any other comments you have about the possible replacement of the existing Fox Island Bridge.

Base: recreational boaters and Fox Island residents (n = 143)



Comment Examples

"Please make it affordable. A toll or high levies on homeowners will be very detrimental to our community."

-Recreational boat owner
Lives on Fox Island

"For safety sake, it needs to be wider and provide adequate space for pedestrians."

-Non-boat owner
Lives on Fox Island

"I prefer the bridge's deficiencies be corrected than replacing it."

-Non-boat owner
Lives on Fox Island

"We live the South Sound and sail down there many times throughout the year. It would be helpful to have taller bridges!"

-Recreational boat-owner
Does not live on Fox Island

"Adjusting the location of the boat ramp would give more options & ease traffic/parking problems."

-Recreational boat owner
Lives on Fox Island

"While a higher clearance would be needed for my vessel, I do not think it would be worth the expense. Avoiding that route is not a problem for me."

-Recreational boat-owner
Does not live on Fox Island

"Taller boats can easily go south around the Island."

-Recreational boat owner
Lives on Fox Island

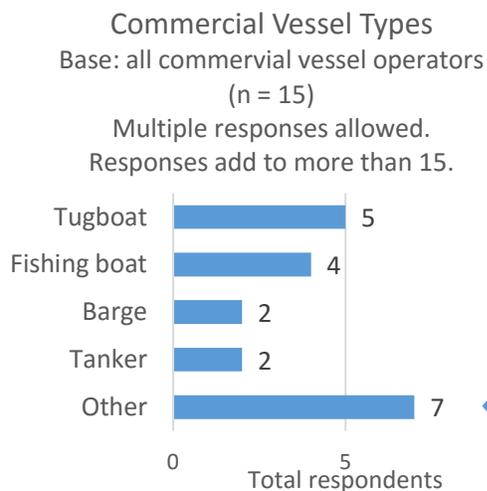
"We really don't want the bridge to be much higher than it already is as the low profile is what makes it so special coming into Fox Island."

-Non-boat owner
Lives on Fox Island

Commercial Vessel Operators

- Commercial vessel operators' preferences were mixed, but their opinions were overall neutral-to-positive regarding making the bridge taller.

15 respondents operated commercial vessels, mostly tugboats and fishing boats but also including several other types. The majority of vessels had air drafts exceeding the current bridge clearance of 32 feet, with a large amount of variability. However, the main reason they gave for not using the channel was that they did not travel in that area.



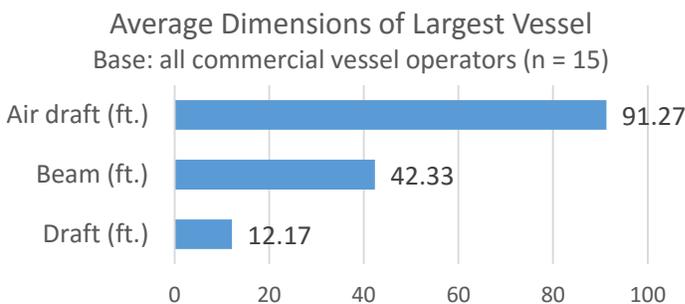
74% did not use the channel.

- 55% because they didn't travel in the area.
- 45% because their vessels were too large for that channel.

60% happy with current clearance.

Ideal clearances ranged from **40 feet** to **160 feet**, average: **78.33 feet**.

"Other" includes: passenger (2), fireboat, research vessel, tollycraft, commercial sailboat, sport fisher



Air drafts ranged from a minimum of 15 feet to a maximum of 362 feet. 12 of the 15 respondents had vessels whose air draft exceeded the current clearance of the Fox Island Bridge.

"If for some reason someone needed something barged under the bridge, it would be only a handful of tugs that could fit under her at the present height ... You can always go around in most cases, just seems if you had the opportunity to make it a little taller it would be better."

-Commercial vessel operator, does not live on Fox Island

"Increase width of bridge for vehicle safety. Two lanes still okay, just a little wider."

-Commercial vessel operator,
Lives on Fox Island

Appendix: Survey Instrument

Replacement Bridge Survey

This brief survey (less than 5 minutes) is designed to obtain feedback about the bridge clearance needs of recreational boaters and commercial vessel operators. The Pierce County Department of Public Works has retained PRR, Inc. (an independent research firm) to conduct this survey.

