Washington State Ferries Workforce Planning Report

Report to the Washington State Joint Transportation Committee

12/22/22

EXECUTIVE SUMMARY

In 2021, the Joint Transportation Committee of the Washington State Legislature contracted with Seattle Jobs Initiative and two project partners, Segal, and Emsi Burning Glass, now Lightcast, to develop a workforce plan for Washington State Ferries (WSF). This is the project's second report, an overview of the long-term workforce plan, and focuses on vessels and terminal staffing. This phase of the project has three primary components:

- Analysis of the Current Workforce Conditions
- Workforce Planning Analysis
- Recommendations
- Implementation Plan

Context

WSF has had an accelerating use of overtime since 2013, indicating a growing imbalance between staffing levels and operational needs. This imbalance reached crisis levels in 2021 when WSF could not restore and maintain full operations due to staffing shortages. WSF staffing issues are decades in the making.

Summary of Findings

The project team interviewed WSF leadership, labor partners, and vessel crew, reviewed WSF policies and practices, and analyzed current staffing levels and overtime and leave data. The analysis revealed five core themes:

Staffing Model: WSF staffing model is too lean and cannot cover mundane unplanned absences and maintain service or support the career pipelines WSF depends on to fill highly skilled senior positions.

Staffing Shortage: The too-lean staffing model, combined with changes in its workforce, has forced WSF to use an increasing amount of overtime pay and, more recently, required them to cut service.

Career Advancement and Retention: There are limited near-term solutions because WSF depends on its internal career pipeline to fill skilled senior positions. However, career advancement is slow, and the process is opaque with little institutional support. This makes it difficult for people new to the sector to transition from entry- and low-ranking positions to more senior and skilled positions.

Recruitment and Hiring: WSF's recruitment and hiring practices have also not kept up with changes in the WSF workforce or Washington state's labor force. As a result, they are not generating large enough pools of qualified candidates. In addition, WSF does not reliably recruit or hire BIPOC workers despite the state's increasingly diverse labor force.

Cultural Issues: Finally, WSF staff and crew described an outdated working culture that is not inclusive. Because they also feel disconnected from leadership, there is limited potential for cultural change under current conditions.

Recommendations

To address these themes, the project team developed recommendations that fall under six categories:

Expand Staffing: In the near term, WSF should expand staffing in the positions with the shortages more directly impacting operations. This is not without challenges, as more senior positions have complex licensure and experience requirements, and unemployment rates remain at historic lows.

Modernize Staffing Model: WSF must build on this project's workforce modeling, determining optimal overtime and accounting for operational demands like fleet age and service demand. To do this, WSF will need additional investment in technology resources and administrative capacity to build and maintain a workforce model so that it can be done on an ongoing basis.

Career Advancement and Retention: Because WSF, by necessity, depends on its internal career pipeline, WSF needs investment in structures and programs that identify and support crew and staff members so they can move from entry-level to senior positions. Investing in both technical and soft skills training will improve retention, which, in turn, will support operations.

Recruitment and Hiring: WSF must commit additional resources and develop expertise in recruiting from communities historically excluded from maritime careers in Washington. Additional investment in recruiting and hiring capacity will speed time-to-hire, easing the staffing shortages.

Cultural Issues: WSF should invest in and build formal and informal mentoring and supervisory roles to improve the connection between leadership and operational workers. Mentors, managers, and supervisors should have training in providing support and feedback to a diversifying workforce and have expectations for doing so built into their roles.

Succession Planning: WSF's operational leadership is quickly aging out of the workforce. WSF faces losing substantial operational capacity and institutional knowledge without adequate succession and knowledge transfer planning. It must invest in identifying the critical knowledge and plan to capture and pass on that knowledge while also planning for how to fill critical positions as they are vacated.

WSF has begun laying the groundwork and taking action on some of these recommendations starting at the end of 2021. The Legislature and Governor funded some initial steps in 2022.

Implementation Plan

Finally, a detailed implementation plan was developed. It has three phases:

Phase 1: Building a Foundation for the Plan. During this phase, WSF must create a short-term staffing plan to address staffing shortages, add talent acquisition staff, specify operational staffing demands, review data management practices, and establish a data governance approach.

Phase 2: Evolve the Plan. In Phase 2, WSF will start putting into place the structural elements of the plan, including procuring technology, hiring necessary administrative personnel, developing an employee value proposition, and implementing succession planning for leadership.

Phase 3: Implement Sustainable Workforce Strategies. The final phase of this implementation plan is to integrate it organization-wide. Central to this phase is deploying the knowledge transfer plan and creating a change management strategy and communications plan to support the staffing model and technology implementation.

ACKNOWLEDGMENTS

Many thanks to the WSF leadership and Human Resources, Budget, and Operations staff for supplying the necessary administrative data and supporting human resources and payroll data analysis. Thank you to the dispatch staff and vessel crew for sharing their insights. Finally, thank you to the Working Group (see Appendix G) for their feedback and insights.

CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

The Joint Transportation Committee (JTC) of the Washington State Legislature contracted with Seattle Jobs Initiative and two project partners, Segal, and Emsi Burning Glass, now Lightcast, to develop a workforce plan for Washington State Ferries (WSF). This project has two phases: initial short-term strategies and a long-term workforce plan. To guide the recommendations and strategies, the project team adopted the following definitions of these timeframes:

- **Short-term**: strategies to improve existing workforce capacity to be implemented in 2022 before completing the workforce plan. WSF can implement these strategies with limited legislation changes and little or no changes to collective bargaining agreements (CBAs).
- **Long-term**: strategies that are not constrained by existing workforce capacity. These strategies may require legislation and changes to CBAs.

The following report is phase two and contains strategies to place WSF on a path to a sustainable workforce that allows it to provide reliable, timely service and fulfill its role as critical transportation infrastructure. The impetus for this project was the rapid growth of WSF overtime use. However, as the project got underway, staffing issues that were years in the making collided with the Covid-19 pandemic, nationwide labor shortage, and a global maritime sector-specific labor shortage. As a result, WSF could not maintain its regular service schedule.

This report builds on the work in phase one but expands it significantly. The project team worked with a working group (Appendix B) that included WSF leadership, labor representatives, and Washington State legislature staff. The team interviewed crew members, dispatch, and leadership and worked with WSF staff to collect and interpret payroll, human resources, and crewing data. Using this data, the team identified the causes of WSF's current workforce issues to develop recommendations for addressing them, a staffing model, and an implementation plan. This report contains the following sections:

- Background and Context
- Methodology and Approach
- Analysis of Current Workforce Condition
- Workforce Planning Analysis
- Recommendations
- Prioritized Implementation Roadmap

Supporting materials can be found in the appendices.

BACKGROUND AND CONTEXT

Pre-Pandemic Workforce Trends

Before the tremendous disruptions of the pandemic, emerging workforce trends across the US were already beginning to shape a new world of work that challenged business leaders to think differently about how work is defined, organized, and performed. The workforce is evolving. Three trends are driving this evolution:

1. Aging Workforce
2. Millennials and Generation Z changing workplace expectations
3. Low unemployment

AN AGING WORKFORCE

Since 2011, Baby Boomers have been retiring in record numbers, leaving with years of institutional knowledge, skills, and experience. Organizations need to fill these critical gaps, particularly in leadership roles. Ten thousand people turn 65 every day in the United States; a rate that will continue until 2030.[1]

MILLENNIALS AND GENERATION Z

As the Boomers leave the workforce, Millennials are assuming these newly vacating positions, and Generation Z is entering the workforce. As the demographics change, so do the workforce characteristics, preferences, and demands. These changes challenge organizations to reimagine their business strategies, including the need for more innovative HR strategies, programs, and practices. Millennials and Gen Z workers will represent 75% of the US workforce by 2025[2].

