



Willapa Bay

Ferry Feasibility Study

An Opportunity for Connectivity

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Introduction

Executive Summary

The Willapa Bay Ferry Feasibility Study presents a comprehensive analysis of the potential for a bike and pedestrian ferry service in Willapa Bay, aiming to connect residents and boost tourism in Pacific County. Conducted by a team of 1st-year MBA students from the University of Washington's Foster School of Business, the study evaluates various aspects of the proposed ferry service, including market potential, operational setup, financial viability, and risk assessment. The study's main assumptions include operating the ferry seasonally from May to October, seeking funding grants, implementing a phased approach, and predicting breakeven by the fourth year of operation.

Opportunity Statement

The study identifies a significant market opportunity to enhance connectivity and promote tourism in Pacific County through a bike and pedestrian ferry service. Key targets of the feasibility study include evaluating market potential, assessing the tourism impact, exploring ferry options and setup, conducting financial analysis, and identifying implementation challenges.

Key Findings

- **Feasibility:** The study concludes that implementing a bike and pedestrian ferry service in Willapa Bay is feasible based on the identified market demand, potential revenue streams, and operational setup.
- **Case Study Analysis:** Insights from case studies of similar ferry services highlight successful strategies such as special pricing, scenic route promotion, and offering diverse fare options.
- **Visitor Personas:** Detailed personas of potential ferry passengers provide valuable insights into their preferences, behaviors, and expectations, guiding marketing and service design efforts.
- **Demand Analysis:** Historical and forecasted visitor volumes indicate a growing market for ferry services, with conservative growth rates projecting increasing ridership over the next decade.
- **Financial Analysis:** Revenue projections from ticket sales, parking, and other onboard services, along with cost estimates for ferry purchase, operation, maintenance, and regulatory compliance, demonstrate the financial viability of the proposed ferry service.

Case Study Analysis

Overview

The case study analysis presents a thorough examination of six ferry services across diverse regions, providing essential insights vital for the feasibility study of the Willapa Bay ferry service. Each case study reveals unique operational methodologies, pricing structures, customer engagement strategies, and promotional tactics that have propelled ferry services to success in their respective domains.

Now, we will delve into each case study in more detail to extract key insights that can inform the feasibility study for the Willapa Bay ferry service. Through this exploration, we aim to uncover actionable lessons and best practices that can be adapted to the specific context of Willapa Bay, enabling the formulation of effective strategies to optimize operational efficiency, maximize revenue potential, and deliver exceptional passenger experiences. By synthesizing these insights, the feasibility study endeavors to create a robust framework for the successful implementation and management of the Willapa Bay ferry service, fostering connectivity, enhancing tourism, and stimulating economic growth within the region.

Bald Head Island

Location: Bald Head Island, North Carolina

Website: <https://www.baldheadislandferry.com>

The ferry service for Bald Head Island operates from Southport, providing access to this idyllic coastal community off the coast of North Carolina. Operating year-round, the ferry offers departures every 30 minutes from two ports, with different schedules for passengers and contractors. Ticket prices are set at \$23.00 for adults and \$12.00 for children, with special arrangements during peak and off-peak seasons. Once on Bald Head Island, visitors can enjoy pristine beaches, explore nature trails, and experience the island's unique charm.

The central map shows the island's layout, including the Bald Head Wind Maritime Forest Preserve, Bald Head Creek and Salt Marsh Preserve, and various beaches like Cape Fear Beach, South Beach, and Point of Cape Fear. The map is surrounded by a grid of 48 small advertisements for local businesses and services, such as real estate, dining, and recreation.

Key Insights from Bald Head Island Ferry Operations for Feasibility Study

- **Tiered Pricing Structure:** Implementing seasonal pricing variations, and offering discounts during off-peak times, can attract more passengers and optimize revenue.
- **Enhanced Passenger Amenities:** Providing basic onboard facilities like restrooms and refreshments, as well as comfortable waiting rooms at the ferry terminal, can improve the passenger experience and satisfaction.
- **Premium Parking Options:** Offering reserved parking spots or annual passes for frequent travelers can provide convenience and generate additional revenue streams.
- **Real-Time Status Updates:** Offering a feature on the website where passengers can track the status of the ferry, such as departure times and delays, can enhance transparency and improve the overall customer experience.
- **Booking Convenience:** Providing easy online booking options and flexible scheduling can attract more passengers and enhance overall accessibility. The website had detailed information and FAQs section which is especially useful for non-tech-savvy adults.

Cumberland Island

Location: Camden County, Georgia

Website: <https://www.cumberlandislandferry.com>

The ferry service for Cumberland Island operates from St. Mary's, providing access to Georgia's largest barrier island. The ferry runs seven days a week during peak seasons and five days a week during winter, offering departures at scheduled times. Reservations are recommended, especially during busy periods, and passengers are required to adhere to safety measures, including wearing face coverings. Once on Cumberland Island, visitors can explore pristine beaches, hike scenic trails, visit historic sites, and enjoy diverse wildlife.



FIGURE 2 VISITORS ENJOYING THEIR RIDE ON CUMBERLAND QUEEN II

Key Insights from Cumberland Island Ferry Operations for Feasibility Study

- **Special Pricing for Local Residents:** Offering special pricing packages for residents of Camden, akin to Cumberland Island's approach, can foster community engagement and support while encouraging local patronage. This initiative could be implemented for a limited time to incentivize initial usage and promote familiarity with the ferry service.
- **Booking Round Trips with Tour Book Options:** Facilitating round trip bookings with optional tour book packages, as seen with Cumberland Island's ferry service, enhances convenience and adds value for passengers. Providing informative tour books or guides can enrich the passenger experience, offering insights into local attractions, historical landmarks, and wildlife encounters during the ferry journey.
- **E-Bike Reservation for Limited Number:** Introducing e-bike reservation options, like Cumberland Island's provision, allows passengers to enhance their exploration of destinations beyond the ferry terminal. Implementing a limited number of e-bike reservations ensures availability while promoting sustainable and eco-friendly transportation alternatives for passengers to further explore the surrounding areas.

Lake Chelan Boat Company

Location: Lake Chelan, Washington

Website: <https://ladyofthelake.com>

The Lady of the Lake ferry service on Lake Chelan offers passengers a captivating journey amidst breathtaking scenery. As it traverses the crystal-clear waters of the lake, passengers are treated to panoramic views of lush forests, towering mountains, and serene landscapes. Whether aboard the classic charm of the Lady Express, the modern comfort of the Lady II, or the elegance of the Lady Cat, each ship promises a unique and

unforgettable experience. Passengers can immerse themselves in the natural beauty of the Pacific Northwest while enjoying the gentle sway of the ferry and the soothing sounds of the lake. With its scenic route and tranquil ambiance, the Lady of the Lake ferry service provides a delightful escape into the heart of nature.



Key Insights from Lady of the Lake Ferry Operations for Feasibility Study

- **Scenic Route Experience:** Emphasizing the scenic beauty of the Lake Chelan route can attract tourists and leisure travelers, positioning the ferry service as a unique and enjoyable experience rather than just a mode of transportation.
- **Multiple Ship Options:** Providing passengers with a choice of three different ship types allows for tailored experiences, catering to diverse preferences and enhancing overall satisfaction with the ferry service.
- **Gift Card Availability:** Offering gift card options enables passengers to share the experience of a lake cruise with others or plan future trips, serving as a convenient and versatile offering that can boost revenue and customer engagement.
- **Fun Schedule of Events:** Incorporating themed cruises and special celebrations into the ferry service schedule adds value and excitement for passengers, attracting tourists and locals alike while fostering community engagement and loyalty.

King County Water Taxi

Location: King County, Washington

Website: <https://kingcounty.gov>

The King County Ferry Service operates in the Puget Sound region of Washington State, providing essential transportation links between various waterfront communities and downtown Seattle. With a fleet of modern vessels, the service offers reliable and efficient transit options for commuters, residents, and visitors alike. Passengers can enjoy stunning views of the Seattle skyline and surrounding landscapes during their journey, making the ferry experience both practical and scenic.



FIGURE 4 KING COUNTY WATER-TAXI DOCKED AT SEATTLE

Key Insights from King County Ferry Operations

- **Integrated Fare Payment System:** King County Ferries utilize an integrated fare payment system that allows passengers to pay fares using various methods, including cash, tokens, ORCA cards, and mobile apps. This flexibility enhances convenience for passengers and streamlines the boarding process, contributing to efficient operations.
- **Parking Facilities and Permit Options:** The ferry terminals in King County provide parking facilities with daily and monthly permit options, accommodating commuters and travelers with varying parking needs. This accessibility encourages multimodal transportation choices and facilitates seamless transitions between driving and ferry travel.
- **Transfer Policies:** King County Ferries have transfer policies that allow passengers to seamlessly transfer between different transit services within a specified timeframe, promoting connectivity and facilitating multimodal travel experiences. These transfer options enhance the overall transit experience and encourage ridership across various modes of transportation.
- **Real-Time Status Updates:** King County Ferries offer real-time status updates through their website and mobile apps, allowing passengers to track the status of ferry operations, including departure times, delays, and service disruptions. This real-time information enables passengers to plan their journeys more effectively and stay informed about any changes or updates to ferry services.