Your responses are confidential. By completing the survey you become eligible to win one of three \$100 Amazon gift cards provided by PRR. Please complete the survey no later than March 5, 2017. If you have any questions about the survey, please contact research@prrbiz.com. We thank you in advance for your participation!

Page exit logic: Skip / Disqualify Logic **IF:** Question "Are you responding to this survey as: (check all that apply)" #1 is one of the following answers ("None of the above") **THEN:** Disqualify and display: "Sorry, you do not qualify to take this survey."

1) Are you responding to this survey as: (check all that apply)*

- Recreational boat owner
- Commercial vessel operator
- Resident of Fox Island
- Resident of Gig Harbor
- None of the above

Logic: Hidden unless: Question "Are you responding to this survey as: (check all that apply)" #1 is one of the following answers ("Recreational boat owner")

2) What type of *recreational* boat(s) do you own? (check all that apply)

- Power boat
- Sail boat
- Other - Write In: _____

Validation: Must be numeric Whole numbers only

Logic: Hidden unless: Question "Are you responding to this survey as: (check all that apply)" #1 is one of the following answers ("Recreational boat owner", "Commercial vessel operator")

3) What is the approximate above water height (in feet) of your tallest vessel?*

Validation: Must be numeric Whole numbers only

Logic: Hidden unless: Question "Are you responding to this survey as: (check all that apply)" #1 is one of the following answers ("Recreational boat owner", "Commercial vessel operator")

4) What is the approximate maximum width (in feet) of your widest vessel?*

Validation: Must be numeric Whole numbers only

Logic: Hidden unless: Question "Are you responding to this survey as: (check all that apply)" #1 is one of the following answers ("Recreational boat owner", "Commercial vessel operator")

5) What is the approximate maximum draft (in feet) of your deepest vessel?

Validation: Must be numeric Whole numbers only

Logic: Hidden unless: Question "Are you responding to this survey as: (check all that apply)" #1 is one of the following answers ("Commercial vessel operator")

6) What is the approximate maximum displacement (in tons) of your heaviest vessel?

Logic: Hidden unless: Question "Are you responding to this survey as: (check all that apply)" #1 is one of the following answers ("Commercial vessel operator")

7) What type of vessel or vessels are these? (check all that apply)

Cargo ship

Tanker

Barge

Tug boat

Fishing boat

Other - Write In: _____

Hidden unless: Question "Are you responding to this survey as: (check all that apply)" #1 is one of the following answers ("Recreational boat owner", "Commercial vessel operator")

8) Do you use the channel under the Fox Island Bridge?*

No

Yes

Logic: Hidden unless: Question "Do you use the channel under the Fox Island Bridge?" #8 is one of the following answers ("No")

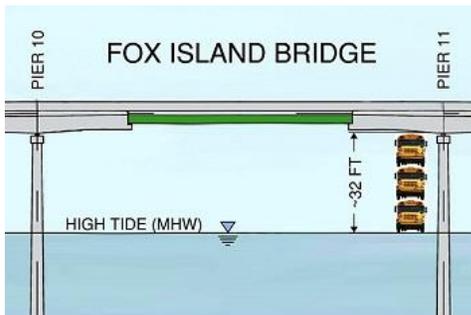
9) Why do you not use the channel under the Fox Island Bridge?

- Do not travel in that area
- My vessel is too large for that channel
- Other (please specify): _____

Validation: Must be numeric Whole numbers only

Logic: Hidden unless: Question "Do you use the channel under the Fox Island Bridge?" #8 is one of the following answers ("Yes")

10) Approximately how many times a year do you pass under the Fox Island Bridge?*



11) The existing Fox Island Bridge has a vertical clearance of approximately 32 feet at mean high water (MHW). Is this sufficient clearance if a replacement bridge is constructed?

*

- No
- Yes

Validation: Must be numeric Whole numbers only

Logic: Hidden unless: Question "The existing Fox Island Bridge has a vertical clearance of approximately 32 feet at mean high water (MHW). Is this sufficient clearance if a replacement bridge is constructed?" #11 is one of the following answers ("No")

12) What mean high water vertical clearance (in feet) would be necessary to make a replacement bridge suitable for your needs?*

Logic: Hidden unless: Question "Are you responding to this survey as: (check all that apply)" #1 is one of the following answers ("Recreational boat owner", "Resident of Fox Island", "Resident of Gig Harbor")

13) What is your home zip code?*

14) Please provide below any other comments you have about the possible replacement of the existing Fox Island Bridge.

Thank you for taking our survey. Your response is very important to us.