LOW UNEMPLOYMENT AND INTENSE COMPETITION FOR TALENT

Finally, before the pandemic, the US experienced the lowest unemployment rates in over 50 years, significantly increasing competition for talent and requiring employers to provide a compelling employee value proposition and improved employee experience. For many years, the employer held a more powerful position in the relationship with employees, but this dynamic started to shift. Competitive total rewards became critical factors in recruiting and retaining high-quality talent.

There are several other factors at play within these trends. Baby Boomers are beginning to transfer wealth to younger generations. The roles of women in the workforce are changing. Millennial men have the lowest workforce participation rate of any prior generation. The US birth rate is declining. Finally, the impact of the opioid crisis on the workforce across generations.

The Post-Pandemic Workforce Trends

The pandemic amplified and accelerated many of these pre-existing trends, making what was already a challenging generational transition much more disruptive.

NATIONWIDE LABOR SHORTAGE

Coming out of the pandemic, employers across nearly every industry are experiencing an incredible labor shortage, with a deficit in talent relative to their business needs. In addition to the pandemic causing employees to rethink their personal and professional needs and preferences, several workforce gaps are emerging that are likely to have lasting implications:

First and foremost, more than 1 million people have died of COVID since the pandemic began; more than 250,000 of those deaths were working-age people.[3] An additional estimated 10 to 33 million working-age adults have some symptoms of long Covid that affect their ability to return to work.[4]

Secondly, many Baby Boomers exited the workforce. While it is uncertain if their exit is permanent, the number of workers aged 55 years or more dropped by six percent in 2020 and hasn't fully recovered.[5]

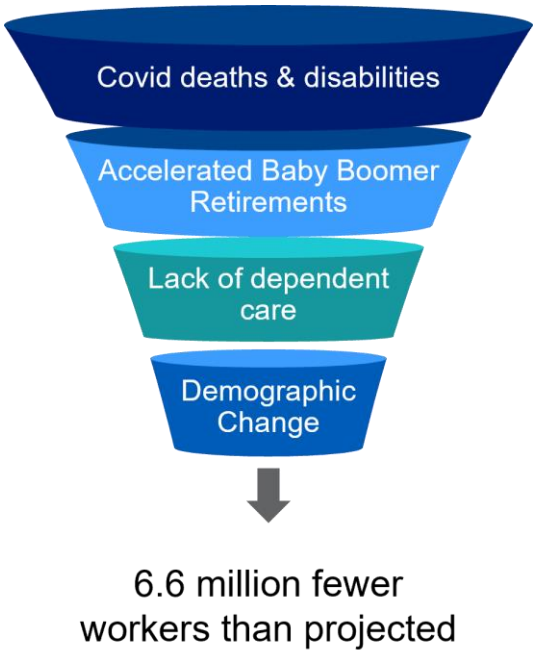

Figure 1. Pandemic Conditions Leading to Fewer Workers

Third, many workers, particularly women, had to leave the labor force because they did not have child or elder care. While childcare facilities and schools have long since reopened, the labor shortage is particularly acute in the early childhood education sector, meaning there are fewer spots for young children.[6] Covid restrictions mean children with spots have frequently been excluded for days or weeks when they experience symptoms common to many childhood illnesses. As a result, parents still incur the cost of daycare and miss work, and hourly workers miss wages.

METHODOLOGY AND APPROACH

In this context, the project team undertook a three-part project:

- Comprehensive analysis of WSF's current structure, strategies, processes, policies, roles, and culture, focusing on the vessel and terminal workforce
- Strategic Staffing Model for the vessels and terminals (Appendix C)
- Prioritized Implementation Roadmap (Appendix D)

To conduct the comprehensive gap analysis, the project team interviewed WSF leadership, labor leaders, and crew aboard vessels (Appendix E). They also collected and reviewed the organization structure, career advancement processes, and collective bargaining agreements.

The strategic model was built using the full-service schedule from 2019, employee census from June 2022, payroll data from Fiscal Year 2019 to Fiscal Year 2022, sick leave data for vessel crew from Fiscal Year 2020 to Fiscal Year 2022, separation data from Fiscal Year 2017 to Fiscal Year 2022. The WSF Fiscal Department provided wages, training costs, and per position. A complete list of data used to construct the model can be found in Appendix F. Based on the analysis of WSF's current workforce condition and staffing model, the project team developed a list of recommendations and an implementation plan to put WSF on the path to a sustainable workforce.

During phase one of this project, the overtime analysis indicated that vessel and terminal operations were the source of most of the overtime. Thus, the team focused their subsequent work on these units. In addition, it was challenging and time-consuming to collect and harmonize the data across multiple divisions and systems. As a result, the staffing model does not include Eagle Harbor, and the administrative workforce was not in the scope of this work.

However, many of the same patterns are at play in these units. The Eagle Harbor and administrative workforce are understaffed and are experiencing difficulty retaining and recruiting staff, and Eagle Harbor has similar career advancement to the vessel crew detailed below. Both units' staffing shortages and high turnover directly impact operations, even if their first-order impact on the budget and overtime levels is negligible. For example, understaffing at Eagle Harbor has the knock-on effect of leading to vessel crew overtime when a vessel must wait for Eagle Harbor workers to get to them to perform repairs. Low staffing at Eagle Harbor has more indirect impacts on performance because the aging fleet demands more involved scheduled maintenance, though the data was not available to quantify these impacts.

ANALYSIS OF CURRENT WORKFORCE CONDITION

The project team conducted sixteen interviews with WSF and labor leaders and conducted a series of interviews with vessel crews on two routes over two days. The focus of these interviews was to identify what challenges WSF is facing. Five key themes emerged:

- The staffing model is outdated and inadequate
- There is a shortage of staff even within this model
- Recruiting and hiring practices are not generating a sufficient pool of candidates
- The process of career advancement is slow, complicated, and opaque, which negatively impacts retention
- There are cultural issues negatively impacting recruitment and retention

The current conditions of WSF's workforce are not sustainable and resulted in an acceleration of overtime use and disrupted and reduced services. The root causes of the conditions are decades in the making, born out of systems and processes developed over many years colliding with changes in the workforce, increased demand for ferry services, and an aging fleet. At the core, WSF's staffing model is too lean for critical infrastructure. It has no buffer to cover unscheduled absences. As a result, there is an increasing use of overtime to maintain

service. In addition, because of the lean staffing model, WSF does not have the capacity to adjust and adapt its staffing model to changing conditions.

At the same time, the model of hiring all new employees as on-call entry-level positions that have volatile hours and pay, limited guidance, and long waiting periods at entry-level pay to reach a permanent position. This model contributes to high turnover and an inadequate internal pipeline of workers to internal positions, further exacerbating the staffing shortage and overuse of overtime.

The complex licensure and training requirements further constrict the pipeline to more senior positions (Mates and Captain, Assistant and Chief Engineers). Crew members can languish in lower-ranking positions despite the need within the organization and the crew members' desire because they do not have the time or resources to pursue advancement, and there is no institutional support available.

Further analysis of processes, policies, and procedures supported these themes. They are detailed below.