Kitsap Fast Ferry

Location: Bremerton, Washington

Website: <https://www.kitsaptransit.com>

The Kitsap Fast Ferry service offers a dynamic and efficient mode of transportation across Puget Sound, connecting communities with speed and convenience. Designed for commuters and travelers alike, these state-of-the-art vessels provide a swift and comfortable journey between key destinations in the region. Passengers can enjoy the sleek and modern amenities of the fast ferries while taking in the stunning vistas of the surrounding waterways and landscapes. With multiple departure times throughout the day and convenient online booking options, the Kitsap Fast Ferry ensures seamless travel experiences for passengers on the go. Whether commuting to work, exploring new destinations, or enjoying leisurely outings, the Kitsap Fast Ferry offers a reliable and enjoyable way to navigate the waters of the Pacific Northwest.



FIGURE 5 THE RICH PASSAGE 1 (RP1) - KITSAP TRANSIT'S FIRST FAST FERRY

Photo courtesy of All-American Marine

Key Insights from Kitsap Fast Ferry Operations for Feasibility Study

- **Efficient Scheduling:** Emulating Kitsap Fast Ferry's approach to providing multiple departure times throughout the day can optimize service accessibility and accommodate diverse passenger schedules. By offering frequent departures, the ferry service can cater to both commuters and leisure travelers, enhancing overall convenience and attracting a broader customer base.
- **Online Booking and Tracking:** Implementing online booking systems and real-time ferry status tracking, like Kitsap Fast Ferry's digital platforms, enhances passenger convenience and transparency. Enabling passengers to reserve tickets and track ferry status remotely via websites or mobile apps streamlines the booking process and provides passengers with up-to-date travel information, improving overall customer satisfaction. A dashboard to show ferry performance ([Link](#)).
- **Diverse Fare Payment Options and Special Rider Programs:** The Kitsap Fast Ferry service provides passengers with a variety of fare payment methods, including cash, tokens, ORCA card E-purse, or paper tickets, catering to different preferences and needs. Additionally, complimentary transfers are available for ORCA card users, enhancing convenience and encouraging multi-modal transportation. Furthermore, the ferry service offers special rider programs such as free rides for public safety officers and youth, promoting community engagement and supporting local initiatives. These initiatives enhance accessibility, affordability, and inclusivity within the ferry service, serving as valuable considerations for similar feasibility studies.

Mackinac Island Ferry Company

Location: Mackinac Island, Michigan

Website: <https://www.mackinacferry.com>

The Mackinac Island Ferry Service operates in the Straits of Mackinac, Michigan, providing vital transportation links between the mainland and Mackinac Island, a popular tourist destination known for its scenic beauty, historic charm, and car-free environment. With a fleet of passenger ferries, including both traditional and high-speed vessels, the service offers frequent departures to accommodate the island's year-round residents, seasonal visitors, and day-trippers. Passengers can enjoy breathtaking views of the Mackinac Bridge and surrounding landscapes during the short but memorable journey across Lake Huron.



Key Insights from Mackinac Island Ferry Operations for Feasibility Study

- **Customized Ticketing Packages:** Mackinac Island Ferry Service offers customized ticketing packages tailored to different passenger demographics, including discounted rates for seniors, children, and groups, as well as special promotions during off-peak seasons to incentivize travel and stimulate tourism.
- **Intermodal Connectivity:** The ferry service facilitates seamless intermodal connectivity by coordinating schedules with other transportation modes, such as local buses, taxis, and bike rentals, enabling passengers to easily transition between the ferry terminal and their final destinations on Mackinac Island.
- **Advanced Reservation System:** Utilizing an advanced reservation system, the ferry service allows passengers to book tickets online, via mobile apps, or through third-party booking platforms, offering the convenience of guaranteed seating and priority boarding, particularly during peak travel periods.
- **Event-Based Marketing Campaigns:** Leveraging major events and festivals on Mackinac Island, such as the Lilac Festival or Fudge Festival, the ferry service implements targeted marketing campaigns and themed promotions to attract visitors and capitalize on seasonal tourism trends.
- **Infrastructure Investment:** The ferry service invests in modernizing and expanding its terminal facilities, dock infrastructure, and boarding amenities to accommodate growing passenger volumes, improve operational efficiency, and ensure a seamless transition between land and water transportation modes.
- **Community Engagement Programs:** Actively engaging with residents, businesses, and civic organizations, the ferry service sponsors community events, participates in conservation initiatives, and supports economic development projects to foster goodwill and strengthen ties with the island community.

Market Analysis

Customer Persona

Overview

The customer persona, referred to herein as the 'visitor' persona, is a pivotal tool utilized in defining the target market for the Willapa Bay Ferry System and shaping the visitor experience. These personas serve as archetype models, representing a range of demographics, preferences, and motivations that influence customer decision-making processes. The insights derived from these personas directly informed the strategic approach to refining the proposed product offering and pricing structure, guiding planning efforts for the entire feasibility study.

Utilizing the visitor data provided from the Pacific County Travel Bureau¹² as a baseline, four distinct personas were developed as models for this analysis:

1. **The Peninsula Crusaders:** Bob and Carol, an active golden couple from San Francisco, seek outdoor adventures during their vacation stays. They are repeat visitors who view ferry travel as a leisurely experience, integral to their enjoyment of the journey.
2. **The Wanderlust Nomad:** Alex, a young solo traveler from Seattle, values cultural experiences and solitude during her explorations. As a first-time visitor, she sees ferry travel as an opportunity for reflection and disconnection from urban life.
3. **The Shoreline Squad:** The Johnson family (Mark, Emily, Olivia, and Ethan) are from Portland, Oregon and are repeat visitors interested in family-friendly adventures. They view ferry travel as an exciting part of their vacation experience, especially for the children.
4. **The Coastal Crew:** Sara, Ben, and Sam are a group of friends from Seattle, who prioritize outdoor recreation and convenience during their travels. They see ferry travel as a practical means to access new biking trails and destinations, enhancing their adventure with a unique mode of transportation.

¹ *Datafy - PCTB 2023 vs 2022 Prelim Data*, provided by Katja Spitz, Executive Director of Visit Long Beach Peninsula

² *September 2023 Brand Audit Discovery*, provided by Katja Spitz, Executive Director of Visit Long Beach Peninsula

The Peninsula Crusaders (*Active Golden Couple*)

Profile

Names (Age): Bob (63) and Carol (63)

Residence: San Francisco, CA

Relationship Type: Married Adults

Profession: Retirees

Length of Stay: 6 Days

Lodging: Vacation Rental

Visit Status: Repeat Visitors



Purpose of Visit

Bob and Carol are interested in hiking, biking, birdwatching, and other outdoor activities available in the Long Beach Peninsula area.

Brand Audit

They represent 59.3% of respondents that travel in a party of two.

Ferry Outlook

They view taking a ferry as a leisurely way to travel, enjoying the scenic views and fresh sea air as part of their active vacation.

Marketing Approach

Emphasize the relaxation aspects of the ferry journey while highlighting the nearby parks, nature reserves, and outdoor attractions along the route.

The Wanderlust Nomad (*Solo Traveler*)

Profile

Name (Age): Alex (28)

Residence: Seattle, WA

Relationship Type: Single Adult

Profession: Freelance Creative

Length of Stay: 2 Days

Lodging: Hotel

Visit Status: First Time Visitor



Purpose of Visit

Alex is interested in cultural experiences, local cuisine, and exploring off-the-beaten-path destinations.

Brand Audit

She represents 8.6% of the visitors who are solo travelers.

Ferry Outlook

She sees taking a ferry as an opportunity for solitude and reflection, embracing the journey and disconnecting from the hustle and bustle of daily life.

Marketing Approach

Promote ferry travel as a peaceful and scenic journey, perfect for solo adventurers seeking a moment of tranquility.

The Shoreline Squad (*Small Family with Kids*)

Profile

Names (Age): The Johnsons - Mark (40), Emily (38), Olivia (8), and Ethan (6)

Residence: Portland, OR

Relationship Type: Married Adults with 2 Kids

Profession: Business Professionals

Length of Stay: 5 Days

Lodging: Airbnb

Visit Status: Repeat Visitors



Purpose of Visit

The Johnsons are interested in exploring a mix of outdoor adventures and family-friendly attractions.

Brand Audit

They represent 22.2% of respondents who indicated that they were traveling with children.

Ferry Outlook

The Johnsons see taking a ferry as an exciting part of their family adventure, providing Olivia and Ethan with a mini-cruise experience while Mark and Emily enjoy the scenic views and bonding time.

Marketing Approach

Highlight the spacious and comfortable seating arrangements, family-friendly atmosphere, and the opportunity for children to observe the marine and bird life, emphasizing the ferry journey as immersive part of their vacation experience.