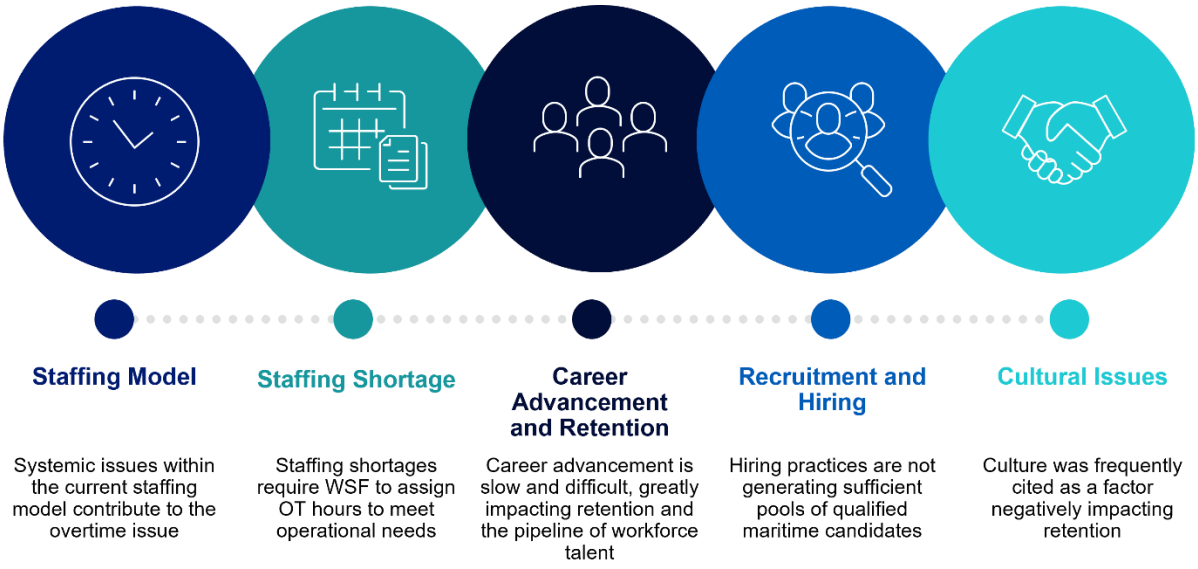

Figure 1. Analysis Themes

Staffing Model*

Since 2013, WSF has been crewing vessels according to the US Coast Guard (USCG) minimum crewing requirements. These requirements are based on vessel type and passenger and vehicle volume. If not fully staffed, vessels either cannot sail or must sail with reduced capacity (i.e., some vessels may sail at "winter" capacity in the high season if they have enough deckhands for the lower capacity). The USCG sets minimums to ensure the crews can perform an evacuation or adequately respond to other onboard emergencies. It does

* This section only addresses operational staff. It is important to note that it is crucial that operational staff are supported by adequate administrative and maintenance staff. However, administrative and maintenance staff is outside of the scope of this work.

not consider other operational demands such as sailing on schedule, vessel maintenance, particularly on older vessels, or customer experience.

Currently, WSF is budgeted to employ a permanent workforce roughly equivalent to the number of full-time equivalent positions (FTEs) required to maintain minimum requirements and a contingent on-call workforce. However, this was not always the case. Before 2012, WSF's standard crewing was one deckhand more than the USCG minimum. To reduce costs, WSF asked USCG to review crewing minimums. Rather than reducing the minimums, USCG increased the minimums on some vessels, and WSF left the crewing level as it was, no longer crewing above the minimum. This change was the beginning of an increase in overtime, as previously, vessels could sail if a single deckhand called in sick, got caught in traffic, or was otherwise delayed.

However, when crewing only to USCG minimums, a single delayed crew member results in delayed or canceled sailings and can have cascading effects throughout the shift or day. In addition to the disruption to critical transportation infrastructure that can leave passengers delayed or stranded, it can result in significant overtime. Not only do other deckhands stay over or work extra shifts so vessels can sail, but all the crew members also earn overtime pay if the delayed sailing keeps them past the end of their shift.

SCHEDULING

The lean staffing level complicates scheduling. Permanent employees bid on schedules based on seniority. Engine Room and Licensed Deck (mates and captains) also bid on vacation time slots[†] based on seniority. These and other scheduled absences among permanent employees are covered primarily by permanent relief employees. Unlicensed deck (Ordinary Sailors, OS, and Able Sailors, AB) does not have a cap on the number of crew members who can take vacation at any given time. The number of relief and on-call employees are primarily based on this demand, with limited capacity allocated to covering unplanned absences. This is partly due to relying on historical allocations rather than ongoing modeling that would account for changing levels of planned and unplanned absences as the workforce demographics and tenure change.

When there are unscheduled absences among permanent employees, dispatchers go through the following list to cover those positions, exhausting each option before moving on to the next:

1. Relief crew members
2. On-call employee
3. Overtime offered in order of seniority

Because each vessel is only crewed to the USCG minimum, any time there is an unscheduled absence, dispatch must go through this list to fill the position for the vessel to sail at all or at full capacity. This is often time-consuming and becomes more so as the rate of absences increases with illness, injury, and burnout and as relief and on-call employees' capacity is exhausted. Dispatch must draw more on overtime to ensure vessels

[†]These crew members earn vacation time based on their seniority but there is a limit on the number of each position who can take vacation at any given time. The order in which the crew members get to request specific dates off is also based on seniority.

can sail. It also creates a vicious cycle as workers are more likely to suffer injury and burnout as they work more overtime, leading to more absences and requiring more overtime to backfill.

BUDGETING AND PLANNING

WSF is challenged to improve its model and planning because it lacks the necessary human resources management tools. It is challenging to extract accurate and consistent information because of its data management conventions and multiple data repositories.

Different job title naming conventions across multiple systems (HRIS, payroll, dispatch, etc.) make tracking and analyzing data difficult. There is insufficient data on staffing needs for the terminal and deck. Additionally, workforce data is very siloed, with individual departments operating under different interpretations of the workforce data.

There is a lack of administrative or technical resources dedicated to data collection, tracking, and analysis, and antiquated systems require reports to be pulled and validated manually. This places a heavy burden on the budget, human resources, dispatch, and operational teams when a need arises to make data-informed decisions. The knowledge of how this is done is frequently lost with turnover in WSF administrative staff. This reliance on manual processes and siloed systems results in fragmented and disconnected data and limited options for analyzing the workforce. As a result, accurately forecasting operational staffing needs is outside WSF's current capacity.

Consequently, the current staffing model is based on historical budget data rather than operation needs. Resources are allocated according to the available budget rather than forecasting what is required to fully operate ferry services, conduct training and workforce development, and account for planned and unplanned absences. Further, the lack of an integrated and coordinated approach makes WSF vulnerable to fiscal and personnel gaps and unable to adapt to or plan for changes in the workforce, labor market, and an aging fleet, let alone absorb or recover from major disruptions.

Staffing Shortage

Further compounding these problems, WSF is also experiencing a staffing shortage within the current staffing model. This shortage is decades in the making, as WSF's recruiting, hiring, and advancement processes have not been updated to reflect the changes in the state's labor force.

RECRUITMENT AND HIRING

The team identified four critical gaps in WSF's recruitment and hiring practices that limit the pool of new applicants. Then, once WSF hires candidates, several elements of the new employee experience contribute to high attrition and the staffing shortage.

Recruitment Strategies and Methods

WSF has conventionally hired in the spring to prepare for the busy summer season. They target regional job fairs, the maritime industry, maritime academies, and word of mouth. WSF and labor unions, particularly

Marine Engineers Benefit Association (MEBA), conduct recruiting, and WSF is responsible for hiring. However, it is limited in scope, relying primarily on existing relationships and avenues. There are currently no diversity, equity, and inclusion strategies or goals to ensure a diverse workforce, and there is currently no hiring or labor strategy to address the upcoming retirements and high levels of turnover. In addition, online job postings are hard to locate.

When potential applicants do find WSF job opportunities, they face additional barriers. To apply, vessel crew and terminal staff must obtain their Transportation Workers Information Card (TWIC),[‡7] a federal identification that costs $125, and their Merchant Mariner Credential (MMC)[§], which costs $140 to $208, depending on the position. The total cost of obtaining these credentials is $405, and applicants must also spend time finding this information, gathering documentation, and sending their applications with little to no guidance.

As a result, hiring practices are not generating sufficient pools of qualified maritime candidates. WSF is also not reliably reaching communities historically excluded from working in Washington's maritime sector or are newer arrivals to the region. WSF recruits and hires few Black, Indigenous, and other People of Color (BIPOC) candidates to work on the ferries. This lack of diversity in WSF and Washington state's maritime industry contrasts with the diverse national maritime industry.[**]

New Employee Experience

WSF's hiring policy as of Fall 2021 started all new crew members in on-call positions. Even experienced and licensed applicants start in on-call entry-level positions. These employees are considered probationary for the first 1,040 hours (6 months) and remain on-call until a permanent position becomes available. This model has several underlying factors that make starting at WSF unattractive and lead to low to marginal retention among on-call employees (particularly unlicensed deck crew).

Second, WSF has traditionally done most of the hiring in the spring to gear up for the summer schedule. On-call workers are reliably assigned 40 hours per week during the spring and summer and can frequently work more if they want. However, their working hours fall to well below 40 hours during the winter.[††] The sharp decline in work hours during the winter surprises many new workers. This model is a critical barrier to new employees who do not have other sources of support and employees who come to WSF from other parts of the maritime industry (e.g., tugboats, fishing boats, deep sea vessels, US Navy). Experienced mariners from

[‡] Created by The Transportation Security Administration in 2007 following the Maritime Transportation Security Act of 2002, this card is required of workers to help maintain security conditions at maritime facilities and aboard vessels. The Department of Homeland Security issues the card following a security threat assessment in which the applicant undergoes drug tests and a comprehensive background check that includes terrorist watch lists, immigration status, criminal history, and outstanding warrants. This credential must be renewed every five years.

[§] This credential is issued by USCG that sanctions their aptitude for relevant job duties. Complete applications include an application form, relevant training course certificates, periodic drug tests.

[**] Washington state's maritime industry is far less diverse than the national maritime industry and the rest of the Pacific Coast region (Oregon, California, Hawaii, and Alaska).

[††] This finding was highlighted during phase one of the project, and the Legislature allocated additional funding to employ new on-call employees full-time through the winter in 2022.

other parts of the industry often spend weeks or months at sea, and the ability to go home every day appeals to them. However, the erratic pay is a deterrent, particularly if they have credentials and experience for higher ranking and higher paying positions elsewhere in the industry.

Third, on-call workers do not have predictable schedules or consistent ports[‡‡] from which they sail. Workers may have to drive long distances, pay for mileage to reach their work destination, and incur penalties for declining assignments. Traveling to different ports with little to no notice is challenging for all workers. Still, it is particularly challenging for those with caregiving responsibilities and workers without reliable transportation.

Fourth, because on-call workers are frequently assigned different vessels and shifts, it is challenging to build working relationships with senior crew and supervisors that help them navigate the organization and sharpen their skills.[§§] First-year staff often feel lonely and isolated while completing their probationary period. In some instances, terminal staff often do not have a supervisor on-site to receive calls and make critical decisions like holding a vessel for an emergency vehicle.

Finally, crew members access permanent positions by bidding on them. The bid is based on seniority. So, it can take as long as two to three years to get a permanent position out of one's home port.

As a result, many on-call workers leave WSF before they are guaranteed work, despite several years of training. This high turnover in entry-level positions means there are not enough crew members in the pipeline[***] to become mates, captains, and engineers. The shortage is particularly acute in the engine room. The near-term consequence of this restriction is increasing rates of overtime. The medium and long-term consequences are canceled sailings and disrupted service.

ADVANCEMENT AND PROMOTION

In addition to an inadequate supply of entry-level crew members gaining the necessary experience and skills, there are challenges in the current advancement and promotion process. The lack of institutional support, the cost of licensure, and low pay for key positions prevent many crew members from advancing to fill those more senior positions.

Knowledge and Guidance

The advancement process is unusually opaque, built around a history of maritime families where the knowledge was shared through social connections. Second, as noted above, employees don't have a single point of contact or supervisor that they can go to for mentorship, leadership, career path and progression, and performance reviews. As a result, it is difficult for employees to move up through the ranks quickly if they do not have those social connections to guide them through accumulating and documenting sea time and

[‡‡] All crew members have a home port from which they sail; however, they can be assigned a sailing within 35 miles of their home port.
[§§] WSF is exploring ways to mitigate this within the constraints of the CBAs.
[***] The informal term in the maritime industry for the pathway from unlicensed sailor to captain or chief engineer without attending a maritime college or academy is the Hawsepipe.

preparing for licensure exams. The lack of institutional support for crew member advancement creates social disadvantages for those new to the maritime industry.

Licensure

Advancement from entry-level to experienced roles requires that crew members accumulate adequate sea time, often on specific routes, prepare for and take exams, and submit and maintain documentation to the USCG. WSF has minimal resources to support crew members obtaining USCG licenses, so they must pursue them independently. They must plan and document their sea time and often must ride routes on their own time when they cannot get assigned shifts on all the routes. They then navigate the USCG MMC licensure exam and application process, without institutional support, including paying for these licensures. Advancement from OS to AB requires the employee to complete various training, which can cost more than $1,500 to complete.

Engine Room Career Progression and Pay

Finally, the engine room has some specific challenges. First, for several years WSF did not employ wipers, which is the entry-level position in the engine room, requiring no credentials beyond the TWIC and basic MMC required of all crew members. The lowest-ranking position in the engine room was the oiler, which is a position that typically requires at least two years of training and a Qualified Member of the Engine Department (QMED) credential. As a result, there was no entry-level pathway in the engine room.

Consequently, WSF competes against the maritime industry for credentialed engine crew while there is a global shortage of these workers. WSF is not well-positioned to compete for these engine room crew. Despite being experienced and skilled workers, oilers make only slightly above entry level-pay, making only $4 to $6 per hour more than the entry-level OS.

WSF has reintroduced this position in the last year. The new wipers should alleviate some of the shortage of oilers. However, in the near term, these positions also require additional oversight and training on-the-job.

Cultural Issues

In addition to the structural issue of attracting and retaining new employees, WSF employees at all levels cited culture as a factor negatively impacting retention. Interviews with crew members and leadership revealed five core cultural elements contributing to the attrition of younger and newer crew members.

The first is that the seniority-based system brings a culture of looking down upon newer employees until they have gained the requisite experience. As opposed to a culture of mentoring and supporting new crew members, they have limited resources to coach and develop new employees. This attitude is particularly acute about BIPOC and women crew members. Because of the low levels of staff diversity, there is not a sense that BIPOC and women vessel crew members are welcome or valued.

Another side effect of the seniority system is a lack of a culture of accountability. It is challenging for supervisors to act when an indiscretion occurs due to the seniority-based system. The result is lower morale and dissatisfaction amongst hardworking and dedicated employees.

There are also no processes in operation for performance and rewards. Employees reported not feeling appreciated or rewarded for their efforts even while working far more overtime than what they want to keep the ferries running. They receive little feedback from leadership on their performance because annual performance reviews are no longer being conducted.

Lack of feedback, accountability, and appreciation contributes to the low organizational trust. Employees feel disconnected and that operational leadership is out of touch with day-to-day operations. Employees reported a greater need for communication and expressed a desire for greater visibility from leadership.

WORKFORCE PLANNING ANALYSIS

In conjunction with the qualitative analysis of workforce conditions, the project team analyzed WSF human resource data to inform workforce planning. This analysis primarily focuses on age to assess the urgency of succession planning. While increasing the diversity of WSF crew is critical to improving the organization's long-term performance, the human resource demographic data is limited to age and gender. Thus, an analysis of racial and ethnic diversity was outside our ability to conduct with existing data.