The Coastal Crew (*Adventurous Friends*)

Profile

Names (Age): Sara (31), Ben (33), and Sam (34)

Residence: Seattle, WA

Relationship Type: Adult Friends

Profession: Business Professionals

Length of Stay: 2 Days (passing through)

Lodging: Camping

Visit Status: First Time Visitors



Purpose of Visit

These friends are interested in destinations offering scenic bike trails, challenging routes, and opportunities for outdoor recreation.

Brand Audit

They represent 8.6% of respondents who comprise of parties of three.

Ferry Outlook

They see the ferry as an exciting prelude to their biking adventure, providing a unique mode of transportation and an opportunity to scope out potential routes.

Marketing Approach

Promote the ferry as a convenient and practical way to access new biking trails and destinations, emphasizing the ease of bringing their bikes onboard and seamlessly continuing their biking adventure upon arrival.

Demand Analysis

Historical Visitor Volumes

Historical visitor volumes to the Long Beach Peninsula were sourced from the Pacific County Travel Bureau³, specifically utilizing data from the Monthly Volume by Visitor Days spanning 2018 to 2023. This data is represented graphically in **Figure 11**. Despite the challenges posed by the COVID-19 pandemic, Long Beach Peninsula exhibited resilience, maintaining an average annual growth rate of 4.2% in visitor numbers.

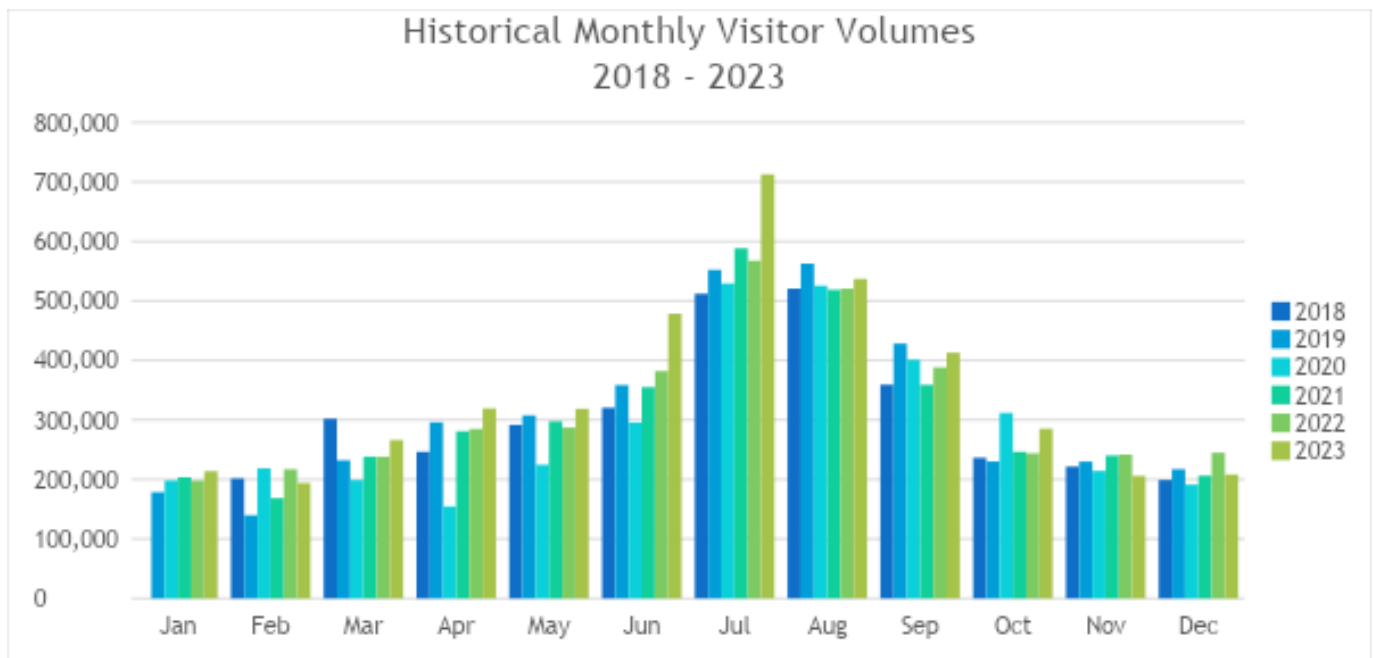


FIGURE 11 HISTORICAL (2018 - 2023) MONTHLY VISITOR VOLUMES

³ Datafy - PCTB 2023 vs 2022 Prelim Data, provided by Katja Spitz, Executive Director of Visit Long Beach Peninsula

Figure 12 illustrates the historical volumes observed between May and October, with an average year-over-year growth rate of 4.4%. Additionally, an analysis of the period between June and September revealed a slightly higher growth rate, averaging 4.9% annually. These findings informed the definition of an operational season for the ferry service, set from May through October, with the peak season identified as June through September.

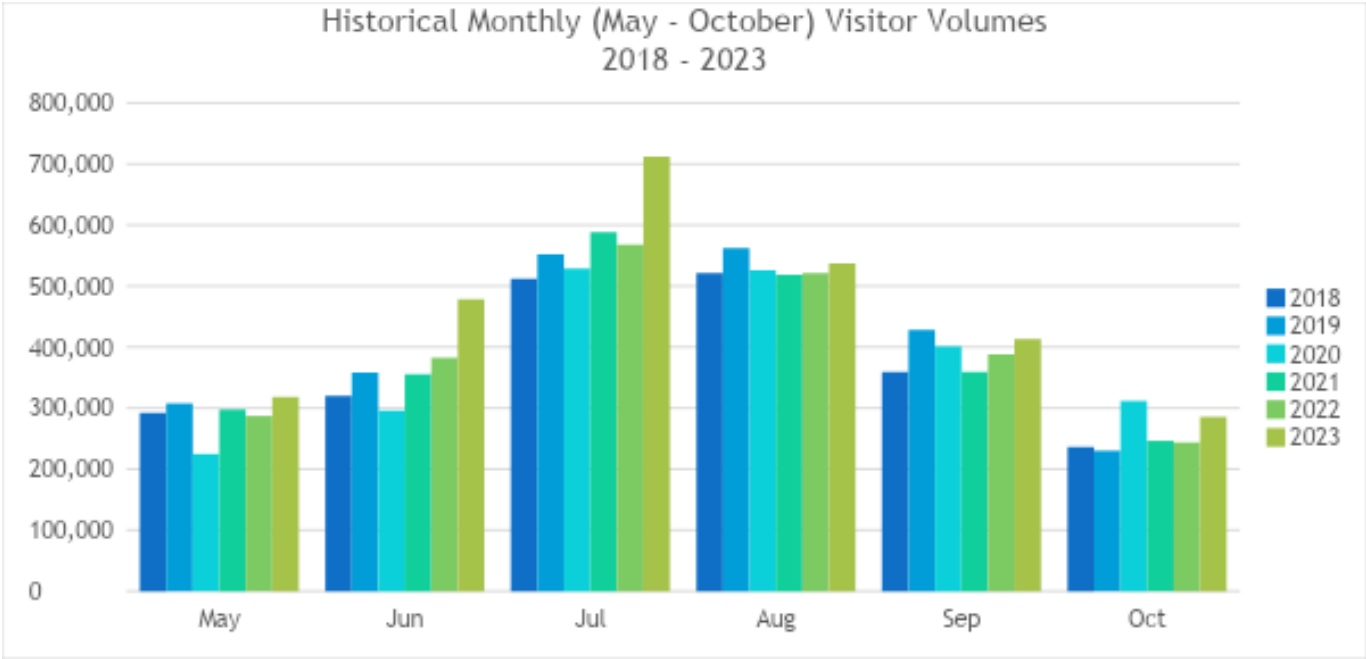


FIGURE 12 HISTORICAL (2018 - 2023) MONTHLY (MAY - OCTOBER) VISITOR VOLUMES

10-Year Forecasted Volumes

It was assumed that ferry operations would commence in 2025, with a forecast horizon extending to 2034. Using the visitor volumes from 2023 as a baseline, projections were made utilizing a conservative linear growth model, assuming a 1% year-over-year growth rate. Below, **Equation 1** illustrates a sample calculation of volumes from July 2023 to July 2024 and July 2025.

EQUATION 1

$$Volume_{July\ 2024} = Volume_{July\ 2023} \times (1 + Growth\ Rate)$$

$$Volume_{July\ 2023} = 712,500 \text{ (given)}$$

$$Growth\ Rate = 1\%$$

$$Volume_{July\ 2024} = (712,500) \times (1 + 0.01) = 719,625$$

$$Volume_{July\ 2024} = 719,625$$

$$Volume_{July\ 2025} = (719,625) \times (1 + 0.01) = 726,821$$

$$Volume_{July\ 2025} = 726,821$$

A summary of both historical and forecasted annual visitor volumes is presented in **Figure 13**, providing insights into the projected trends for the operational period of the ferry service.