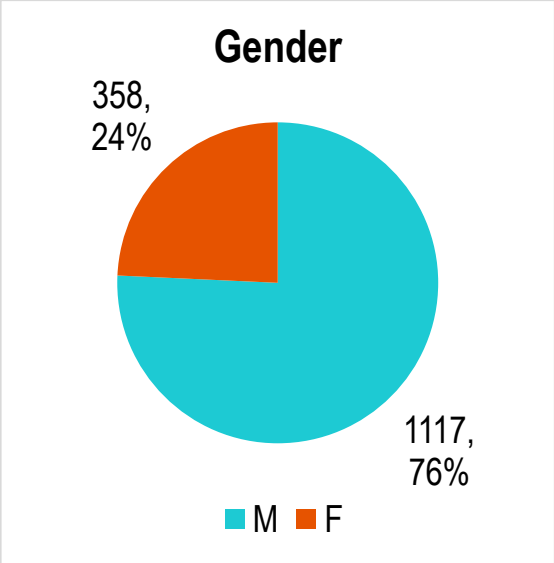

Figure 2. Distribution of Gender in Operational Staff

Demographics

As Figure 2 indicates, more than three-quarters of the WSF vessel crew and terminal staff are men. And women are concentrated in terminal staff. While this does not give direct evidence of the distribution of race and ethnicity among operational staff, there is reason to believe that underrepresentation of BIPOC crew and staff is even more pronounced than gender. Advancing women and BIPOC crew members to leadership positions on vessels is essential because diverse leadership is critical to creating environments that support diversity throughout the ranks.

Tenure and Retirement Risk

Twenty-three percent of WSF's vessel crew and terminal staff has been with WSF for four years or less (

Figure 3). At the same time, 28% of the workforce is currently within five years of or already at or above the average retirement age (

Figure 4). By 2027, the percentage of current workers within five years or above average retirement age will increase to 41% (Figure 5). The large percentage of short-tenure employees combined with the very large number of WSF employees at or near retirement places WSF at significant risk of losing a great deal of institutional knowledge even if WSF can successfully backfill positions.

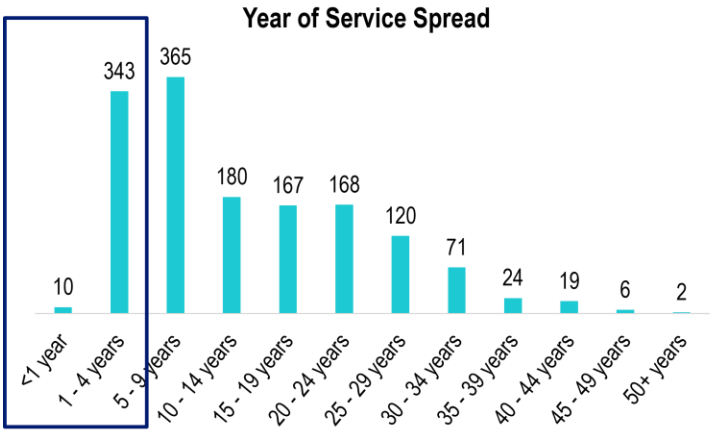

Figure 3. Years of Service†††,‡‡‡

††† Does not include Eagle Harbor, Administrative, or Temporary roles
‡‡‡ Data is effective as of June 30, 2022

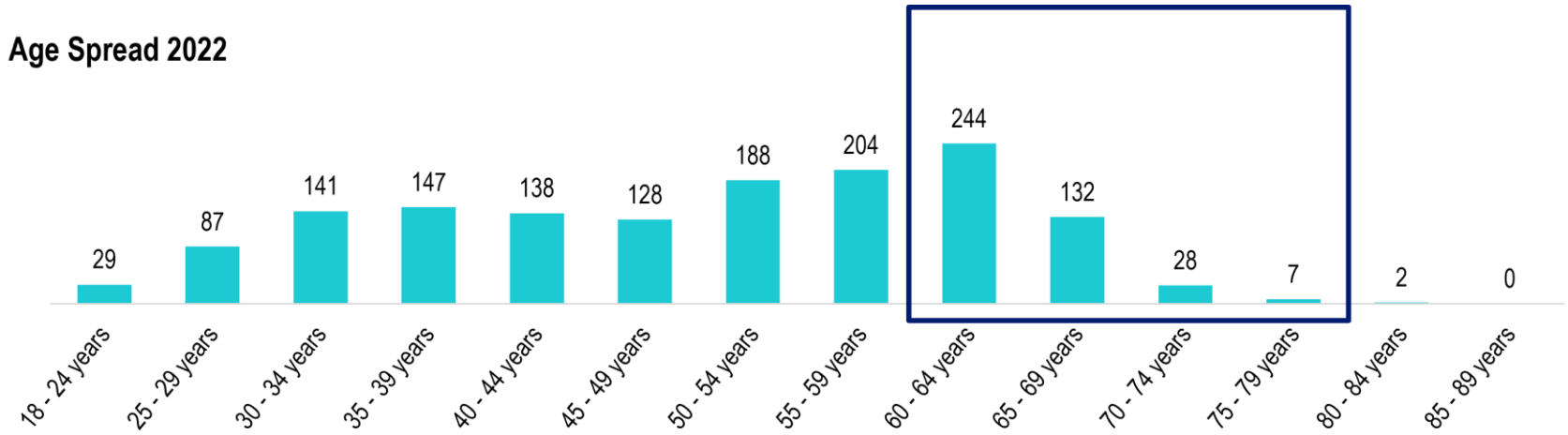

Figure 4. Crew at Eligible for Retirement in 2022§§§,****

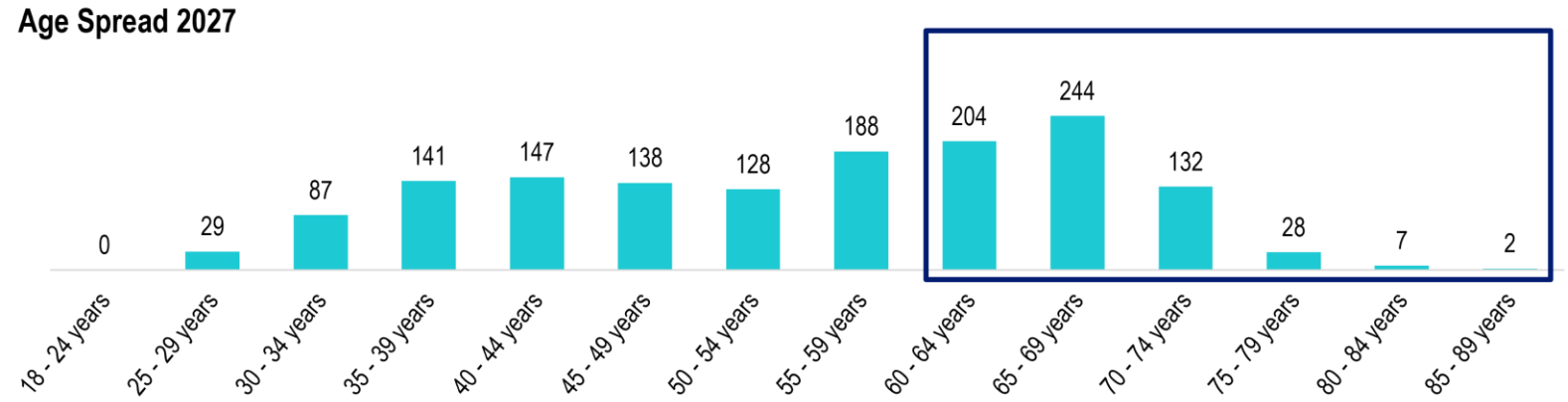

Figure 5. Crew Eligible for Retirement in 2027§§§,****

§§§ Does not include Eagle Harbor, Administrative, or Temporary roles
**** Data is effective as of June 30, 2022

A more detailed analysis of retirement risk by positions (Table 1) indicates that Captains are at the highest risk of retirement, with more than half currently within five years of or above average retirement age, and more than three quarters will be in 2027. This is a huge operational risk. Not only do these captains represent a great deal of institutional knowledge and operational capacity, but they are also hard to replace. It takes years to accumulate the sea time and credentials to move from mate to captain.