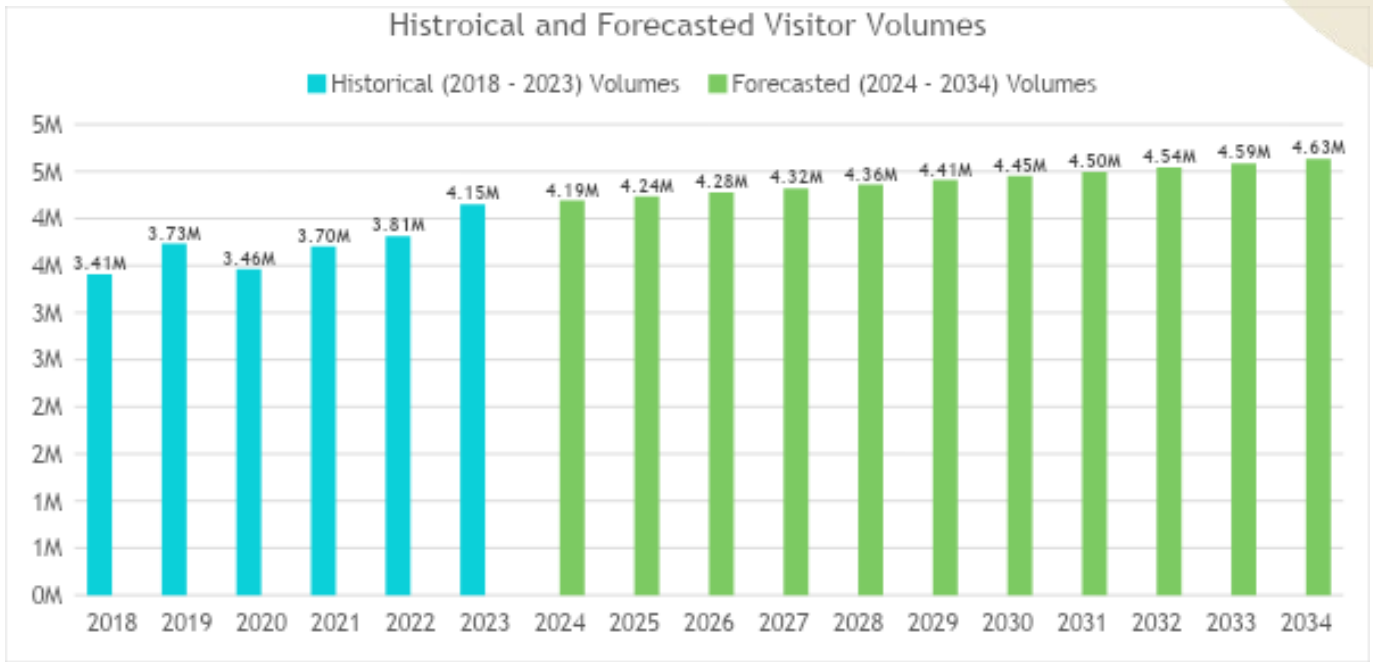


FIGURE 13 HISTORICAL (2018 - 2023) AND FORECASTED (2024 - 2034) ANNUAL VISITOR VOLUMES

10-Year Forecasted Ferry Ridership

The analysis assumed ferry operations running annually from June to October, starting in 2025 with a forecast horizon extending to 2034. Considering a conservative annual visitor volume growth rate of 1% and a potential ferry capacity of 48 seats, approximately 1.5% of monthly forecasted visitors to the Long Beach Peninsula were projected to ride the ferry. **Table 1** and **Table 2** present a 10-year forecast of monthly visitors and ferry ridership, respectively. Additionally, to assess daily operational implications, daily ferry ridership volumes were derived, assuming operation on 6 days per week (approximately 26 days per month), as shown in **Table 3**.

TABLE 1 10-YEAR FORECAST OF MONTHLY VISITOR VOLUMES

Year	May	Jun	Jul	Aug	Sep	Oct	May - Oct Totals	Jun - Sept Totals
2023 (Baseline)	318,600	478,500	712,500	537,300	413,000	285,200	2,745,100	2,141,300
2024 (Present)	321,786	483,285	719,625	542,673	417,130	288,052	2,772,551	2,162,713
2025	325,004	488,118	726,821	548,100	421,301	290,933	2,800,277	2,184,340
2026	328,254	492,999	734,089	553,581	425,514	293,842	2,828,279	2,206,184
2027	331,536	497,929	741,430	559,117	429,769	296,780	2,856,562	2,228,245
2028	334,852	502,908	748,845	564,708	434,067	299,748	2,885,128	2,250,528
2029	338,200	507,937	756,333	570,355	438,408	302,746	2,913,979	2,273,033
2030	341,582	513,017	763,896	576,058	442,792	305,773	2,943,119	2,295,763
2031	344,998	518,147	771,535	581,819	447,220	308,831	2,972,550	2,318,721
2032	348,448	523,328	779,251	587,637	451,692	311,919	3,002,275	2,341,908
2033	351,933	528,562	787,043	593,513	456,209	315,038	3,032,298	2,365,327
2034	355,452	533,847	794,914	599,449	460,771	318,189	3,062,621	2,388,981

TABLE 2 10-YEAR FORECAST OF MONTHLY FERRY RIDERSHIP

Year	May	Jun	Jul	Aug	Sep	Oct	May - Oct Totals	Jun - Sept Totals
2025	4,875	7,322	10,902	8,221	6,320	4,364	42,004	32,765
2026	4,924	7,395	11,011	8,304	6,383	4,408	42,424	33,093
2027	4,973	7,469	11,121	8,387	6,447	4,452	42,848	33,424
2028	5,023	7,544	11,233	8,471	6,511	4,496	43,277	33,758
2029	5,073	7,619	11,345	8,555	6,576	4,541	43,710	34,095

2030	5,124	7,695	11,458	8,641	6,642	4,587	44,147	34,436
2031	5,175	7,772	11,573	8,727	6,708	4,632	44,588	34,781
2032	5,227	7,850	11,689	8,815	6,775	4,679	45,034	35,129
2033	5,279	7,928	11,806	8,903	6,843	4,726	45,484	35,480
2034	5,332	8,008	11,924	8,992	6,912	4,773	45,939	35,835

TABLE 3 10-YEAR FORECAST OF DAILY FERRY RIDERSHIP BY MONTH

Year	May	Jun	Jul	Aug	Sep	Oct	May - Oct Totals	Jun - Sept Totals
2025	188	282	419	316	243	168	1,616	1,260
2026	189	284	424	319	245	170	1,632	1,273
2027	191	287	428	323	248	171	1,648	1,286
2028	193	290	432	326	250	173	1,664	1,298
2029	195	293	436	329	253	175	1,681	1,311
2030	197	296	441	332	255	176	1,698	1,324
2031	199	299	445	336	258	178	1,715	1,338
2032	201	302	450	339	261	180	1,732	1,351
2033	203	305	454	342	263	182	1,749	1,365
2034	205	308	459	346	266	184	1,767	1,378

Furthermore, a load capacity analysis was conducted under the assumption of ferry ridership at 1.5% of forecasted visitor volume, operating 10 routes per day during peak months and 6 routes per day during shoulder months. Table 4 presents the 10-year forecasted load capacity. Figure 14 illustrates the projected annual ferry ridership compared to the annual capacity of the ferry. Notably, the analysis predicts that ferry ridership will remain within the ferry’s load capacity over the 10-year study period, indicating room for growth in operations without immediate need for expansion.

TABLE 4 10-YEAR FORECAST OF MONTHLY/DAILY FERRY LOAD CAPACITY

Year	May	Jun	Jul	Aug	Sep	Oct
2025	65%	59%	87%	66%	51%	58%
2026	66%	59%	88%	67%	51%	59%
2027	66%	60%	89%	67%	52%	59%
2028	67%	60%	90%	68%	52%	60%
2029	68%	61%	91%	69%	53%	61%
2030	68%	62%	92%	69%	53%	61%
2031	69%	62%	93%	70%	54%	62%
2032	70%	63%	94%	71%	54%	62%
2033	70%	64%	95%	71%	55%	63%
2034	71%	64%	96%	72%	55%	64%



FIGURE 14 10-YEAR FORECAST OF ANNUAL FERRY RIDERSHIP COMPARED TO LOAD CAPACITY

Product Offering

Proposed Ferry Ticket Pricing Structure

After analyzing the customer personas and market demand, it was determined that the primary customer segment to target for pricing considerations was adult tourists and families. The Brand Audit data obtained from the Pacific County Travel Bureau⁴ served as the cornerstone for developing the proposed pricing structure. Notably, the audit revealed that 77.8% of visitors were not traveling with children, while 22.2% were accompanied by kids.

The proposed pricing structure entails an adult ticket priced at \$28 and a child ticket at \$12, providing a significant economic value. Under this structure, a 'family' is defined as comprising at least one adult and one child. With the introduction of a family discount, a child ticket remains \$12, while an adult ticket receives a 25% discount, priced at \$21. Thus, the family ticket package (one child + one adult) would be \$33, offering additional savings. **Table 5** illustrates the proposed ticket pricing for adults, children, and families.