More than one-third of chief engineers are within five years of or above average retirement age, and more than half will be in 2027. Though chief engineers skew younger than captains, moving from assistant engineer to chief engineer requires a similar amount of time and credentialing. The global shortage of licensed marine engineers makes backfilling these positions more difficult.

Terminal supervisors and janitors are similarly positioned to captains; however, these positions do not have the experience or credentialing requirement and thus do not pose the operational risk that the share of captains and chief engineers nearing or eligible for retirement does.

Table 1. Crew Eligible for Retirement by Position

		Below Retirement Risk Range and Age				Within Retirement Risk Range + At or Above Avg. Retirement Age			
Job Category	Total Count	2022		2027		2022		2027	
		N	%	N	%	N	%	N	%
Captain	74	35	47%	16	22%	39	53%	58	78%
Mate	75	61	81%	52	69%	14	19%	23	31%
2nd Mate	28	26	93%	23	82%	2	7%	5	18%
Ablebodied Sailor	234	164	70%	134	57%	70	30%	100	43%
Junior Deckhand	245	203	83%	176	72%	42	17%	69	28%
Chief Engineer	110	73	66%	51	46%	37	34%	59	54%
Assistant Engineer	74	60	81%	53	72%	14	19%	21	28%
Oiler	186	159	85%	142	76%	27	15%	44	24%
Terminal Supervisor	39	16	41%	12	31%	23	59%	27	69%
Ticket Seller	134	77	57%	47	35%	57	43%	87	65%
Ticket Taker	33	25	76%	22	67%	8	24%	11	33%
Terminal Attendant	179	120	67%	100	56%	59	33%	79	44%
Janitor	6	3	50%	2	33%	3	50%	4	67%
Total:	**1417**	**1022**	**72%**	**830**	**59%**	**395**	**28%**	**587**	**41%**

Impact of Turnover

As the WSF leadership and crew interviews indicated, turnover is also an issue. However, in line with the interviews, the positions with the highest turnover are junior deckhands (OS), terminal attendants, and janitors, the entry-level positions in WSF. This is particularly problematic for junior deckhands because these are the positions all unlicensed crew members are hired into and the positions in which employees accrue the necessary sea time to be eligible to advance to mate and then captain. High turnover in this position creates

potential gaps in the number of crew eligible to advance to fill vacancies created by retirement and turnover in more senior positions.

Table 2. Turnover Rate by Position

Job Category	Total Population	4-Year Average Involuntary Turnover		4-Year Average Voluntary Turnover		4-Year Average Retirement	
		N	%	N	%	N	%
Captain	287	4	1.4%	1	0.3%	37	12.9%
Mate	279	5	1.8%	3	1.1%	9	3.2%
2nd Mate	96	0	0.0%	1	1.0%	1	1.0%
Ablebodied Sailor	1121	17	1.5%	8	0.7%	55	4.9%
Junior Deckhand	967	39	4.0%	53	5.5%	19	2.0%
Chief Engineer	391	10	2.6%	0	0.0%	34	8.7%
Assistant Engineer	302	5	1.7%	2	0.7%	4	1.3%
Oiler	783	30	3.8%	27	3.4%	18	2.3%
Terminal Supervisor	141	1	0.7%	1	0.7%	11	7.8%
Ticket Seller	489	4	0.8%	4	0.8%	36	7.4%
Ticket Taker	67	0	0.0%	0	0.0%	4	6.0%
Terminal Attendant	613	45	7.3%	44	7.2%	16	2.6%
Janitor	22	1	4.5%	2	9.1%	0	0.0%

RECOMMENDATIONS

Figure 6. Recommendation Themes

Expand Staffing

The first recommendation is to expand staffing in areas where severe understaffing exists. Expanding staffing will lower costs and re-establish full vessel operations. To do this, WSF must create a short-term staffing plan. The staffing plan will add full-time positions to the deck, terminal, and engine crews in the areas where the workforce staffing model demonstrates severe understaffing and a high level of overtime being used. An adequate budget to support the short-term staffing plan must be allocated.

RECOMMENDED HEADCOUNT

Table 3 provides proposed headcounts for the deck and engine room based on the workforce modeling. This model is a starting point for assessing the needed staffing levels. This table is the proposed additional crew members needed to meet the USCG minimum required for the 2019 sailing schedule with no overtime (this is

not a reasonable assumption but is a useful starting point). **It is a starting point for determining how many crew members WSF should hire to restore full service with minimum USCG crewing.** WSF must make two key decisions to arrive at the number of each position that should be hired:

- Determine the amount or percentage of overtime WSF is willing to offer employees. Some overtime is built into WSF operations because engine room crew work 12-hour shifts (84 hours per 2-week period) and the nature of water-based travel (e.g., tides, weather, delay for emergency vehicles). In addition, some overtime is cost-effective.
- Account for needed relief staff to provide coverage for additional staffing for vacation and sick time as indicated in the respective bargaining agreements.

Overall, WSF needs to increase the number of crew members by 17% to 20%. Based on the collective bargaining agreements, higher-ranking positions (e.g., AB, Mate, Captain, Chief Engineer) will largely be filled by promoting existing employees. The new hires will be concentrated in entry-level and lower-ranking positions (e.g., Junior Deckhand/OS, Second Mate, Oiler, and Assistant Engineer). While some employees have or are eligible to test for the licensure necessary for a promotion, others will need support to become eligible as quickly as possible.

Table 3. Proposed Vessel Crew Headcount

	Position	Current Headcount††††	Proposed Additional Headcount			
			Low‡‡‡‡		High	
Deck	Captain	70	3	4%	4	6%
	Mate	79	14	18%	16	20%
	2nd Mate	23	21	91%	24	104%
	Able-bodied Sailor	277	40	14%	45	16%
	Junior Deckhand	255	62	24%	69	27%
Engine	Chief Engineer	105	15	14%	17	16%
	Assistant Engineer	72	16	22%	18	25%
	Oiler	188	14	7%	16	9%
	Total:	**1,069**	**185**	**17%**	**209**	**20%**

Unsurprisingly, the position with the largest number of new crew members needed is Junior Deckhand (OS), with 62 to 69 additional crew members. The position with the largest growth rate is Second Mate, with WSF needing 91% to 104% additional Second Mates. Maritime academy graduates have the appropriate licensure

†††† Staffing analysis uses historical FY 2022 data and current headcounts are effective as of June 30, 2022.

‡‡‡‡ The "low" end of the proposed staffing range is currently modeled as taking the "high" proposed range and subtracting 10%.

but are required to obtain the pilotage necessary to use that license in the Sound. However, ABs who have not attended a maritime academy can also advance via the Hawsepipe career path (Appendix). WSF has designed a program[§§§§] to support these ABs as they prepare for the exam and to ensure they are assigned shifts on each route to get all the required pilotage on the clock. However, this program is not fully funded. Funding should be provided to extend this program upon the successful completion of the pilot program.

In addition to adding crew members, since the first report in 2021, WSF implemented a policy guaranteeing on-call employees 40 hours per week through the winter season, using the additional time these employees are working for training. This policy will reduce turnover, improve the pipeline from OS to AB and mate, and give WSF more capacity to support the AB to mate program. This policy should be permanent, with adequate employee pay and training resources allocated.