TABLE 5 PROPOSED PRICING STRUCTURE

Customer Segment	Adult	Child	Family
Adult Tourist	\$28		
Tourist Family (Adult + At Least 1 Child) Adult Ticket 25% Off	\$21	\$12	\$33

Using the Brand Audit percentages as weights, the weighted average ticket price per seat was calculated to be \$25.45, as detailed in **Table 6**.

TABLE 6 AVERAGE TICKET PRICE

Customer Segment	Seat
Adult Tourist	\$28
Average Family Ticket	\$16.50
Average Ticket Price	\$25.45

⁴ September 2023 Brand Audit Discovery, provided by Katja Spitz, Executive Director of Visit Long Beach Peninsula

Ferry Ticket Revenue Projections

Considering the average ferry ticket fare of \$25.45 and Washington State’s 8.1% sales tax of \$2.06, the average face value ticket price is calculated to be \$27.51. **Table 7** presents the 10-year forecasted annual after-tax revenue alongside the projected annual ferry ridership volumes.

TABLE 7 FERRY TICKET REVENUE PROJECTIONS

Year	Annual Volume	After-Tax Revenue
2025	42,004	\$1,068,880
2026	42,424	\$1,079,568
2027	42,848	\$1,090,364
2028	43,277	\$1,101,268
2029	43,710	\$1,112,280
2030	44,147	\$1,123,403
2031	44,588	\$1,134,637
2032	45,034	\$1,145,984
2033	45,484	\$1,157,443
2034	45,939	\$1,169,018

Ferry Options

Vessel

In searching for the proper vessel for Willapa Bay, we first analyzed the vessels used by the comparable operating ferry systems around the country from the case studies. These are surmised in **Table 8**. Although these range in capacity, from the 1200 of the Kitsap Fast Ferry to the 36 of Lake Chelan’s Lady Cat, this comparison gave us a broader perspective on what other regions are doing to best suit their needs. The ferry that we chose for Willapa Bay has the following specifications, all selected to meet the criteria for the feasibility study.

TABLE 8 CASE STUDY VESSEL COMPARISONS

	Vessel Type	Construction	Horsepower	Capacity	Length (ft)	Breadth (ft)	Draft (ft)
Bald Head Island Ferry	Ferry	Aluminum	1,280	150	72	22.5	4.2
Lake Chelan							
Lady of the Lake II	Ferry	Steel	960	350	100	24	5
Lady Express	Ferry	Aluminum	2,160	150	64.5	21	5
Lady Cat	Ferry	Fiberglass	1,600	36	51	17	5
Kitsap Fast Ferry	Ferry	Steel	5,000	1,200	301.5	78.5	15.8
Mackinac Island							
Marquette II	Ferry	Aluminum	3,420	330	74	24	6
Radisson	Ferry	Aluminum	3,600	317	77	24	8
Cadillac	Ferry	Aluminum	1,700	150	64.7	22	7.7

The proposed vessel is shown in **Figure 15**.



FIGURE 15 PROPOSED VESSEL

Construction: Fiberglass, although lighter than steel, is heavier than aluminum. The extra weight translates to better seafaring capabilities and increased resilience to more intense weather. Fiberglass ships aren't as easily buffeted by the wind, which is a key factor considering the importance of comfort for all passengers on board.

Speed: The cruise speed of our chosen ship is 23 knots, making it an ideal candidate for Willapa Bay and its proposed three distinct ports. If the ship is too slow, we won't be able to travel as many legs per day, making long-term volume difficult to reach. The success of the proposed operation depends on 10 legs of travel each day within 12 hours. This setup allows for increased accessibility to many diverse groups, with reasonable operating hours for the captain and crew.

Capacity: Our proposed ship carries 48 passengers, not including the captain and co-captain. Based on our analysis, this specific capacity allows for a sufficient volume of passengers for each trip and enough individual tickets purchased to breakeven within 4 years. A smaller ship would force the operation to be much more expensive due to the decreased volume.

Having a 48-passenger ship is a great option to start the operation without overestimating the number of people who might take it. Any fewer seats might cause the demand for tickets to exceed the supply of seats. A larger ship would like to cause excess supply with initially low demand, making the operation less sustainable.

Length: Our proposed ship is 49.7 feet long, relatively small compared to many of the other comparable ferries. The useful life of our proposed ship is 10 years, after which the ship will have to be scrapped and more difficult choices made. The shorter relative length of our ship means that infrastructure change to the ports involved would be relatively minor. A longer ship would require major changes for all ports, whose financial investment would make the start of the project more challenging.

Draft: With a draft of 4.3 feet, our proposed boat will only require minor dredging of the Nahcotta and South Bend/Raymond ports. The dredging of these ports was previously planned regardless of ferry installation, and Willapa Bay has its dredging boat, making the venture much more financially feasible.

Ship Structure: The cabin of this ship is fully covered and protected from the elements, making it ideal for travel across a bay with a wide range of possible weather conditions. There is also ample room on the deck for the installation of bike racks, a very modest cost, compared to the cost of the ship. This will encourage the cyclists traveling south to South Bend to see the ferry as an option for getting to Nahcotta, where they can then ride along the west side of the bay.

Ship Shipping: The cost of shipping the ship from Norway, based on our research, would be about \$30,000. We accounted for this in the upfront cost of the ship.

Funding Sources

An operation of this size and novelty needs a large influx of funds initially, especially considering we don't predict the ferry system to breakeven until the fourth year of operation. We considered partnering with a single business partner, but this would likely be unsuccessful due to the high upfront costs and small size of most of the businesses on the peninsula. Due to the public accessibility of the proposed ferry, we researched grants available to the public via the state of Washington.

- **Regional Mobility Grant⁵:** This grant supports local efforts to improve connectivity between counties and regional population centers and reduce transportation delays. This program includes four eligible project types: vehicle and equipment purchases, capital construction, operations, and transportation demand management. Applicants must match funds of at least 20%.
- **Green Transportation Capital⁶:** This grant provides funding to transit agencies for cost-effective capital projects that reduce the carbon intensity of the Washington transportation system.
- **Tribal Transit Mobility Grant⁷:** The purpose of this grant is to provide for the transportation needs of tribal communities.

Based on the layout of the region and the proximity of the Shoal water and Chinook tribes, we are recommending that Pacific County apply for the Regional Mobility Grant or the Tribal Transit Mobility Grant. The best short- and long-term outcome for this new system is to partner with the local tribes. With our ferry headquarters based in Tokeland, the business of the Shoal Water Bay Casino will see a significant boost as new tourists are attracted to the area because of the new ferry. This will allow them to expand both the casino and the hotel as the demand for lodging expands. This new operation will also help grow the presence of the tribes around the peninsula along Willapa Bay as more tourists become aware of the casino, the hotel, and the new ferry in part sponsored by the Shoal water Tribe.

5
<https://wsdot.wa.gov/business-wsdot/grants/public-transportation-grants/grant-programs-and-awards/regional-mobility>

6
<https://wsdot.wa.gov/business-wsdot/grants/public-transportation-grants/grant-programs-and-awards/green-transportation-capital>

7
<https://wsdot.wa.gov/business-wsdot/grants/public-transportation-grants/grant-programs-and-awards/transit-support-grant>

Operational Setup

Routes, Schedule, and Frequency

Routes

The Willapa Bay Ferry service is designed to efficiently connect the key ports of Nahcotta and South Bend, with Tokeland serving as the central hub. Strategically positioned, Tokeland not only acts as the mid-point between the two destinations but also as the operational foundation of the service. The route ensures that passengers with and without bicycles can travel back and forth between the picturesque Nahcotta, through centrally located and peaceful Tokeland, to downtown South Bend. This route capitalizes on the unique offerings of each port: Nahcotta's proximity to Long Beach, South Bend's access to downtown and the county's courthouse, and Tokeland's connection to local commerce, such as the Shoalwater Bay Casino and many local art studios, creating a corridor that stimulates local economies and provides many opportunities for community engagement and tourism.

Schedule

The schedule for the ferry service is meticulously crafted to accommodate the seasonal influx of visitors, particularly from June through September, which marks the peak of tourism due to the pleasant summer weather. During these months, the service operates on a rigorous timetable, commencing at 6:45 AM and concluding at 6:45 PM, ensuring daylight operations for safety and customer convenience. The service is tailored to begin and end in Tokeland, where each day's journey starts with a brief loading period before embarking on the first leg to Nahcotta and ends with the unloading of passengers and cargo back in Tokeland. This schedule also considers the operational efficiency during the shoulder months of May and October, with reduced service to align with the decreased demand, ensuring a sustainable operation model that adjusts with the seasonal ebbs and flows of the region. The schedule can be seen in **Table 9** with the aquamarine blue portion not being run during the shoulder months of May and October.