MODELING

To ensure this new staffing level is sustainable and provides regular, dependable service, WSF should continue to model data annually so they can anticipate staffing needed, considering turnover and unplanned absences. This will require administrative and operational support resources to collect data and update the model on an ongoing basis, particularly as this will continue to be a manual process until WSF procures and implements the necessary technology infrastructure.

COLLECTIVE BARGAINING IMPACT

The recommendation to expand staffing has no significant impact on the collective bargaining agreements. WSF has the right to change the staffing level, and there is no guaranteed overtime beyond the four hours per two weeks for the engine room due to their 12-hour shifts. Some bargaining units may not be happy about reduced overtime for members. However, it is more likely that existing crew members would welcome the reduction in overtime as they expressed how overextended they were in interviews.

Staffing Model

For WSF to have sustainable staffing in the medium and long term, they must reimagine the staffing model for deck and terminal staff and allocate support resources to account for more accurate staffing needs**.** The project team recommends leveraging the staffing model created, implementing a sophisticated staffing methodology and an operational model that is more accurate for operational staffing for the deck and terminal employees.

A more sophisticated staffing model will require an analysis of staffing needs for deck crews beyond the USCG minimums. This model will account for crewing needed to fully operate and maintain the vessels, conduct training and workforce development, and provide a margin for unplanned absences. Such a model will not be

[§§§§] WSF leadership planned on reserving 70% of the program's positions for current employees and 30% for external hires. However, in the pilot phase, they fill all of the spots with ABs who wanted to advance to mate but have not been able to because they had not been able to accrue all of the required pilotage or prepare for the exams.

static and will change to account for things like vessel age (e.g., engine room crew and deckhand need to perform more ongoing, routine maintenance on older vessels).

This model should also identify staffing needs for terminal staff beyond what has been allocated based on historical budget calculations. This is to ensure there is adequate staffing to provide supervisory support and takes into consideration customer demand.

DATA MANAGEMENT

To build and maintain such a model, WSF must conduct a comprehensive review of data management practices and establish a data governance approach that includes the following:

- Establishing a data governance council and data integrity team
- Aligning data collection with institutional reporting needs
- Integrating data sources where appropriate
- Identifying and rectifying data inconsistencies
- Identifying and training data stewards from varying parts of the organization

TECHNOLOGY

To effectively model on an ongoing basis, WSF will require the appropriate technology to move it from manually pulling and validating reports from multiple disconnected and incompatible systems. To procure the best-fit technology, WSF should stand up a cross-functional task force to oversee the documentation of business and system requirements and research of technology vendors. WSF should consider utilizing outsourced resources or Washington State Department of Transportation (WSDOT) technology resources if internal resources don't have the capacity or the competencies to do this work.

In the past, funds were allocated before technology was selected, and the funding was inadequate for the appropriate solution. To ensure this effort is successful, gather business requirements and explore technology solutions before allocating budgetary funds. An adequate budget must be earmarked to procure technology that will fully meet WSF's operational needs, which are more complex than the WSDOT at large.

Collective Bargaining Impact

WSF has experience consulting and including labor partners in decisions when needed for technology procurement. There is the potential that this may complicate contracts and require some changes to existing CBAs for full implementation.

ADMINISTRATIVE CAPACITY

WSF will also need to identify, develop, or hire administrative staff with the requisite skills and competencies to support the new staffing model and technology. In the near term, WSF will need staff dedicated to implementing the technology and modeling, such as IT project management and change management support. A data analyst, data modeler, or similar position may help manage and operationalize the new staffing model

across the organization. A long-term staffing plan must include positions with the necessary skills and dedicated time to use and maintain the technology, such as systems analysts.

Collective Bargaining Impact

Building skills competencies to support new staffing modeling has no identified impact on CBAs.

IMPLEMENTATION

Implementing the systems necessary to model workforce needs on an ongoing basis will require a change management strategy and communications plan. The strategy and plan will ensure that the systems are effectively integrated into the organization and do not exacerbate the current cultural issues in WSF.

First, WSF must conduct an audience and impact analysis to understand the impacts throughout the organization. Based on this analysis, WSF can develop a change management strategy to ensure readiness and adoption for all changes.

Alongside the strategy, WSF must create a communications plan to keep all interested parties informed of changes throughout the implementation. Keeping labor partners, crew members, and administrative staff fully informed and maintaining open communication channels so these parties can inform leadership of potential challenges is essential to change management. Informing ferry patrons and the public is crucial for restoring confidence in the organization that has been damaged in recent years.

Finally, WSF must determine a learning strategy and plan for ensuring all staff is trained on new systems and processes. This final step is critical to ensure that the WSF effectively uses the new technology and bases the staffing model on accurate data. Without accurate data, the model will become obsolete and ineffective and may lead to an overreliance on overtime and inadequate succession planning.

Collective Bargaining Impact

The training required to implement the new staff modeling effectively, such as learning new technology, will need to be considered and integrated into the CBAs.

Career Advancement & Retention

To ensure an adequate number of crew members at each stage of the career pipeline, WSF must implement structural supports to improve culture, retain staff, and move crew along WSF career pathways. This will require a multifaceted employee engagement and retention strategy and plan. This strategy and plan will include the following:

- Performance management and career development programs
- Compensation analysis for the engine room
- Diversity and inclusion plan

CAREER DEVELOPMENT

Employees indicated that they do not have reliable relationships with supervisors and are not given feedback when they do well or how to improve. This contributes to high entry-level turnover and limits tenured employees' career progression. We recommend that WSF create a more structured career development process, including a performance management process compatible with CBAs for all roles within the deck, engine, and terminal aimed at developing employees and advancing their career goals. This process should not supplant the seniority system but augment it and ensure that WSF is developing its workforce.

Performance Management

This process should include a single point of contact for all deck and engine crew. This point of contact will serve as a mentor and supervisor beyond the leadership on the vessel.

The process must ensure that leaders are accountable for performance management consistent with the newly outlined process. For example, it must include training for managers on how to effectively conduct the performance management process and provide feedback on performance throughout the year. It may also incorporate more informal check-in and feedback sessions.

Career Development

The performance management processes facilitate WSF creating a more robust career ladder and employee growth opportunities. Relationships with supervisors and managers through which employees receive regular and actionable feedback and can access information about opportunities help build the pipeline. These relationships can also ensure that WSF training and WSF-supported training is aligned with staff needs and ambitions, USCG requirements, and WSF operational needs. An example is WSF's pilot AB to Mate program that aims to provide an effective route to move from unlicensed deck to captain.

Collective Bargaining Impact

This recommendation has the most potential impact on CBAs. WSF does not currently have a performance management process for these positions, and all career advancement is based on seniority and rank. A core question for labor partners is how a new performance management process would evaluate performance while prioritizing seniority and rank. Additionally, a formalized performance management process will create additional responsibilities that need to be accounted for in compensation.

However, there are key opportunities to implement its use. As mentioned above, performance management can help identify and support ABs who are interested and strong candidates for the AB to Mate program. It can also improve transparency when mates are eligible to move into a captain position. Currently, the International Organization of Masters, Mates, and Pilots (MMP) union reviews mates eligible for this promotion to ensure the candidate is prepared to take on the role of captain.

Finally, focusing performance management on development offers a mechanism to identify and remedy skill gaps. For example, in addition to their technical tasks, Chief Engineers and Captains are managers. Captains, in particular, are responsible for all crew on the vessel. However, they have limited leadership training, which is

particularly important for managing an increasingly diverse crew and ensuring they are prepared to create an inclusive workplace environment onboard the vessel.