TABLE 9 PROPOSED FERRY ROUTE SCHEDULE

Route Segment	Amount of Time (hr.)	Time (PDT) - Start	Time (PDT) - Finish	Diesel Fuel (gal)
Tokeland - Load	0.25	6:45 AM	7:00 AM	0.16
Leg #1	0.77	7:00 AM	7:50 AM	39.03
Nahcotta Unload + Load	0.50	7:50 AM	8:20 AM	0.32
Leg #2	0.77	8:20 AM	9:10 AM	39.03
Tokeland Unload + Load	0.50	9:10 AM	9:40 AM	0.32
Leg #3	0.45	9:40 AM	10:10 AM	22.50
South Bend Unload + Load	0.50	10:10 AM	10:40 AM	0.32
Leg #4	0.45	10:40 AM	11:10 AM	22.50
Tokeland Unload + Load *	0.50	11:10 AM	11:40 AM	0.32
Leg #5 *	0.77	11:40 AM	12:30 PM	39.03
Nahcotta Unload + Load *	0.50	12:30 PM	1:00 PM	0.32
Leg #6 *	0.77	1:00 PM	1:50 PM	39.03
Tokeland Unload + Load *	0.50	1:50 PM	2:20 PM	0.32
Leg #7 *	0.45	2:20 PM	2:50 PM	22.50
South Bend Unload + Load *	0.50	2:50 PM	3:20 PM	0.32
Leg #8 *	0.45	3:20 PM	3:50 PM	22.50
Tokeland Unload + Load	0.50	3:50 PM	4:20 PM	0.32
Leg #9	0.77	4:20 PM	5:10 PM	39.03
Nahcotta Unload + Load	0.50	5:10 PM	5:40 PM	0.32
Leg #10	0.77	5:40 PM	6:30 PM	39.03
Tokeland - Unload	0.25	6:30 PM	6:45 PM	0.16
Total	11.43	12.0	vessel hours	327.38

*Note: This route segment is to be dropped during the shoulder months of May and October.

Frequency

The frequency of the service is deliberately arranged to maximize revenue opportunities throughout the summer season and slightly beyond. By offering multiple departures daily, the ferry ensures a consistent and reliable mode of transportation for both residents and tourists around Willapa Bay and thus Pacific County. The calculated start and end times are chosen to facilitate a smooth flow of traffic during the high season, providing convenient options for day-trippers, workers, cyclists, and other visitors. This approach not only optimizes revenue during the high-demand summer months but also extends the profitable operation into the shoulder seasons, thereby securing a steady income stream while catering to the needs of the local communities and maintaining service accessibility. The schedule underscores the ferry's role as a pivotal maritime link within the region's transport ecosystem, balancing economic objectives with connecting the community.

There are several extra points to consider with the proposed ferry schedule:

- The diesel fuel consumption considers the vessel's diesel engines and the onboard marine generator for onboard power. The loading and unloading times are composed of fuel burn for just the marine generator to maintain onboard power, and the legs where the vessel is underway consist of both the diesel engines and the marine generator's combined fuel burn.
- The schedule does not include refueling. The operational spreadsheet shows that the chosen vessel does not need to refuel midday during the voyage if it is filled up either in the morning prior to the first scheduled loading time in Tokeland or after the last scheduled unloading time the prior evening in Tokeland.
- The schedule accounts for a 15% operational buffer on all legs operated, i.e., each journey leg of the vessel effectively had 15% of the measured actual distance added to it to account for operational variance due to tides, wind, waves, ship traffic, water hazards, and other weather variability possible on Willapa Bay. This buffer can be increased or decreased in the operational model, but the times must be manually adjusted to round up to a time ending in 5 or 0.
- The shoulder season schedule starts in May and October and can be shifted to later in the morning to operate on a similar timely cadence as the full-time summer schedule. Additional options include a more spaced-out schedule with increased loading and unloading times and/or a longer layover in South Bend.

Ports Setup

The Willapa Bay Ferry service has selected three strategic ports for its direct service: Nahcotta, Tokeland, and South Bend, carefully considering factors such as accessibility, integration with local transportation, e.g., Pacific Transit⁸, and existing amenities to enhance the passenger experience. Nahcotta's port, being a mere 11 miles from downtown Long Beach, offers potential for integration with bus routes and summer trolley schedules, alongside necessary ADA modifications and the provision of electric car and bike charging stations. Tokeland Marina boasts proximity to the Shoalwater Bay Casino and could serve as a base of operations for the ferry service, featuring amenities such as an RV park and envisioned shuttle services. South Bend's dock, conveniently located at the heart of the city, allows for a walkable connection to downtown and requires ADA upgrades, highlighting the port's readiness for vessel accommodation without the need for dredging. Additionally, Bay Center Marina and Bendiksen Landing were considered, acknowledging their respective challenges and potentials, such as the need for significant dredging or the development for passenger parking and shuttle. Important considerations for choosing a ferry terminal include proximity to key destinations, availability and quality of parking facilities, the need for infrastructural modifications, accessibility for all passengers, and the presence of complementary amenities that contribute to a seamless and enjoyable travel experience. Further details for each of the five locations reviewed are as follows:

⁸ <https://www.pacifictransit.org/Schedules-Maps>

Nahcotta - Port of Peninsula

Website: <https://portofpeninsula.us/>

- 11 miles to/from downtown Long Beach
- Ferry service can be integrated into Pacific County bus routes and Long Beach Summer Trolley schedules.
- Great event space already onsite for summer festivals and concerts
- Requires additional dredging per NOAA 18504 (3-4 ft deep at mean lower low water [MLLW]) for a vessel with a 4.27-foot draft.
- ADA modifications required to accommodate handicapped guests.
- Dedicated small port parking lot; Nahcotta Small Ship Basin could be used for overflow parking on the opposite side of the Peninsula Highway
- Onsite restrooms
- Recommended Facilities: electric car and bike charging stations.

Tokeland - Port of Willapa Harbor: Tokeland Marina

Website: <https://www.portofwillapaharbor.com>

- 3 miles to/from Shoalwater Bay Casino
- Can be integrated into Tokeland Shopper Shuttle; Shoalwater Bay Casino could also operate its own hopper service to and from the marina.
- Envisioned based of operations for the ferry service per included schedule.
- ADA modifications required to accommodate handicapped guests.
- Parking for visitors along Front Lane
- RV Park for summer festivals and concerts
- Recommended Facilities: electric car and bike charging stations.

South Bend - City of South Bend's Recreational Dock/Ramp

Website: <https://southbend-wa.gov/city/map/>

- 0 miles to/from downtown South Bend
- 10-minute walk to and from the Pacific County Courthouse
- Small parking lot: Bendiksen Landing could help alleviate future downtown parking woes with a shuttle service connecting it with South Bend and possibly Raymond.
- Dock can accommodate vessel without dredging but requires ADA upgrades for handicapped guests.
- Recommended Facilities: electric car and bike charging stations, restrooms (local businesses like Elixir Coffee Shop and Merino's Mexican have them, but this may become a pain point in the future)

South Bend - Port of Willapa Harbor: Bendiksen Landing

Website: <https://www.portofwillapaharbor.com/>

- 1 mile to/from downtown South Bend
- Excluded from ferry schedule due to proximity to recreational dock downtown.
- Can be developed for passenger parking with a summer trolley service to/from downtown South Bend
- Linda's Fish & Chips would benefit even from the site being used for parking; visitors who have parked and are waiting for a shuttle could get a bite to eat in the meantime.
- New dock with ADA specifications required to accommodate handicapped guests if developed in place of downtown.
- Recommended Facilities: restrooms, electric car and bike charging stations.

Bay Center - Port of Willapa Harbor: Bay Center Marina

Website: <https://www.portofwillapaharbor.com/>

- A short walk across the 2nd Street Bridge to Dock of the Bay
- Excluded from ferry schedule due to small size of harbor and detour from Nahcotta Channel
- Marina and Bay Center Channel would require significant dredging per NOAA 18504
- Parking is a pain point here (parking violators could block the fisheries, the ship ramp, etc.)
- Recommended Facilities: restrooms, electric car and bike charging stations (Dock of the Bay is a short detour off U.S. 101)

In our team's thorough review and strategic planning, a pivotal goal was to judiciously minimize capital expenditures while facilitating the ferry service's integration into the existing port infrastructures. Central to this approach was the imperative to ensure all docks meet ADA compliance, a necessary investment to guarantee accessibility for all users. Beyond these essential modifications along with additional dredging for the Port of Nahcotta, our recommendations are deliberately circumscribed to the addition of restrooms at those few ports currently lacking such facilities, and the implementation of charging stations, with a particular emphasis on those for electric cars and bikes. This reflects a forward-looking vision to support sustainable modes of transportation, cater to the evolving needs of environmentally conscious travelers, and simultaneously cater to the county's growing touring cyclist visitor demographic. By limiting the scope of initial capital improvements, we have charted a cost-effective course for the ports to not only welcome the new ferry service but to also foster an inclusive, eco-friendly, and community-oriented transportation network that benefits both the summer tourists and locals.

Financial Analysis

Revenue Streams

We foresee different revenue streams to be realized upon the implementation of the bike and pedestrian ferry service at Willapa Bay, including but not limited to ferry ticket sales, additional services to be provided onboard (e.g. food and beverages, E-bike charging, etc.), potential charging at the ports, and revenues to positively benefit the local tourism business (e.g. hotel, local artist, etc.).

However, due to the limited time of this study, we chose to focus on ferry tickets as the only revenue stream here to consider the potential break-even in the very first stage of the business setup.

Revenue is a result of the potential volume and pricing. Passenger volume is coming from the demand planning. So basically, we started with the historical visitor volume in the region and some conservative assumptions on the potential Year-on-Year growth (YoY) rate (i.e., 1%) to derive the outlook for the next 10 years starting from 2025, which is the first year we assume the ferry to be in the water. Considering the seasonality, the ferry is to be operated from May to October every year with Jun to Sep being the peak months and 10 trips per day, while May and October are the shoulder months and have 6 trips per day. On the other hand, we have also considered the ferry capacity, which is 48 passengers. Thus, we could accommodate 480 passengers maximum each day in the peak month and 288 passengers in the shoulder month. With that limitation in mind, we have assumed that around 1.5% of the visitors each month would consider taking a ferry. This assumption should be further verified in future studies based on potential surveys and focused group interviews to be conducted. Furthermore, due to the ferry capacity, we have not considered the residents who would be interested in taking the ferry, it might be of interest to check the potential of this customer segment and re-evaluate the option of going for an even bigger ship in the future.

With that, we multiply the volume with the price being set up in the earlier section (\$25.45) to derive the monthly revenue for the next 10 years purely from ticket sales.

Costs

From the cost side, we looked both into fixed costs and variable costs. Fixed cost mainly involves the ferry cost and the associated shipping, import duty & taxes as well as the potential touch-up that might be required before its operation.

Ferry Cost

Ferry	\$ 250,000	
Federal Yacht Import Tax (One-time)	\$ 3,750	https://breezecustoms.com/blog/importing-into-the-united-states/how-to-import-a-boat-into-the-us/
WA State Use Tax (One-time)	\$ 20,250	Use tax Washington Department of Revenue
USCG Overseas Inspection Fee	\$ 4,595	CGD 91-030, 60 FR 13563, Mar. 13, 1995, as amended by USCG-2013-0671, 78 FR 60144, Sept. 30, 2013
Shipping & Retrofitting	\$ 125,000	*Assuming 50% of Ferry Cost
IT cost	\$ 100,000	*Scaled down from reference from bald head island

As for variable costs, we have mainly considered the costs associated with the ferry operation, including fuel and labor costs. For Fuel costs, we have studied the fuel costs per trip based on the route and considered the number of trips being planned each day in different months. With that, we have derived the fuel costs for the operating months as follows.

Operation Setup

Operating Days / Week	6	* Tuesday Off
Operating Days / Month	26	* May-Oct

Fuel Cost

	Jan-Apr	May (Off-Peak)	Jun (Peak)	Jul (Peak)	Aug (Peak)	Sep (Peak)	Oct (Off-Peak)	Nov-Dec
Trips/Day	-	6	10	10	10	10	6	-
Fuel Cost/Day	-	\$ 1013.61	\$1636.9	\$1636.9	\$1636.9	\$1636.9	\$1013.61	-
Fuel Cost/Month	-	\$26,354	\$42,559	\$42,559	\$42,559	\$42,559	\$26,354	-
Annual Total	\$222,945							

For labor costs, we have considered the head counts required in both the front office and back office for the ferry operation. On the ferry, we have planned to have 2 licensed captains and 2 crew members to run all the trips in 2 shifts. There will be a ship engineer to take care of the overall maintenance of the ferry, as well as two customer support to look after ticket purchases and related inquiries from customers. In the back office, we have planned to have 1 general manager to look after the overall ferry business and set strategic direction for operation, sales & marketing and future ferry purchases, and investor relationship management. We expect to have 3 more employees to look after finance, sales & marketing and IT more specifically. The team has researched the average salary in Pacific County and has made some salary assumptions for each of the head counts mentioned above. More specifically, we have considered an adjusted salary for the seasonal crew assuming they will be working half of the year from May to October only.

Labor Cost								
	Role		Annual Salary	Adjusted Salary		Annual Salary		
Seasonal Crew	- Licensed Captain	2x	\$ 61,960	\$ 30,980	Back Office	- General Manager	1x	\$ 84,000
	- Ship Engineer	1x	\$ 60,450	\$ 30,225		- Finance	1x	\$ 80,000
	- Crew Member	2x	\$ 37,640	\$ 18,820		- Sales & Marketing	1x	\$ 70,000
	- Customer Support	2x	\$ 37,640	\$ 18,820		- IT	1x	\$ 60,000
Annual Total			\$392,845					

On top of that, the study has incorporated potential regulatory costs following. For details, please refer to the next section on regulatory compliance.

Regulatory Cost										
	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
	(Yr. 1)	(Yr. 2)	(Yr. 3)	(Yr. 4)	(Yr. 5)	(Yr. 6)	(Yr. 7)	(Yr. 8)	(Yr. 9)	(Yr. 10)
State of Washington Annual Registration Fee	\$382	\$445	\$445	\$509	\$509	\$572	\$572	\$636	\$636	\$636
State of Washington Annual Operator License Fee	\$60	\$35	\$35	\$40	\$40	\$45	\$45	\$50	\$50	\$50
U.S. Coast Guard Annual Vessel Inspection Fee	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300
Insurance	\$8,108	\$8,270	\$8,435	\$8,604	\$8,776	\$8,951	\$9,130	\$9,313	\$9,499	\$9,689
Annual Total Regulatory Cost	\$8,849	\$9,050	\$9,215	\$9,453	\$9,625	\$9,869	\$10,048	\$10,299	\$10,485	\$10,675

Free Cash Flows & Break-Even Period

Finally, we put the estimated cost and revenue into the financial model to understand the future cash flow that we could expect from the ferry services. In this financial analysis, we have assumed an average YoY inflation rate of 2% while the opportunity cost of revenue to be 8% (i.e., opportunity cost if the required upfront investment for this project is invested somewhere else). We have also assumed that the ship-related cost will be depreciated within 10 years of the ship's remaining life cycle. With that, we have derived the Future Cash Flow (FCF) of the project following the basic finance and accounting rules. As a result, we forecast a potential investment of \$731k that is required in year 0 of the project, and all upfront investment could be broken even in 4 years. This was assuming an upfront lump-sum acquisition of a vessel in cash to simplify the financial timeline for the Excel Model and keep it at 10 years.

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Revenue	\$ -	\$ 1,244,880	\$ 1,275,568	\$ 1,296,364	\$ 1,318,264	\$ 1,341,280	\$ 1,365,403	\$ 1,390,637	\$ 1,417,084	\$ 1,444,743	\$ 1,473,618
Ferry Tickets		\$ 1,265,880	\$ 1,275,568	\$ 1,293,364	\$ 1,312,264	\$ 1,332,280	\$ 1,353,403	\$ 1,375,637	\$ 1,399,084	\$ 1,423,743	\$ 1,449,618
Perfing											
Other Fee Streams											
COGS	\$ -	\$ 361,888	\$ 704,888	\$ 731,888	\$ 745,888	\$ 760,888	\$ 776,888	\$ 793,888	\$ 811,888	\$ 830,888	\$ 850,888
Fuel		\$ 222,385	\$ 227,434	\$ 231,812	\$ 236,531	\$ 241,603	\$ 247,030	\$ 252,813	\$ 258,954	\$ 265,463	\$ 272,350
Dry Docking		\$ 16,500	\$ 16,870	\$ 17,247	\$ 17,632	\$ 18,025	\$ 18,426	\$ 18,834	\$ 19,249	\$ 19,671	\$ 20,100
Labor		\$ 462,485	\$ 470,694	\$ 479,028	\$ 487,500	\$ 496,105	\$ 504,843	\$ 513,715	\$ 522,723	\$ 531,861	\$ 541,130
Depreciation		\$ 50,888	\$ 50,888	\$ 50,888	\$ 50,888	\$ 50,888	\$ 50,888	\$ 50,888	\$ 50,888	\$ 50,888	\$ 50,888
EBIT		\$ 882,992	\$ 570,680	\$ 564,476	\$ 572,376	\$ 580,392	\$ 588,513	\$ 596,749	\$ 605,196	\$ 613,852	\$ 622,738
Federal Business Tax		\$ 84,759	\$ 85,370	\$ 86,026	\$ 86,725	\$ 87,468	\$ 88,245	\$ 89,057	\$ 89,904	\$ 90,786	\$ 91,703
WA B&O Tax		\$ 4,734	\$ 4,694	\$ 4,650	\$ 4,603	\$ 4,554	\$ 4,502	\$ 4,447	\$ 4,389	\$ 4,328	\$ 4,264
EBIT		\$ 244,598	\$ 281,988	\$ 289,380	\$ 295,651	\$ 301,924	\$ 308,266	\$ 314,692	\$ 321,207	\$ 327,816	\$ 334,525
Net Working Capital (NWC)	\$ 1,75,728	\$ 1,75,728	\$ 1,62,627	\$ 1,64,494	\$ 1,66,333	\$ 1,68,147	\$ 1,70,038	\$ 1,71,996	\$ 1,73,921	\$ 1,75,913	\$ -
Change in NWC	\$ 1,75,728	\$ -	\$ 9,985	\$ 1,867	\$ 1,837	\$ 1,870	\$ 1,904	\$ 1,938	\$ 1,974	\$ 2,011	\$ (20,011)
Fixed Cost											
Total CAPEX	\$ 303,516										
Ferry Cost	\$ 250,000										
Federal yacht Import Tax (One-time)	\$ 3,750										
WA State Use Tax (One-time)	\$ 23,250										
USCG Overseas Inspection Fee	\$ 4,516										
Shipping & Refitting	\$ 125,000										
Watercraft License Tax	\$ 1,250	\$ 1,125	\$ 1,070	\$ 1,015	\$ 960	\$ 905	\$ 850	\$ 795	\$ 740	\$ 685	\$ -
IT cost	\$ 100,000										
Depreciation		\$ 50,888	\$ 50,888	\$ 50,888	\$ 50,888	\$ 50,888	\$ 50,888	\$ 50,888	\$ 50,888	\$ 50,888	\$ 50,888
Depreciation of Ferry		\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000
Fair Market Value of Ferry	\$ 250,000	\$ 225,000	\$ 200,000	\$ 175,000	\$ 150,000	\$ 125,000	\$ 100,000	\$ 75,000	\$ 50,000	\$ 25,000	\$ -
After-depreciation Ferry Value											
Maintenance Cost		\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000
Regulatory Cost		\$ 6,889	\$ 6,250	\$ 5,625	\$ 5,000	\$ 4,375	\$ 3,750	\$ 3,125	\$ 2,500	\$ 1,875	\$ 1,250
Annual Registration Fee (State of Washington)		\$ 80	\$ 85	\$ 90	\$ 95	\$ 100	\$ 105	\$ 110	\$ 115	\$ 120	\$ 125
Annual Operator License Fee (State of Washington)		\$ 80	\$ 85	\$ 90	\$ 95	\$ 100	\$ 105	\$ 110	\$ 115	\$ 120	\$ 125
Annual Visual Inspection Fee (U.S. Coast Guard)		\$ 300	\$ 300	\$ 300	\$ 300	\$ 300	\$ 300	\$ 300	\$ 300	\$ 300	\$ 300
Insurance		\$ 6,120	\$ 6,270	\$ 6,420	\$ 6,570	\$ 6,720	\$ 6,870	\$ 7,020	\$ 7,170	\$ 7,320	\$ 7,470
Marketing Cost	\$ 50,000	\$ 5,000	\$ 5,100	\$ 5,200	\$ 5,300	\$ 5,400	\$ 5,500	\$ 5,600	\$ 5,700	\$ 5,800	\$ 5,900
Future Cash Flow	\$ (730,578)	\$ 305,488	\$ 337,111	\$ 352,625	\$ 368,139	\$ 383,653	\$ 399,167	\$ 414,681	\$ 430,195	\$ 445,709	\$ 461,223
Cumulative Cash Flow	\$ (730,578)	\$ (425,090)	\$ (87,979)	\$ (139,373)	\$ 111,764	\$ 245,427	\$ 379,090	\$ 512,753	\$ 646,416	\$ 780,079	\$ 913,742

FIGURE 16 SCREENSHOT OF THE FREE CASH FLOW TABLE FROM THE EXCEL FINANCIAL MODEL

Risk Assessment, Regulatory Compliance, Registration, and Insurance

Potential Risks

- **Vessel Stability:** Pilot tests are to be conducted before the ship starts operating commercially.
- **Lifesaving equipment on board:** Lifesaving equipment should be bulk procured from local companies within Pacific County to ensure passenger and crew safety.
- **Licensing and Training:** for captains and crew onboard to ensure compliance with Washington state norms and U.S. Coast Guard regulations.
- **Safety drills training for all captains and crew onboard:** Crew will have to undergo safety drills to ensure they can aid passengers as needed.
- **Thorough QA testing for navigation equipment** needs to be conducted before commercial operation begins and before the commencement of round trips in and around Willapa Bay.
- **Future Changes to Maritime Law at the State Level and/or Federal Level:** Future changes to maritime law that are applicable to the ferry's operating jurisdiction will need to be monitored going forward. An example is the changes that came with RCW 79.100⁹ effective in June of 2014.

Relevant Organizations to Work With

- Animal and Plant Health Inspection Service (APHIS), U.S. Fish and Wildlife Service (FWS), and the Public Health Services (PCH) to ensure any damage caused to marine life is within tolerance limits.
- USCG (US Coast Guard) to ensure the ferry complies with standard regulations of operation, design, maintenance, and certification.
- WSDOT (Washington State Department of Transportation)

Ship Registration

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<https://www.dnr.wa.gov/programs-and-services/aquatics/derelict-vessels/large-and-older-vessel-ownership-requirements>

- Required Documents
 - A current copy of the U.S. Coast Guard Certificate of Documentation
 - A completed, signed, and notarized Vessel Title Application¹⁰

Breakdown of Licensing, Regulatory and Operational Costs

The following tables provide a breakdown of costs associated with ensuring legal compliance:

Regulatory Cost		Annual	Operators License Fee	Operators License Fee (Renewal)
State of Washington Annual Registration and Licensing Fees Reference: Link to Source 1, WA.com				
Insurance				
<u>Assumptions</u>				
Initial Insurance Cost is 2-3% of Vessel Purchase Price (with tax)			0.00	\$ -
Forecast Insurance Cost rises at the rate of inflation			-	\$ 35.00
	Inflation Rate	2%	-	\$ 35.00
	Percentage of Vessel Purchase Price	3%	-	\$ 40.00
	Vessel Purchase Price	\$ 250,000.00	-	\$ 40.00
	WA State Tax & Pacific County Tax	8.10%	-	\$ 45.00
	Total Vessel Purchase Price	\$ 270,250.00	-	\$ 45.00
	Initial Insurance Cost	\$ 8,107.50	-	\$ 50.00
			-	\$ 50.00

Year	Insurance Cost
2025	\$ 8,107.50
2026	\$ 8,269.65
2027	\$ 8,435.04
2028	\$ 8,603.74
2029	\$ 8,775.82
2030	\$ 8,951.34
2031	\$ 9,130.36
2032	\$ 9,312.97
2033	\$ 9,499.23
2034	\$ 9,689.21

¹⁰ <https://dol.wa.gov/vehicles-and-boats/boats/register-boat/vessel-title-application>

Insurance

Required Policies

- Protection & Indemnity (P&I) Insurance: maritime-specific; covers liability claims from third parties, e.g., passengers, for bodily injury, loss of life, and damage to property.
- Hull and Machinery Insurance: covers the principal asset, the ferry.
- Pollution Liability Insurance: covers the costs associated with a spill or environmental damage, including clean-up and fines.
- Workers' Compensation Insurance: covers employees' medical costs and a portion of their lost wages if they get injured while working.

Optional/Recommended Policies

- Commercial General Liability Insurance: legal liabilities on the premises, e.g., docks and terminals, or due to business operations. Covers broader scenarios than P&I insurance.
- Maritime Employers Liability (MEL) Insurance: completes Workers' Compensation Insurance in scenarios where the latter may not apply due to maritime laws.
- Excess Liability/Umbrella Insurance: extra protection offered against large claims.
- Business Interruption Insurance: Covers lost income and fixed expenses during periods where the service is unable to operate due to a covered loss.

Major Assumptions

Financial

- Inflation Rate: 2%
- Nominal Discount Rate: 8%
- Federal Business Tax: 21%
- WA State Sales Tax: 6.5%
- Pacific County Sales Tax: 1.6%

Operational

- Small Passenger Vessel (SPV) “T” categorization
- Ferry goes into operation in 2025.
- Peak Months of operation June to September
- Reduced operations in May and October
- Fuel Cost with Tax (per U.S. gallon): \$5.00

Conclusion

Recommendations and Next Steps

Our team has conducted extensive research, analyzed the future free cash flows and costs associated with the Willapa Bay Ferry project, and concluded that the project is feasible and could be expected to breakeven in 4 years per our study's assumptions. However, we are recommending the following:

- Additional Livable City Year projects and studies focused on target areas that we could not address within this project's timeframe, e.g., market research with feedback from residents and summer visitors, charging infrastructure at the ports for electric bikes and vehicles, etc.
- An official feasibility study done by business professionals with explicit maritime experience specializing in sea-based transportation operations and logistics.

We believe that the grants available via the State of Washington should be leveraged to initiate the operations, be they private as modeled within this study or public. Additionally, finding a company and/or entrepreneurial individual interested in running a regularly scheduled ferry service in place of a sporadic fishing charter service, for example, would significantly help get the ferry underway.

Deliverables

- Final Presentation Deck (Microsoft PowerPoint)
- Detailed Report (Microsoft Word Document)
- Financial Schedule (Microsoft Excel)