COMPENSATION

The particularly acute shortage of engine room crew within WSF and the global labor force requires WSF address compensation concerns by conducting a formal compensation analysis for the engine room. As part of the compensation analysis, WSF should revisit its compensation strategy and philosophy to ensure that they are aligned with the organization's strategic goals. An effective market analysis should be conducted to ensure a competitive compensation structure, including comparisons to peer organizations and national, regional, and local markets. WSF will need a comprehensive communication and change management strategy to support the effort. There is a dedicated WSDOT Human Resources team doing an audit. A third-party vendor should be considered to help facilitate this process to ensure adequate, dedicated expertise committed to a full analysis.

Collective Bargaining Impact

There are no concerns about impacts on the MEBA CBA.

DIVERSITY, EQUITY, AND INCLUSION

Finally, a formal Diversity, Equity, and Inclusion (DEI) strategy must be central to WSF's employee advancement and retention efforts. Employees must see that WSF is investing in their growth. This strategy should identify the approach WSF is taking to ensure a diverse and inclusive workplace and should include the following:

- Specific goals and objectives WSF would like to achieve through its diversity and inclusion efforts.
- An inventory and outline of all the current diversity and equity programs and practices with their intended outcomes for the organization.
- Articulation of how the diversity, equity, and inclusion strategy will intersect with other key areas for the organization, such as recruiting and retention, succession planning, employer branding, and other areas.
- Training and development that should take place to support the diversity, equity, and inclusion strategy.
- Key performance indicators for ensuring the programs and practices have their intended effect on culture. These indicators should be aligned with the climate and engagement survey.

WSF's DEI planning must work within the Washington State Equity Office's framework and WSDOT's DEI goal, and they will have two full-time staff members dedicated to this work. However, WSF should consider contracting with a third party to facilitate the planning. A third party with specific knowledge skillsets will have the independence, latitude, and authority to make assessments and recommendations that may be difficult for staff.

Collective Bargaining Impact

There are no impacts on the CBAs related exclusively to the DEI strategy.

Succession Planning and Knowledge Transfer

Closely related to career advancement and retention is succession planning. WSF faces the loss of a significant amount of experience in the coming years as the existing workforce ages out. With that experience is a great deal of institutional knowledge, which WSF will lose if it does not implement a succession plan and knowledge transfer approach. We recommend that WSF adopt a formal succession model for leadership roles (e.g., Captains, Chief Engineers, Terminal Supervisors), such as the nine-box grid model.

SUCCESSION PLANNING

The nine-box grid is most commonly used in succession planning to evaluate an organization's talent and identify potential leaders. As outlined in Figure 7, the vertical columns of the grid indicate growth potential, and the horizontal rows identify whether the employee is currently below, meeting, or exceeding performance expectations. The intersection of the two determines the employee's current standing and where development may be needed.

When leadership performance and potential are assessed and plotted on the graph, individuals in the upper right quadrant (Box 3) are high-potential candidates for succession. They should be ready for leadership within six months to a year. Those in boxes 2, 3, or 6 have a longer timeline but can be groomed for eventual movement to box 3. Those in the lower left quadrant (Box 7) may need to be reassigned or targeted for additional training.

The boxes on the grid indicate where investment needs to be made to develop future leaders. This process should develop a robust leadership development program for the senior and mid-level crew. This program should include the following:

- Revised performance management approaches to enhance feedback mechanisms for managers and leaders.
- Formal mentoring, shadowing, or job rotation programs for critical leadership roles
- Structured leadership training/development experiences
- Cross-functional committees and teams to build leadership skills and culture
- Appropriate resources to support the design, implementation, and maintenance of the succession planning effort

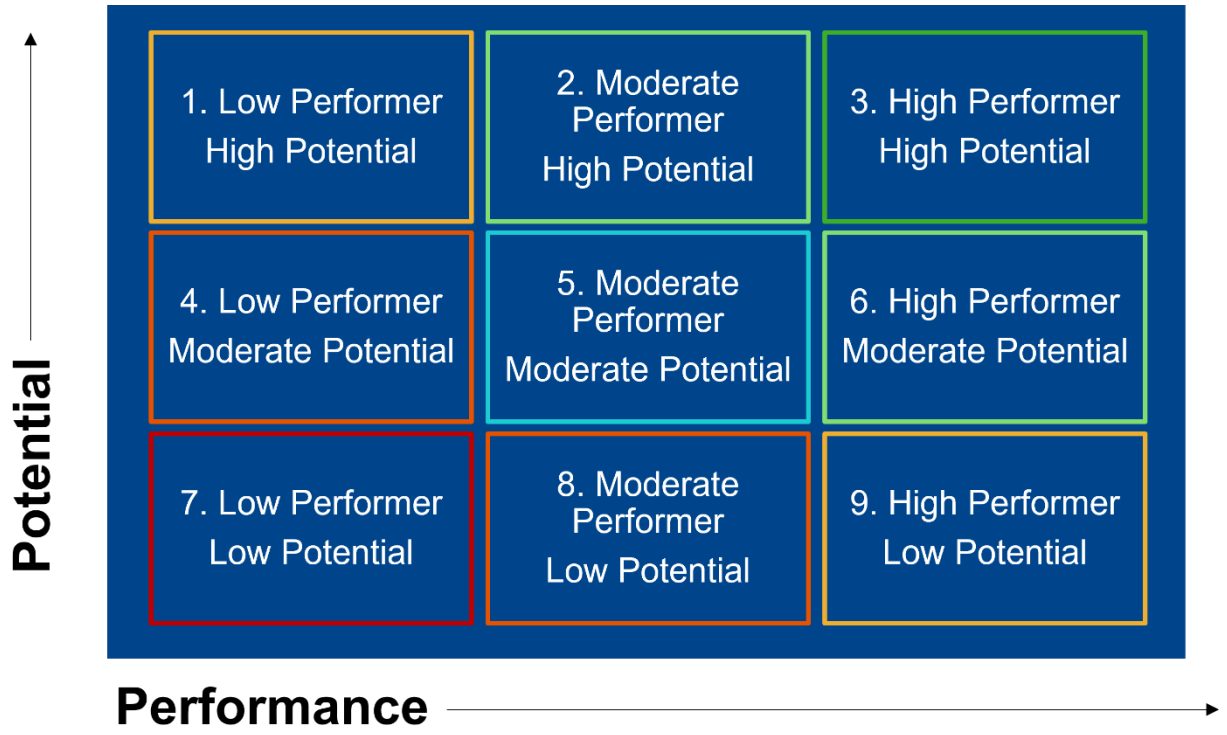

Figure 7. Nine-box Succession Planning Model

We recommend assembling three working groups for cases where a nine-box model may be challenging to implement,[*****] one each for deck, engine, and terminal succession to help design a broader succession framework. We recommend considering the following components:

- Develop approaches and tools for identifying critical skills and competencies and high potential or high-performing individuals that could fill at-risk positions.
- Establish clear and consistent job profiles and link them to core competencies.
- Determine the key success factors for various roles.
- Establish a mechanism and tool for gathering and storing/creating an inventory of the required knowledge, skills, abilities, and attributes for roles.
- Assess the abilities and career interests of employees.
- Conduct gap analyses for deck, engine, and terminal roles to inform recruiting and training strategies.
- Identify training and development priorities and needs, and revise programs accordingly.
- Determine criteria and processes for evaluating internal talent pools and whether an external search is needed.
- Establish internal mentoring and rotational programs to develop talent as appropriate.

[*****] The broader deck, engine, and terminal roles, particularly in a unionized environment where hiring and promotions are more regulated.

- Consider DEI objectives in the succession strategy.

KNOWLEDGE TRANSFER

Developing processes and identifying individuals within WSF to fill newly vacated positions must be augmented by a formal approach for knowledge transfer for leadership and critical or hard-to-fill roles. We recommended creating a process and tool for conducting an inventory of critical skills, competencies, and required experience for key roles and those roles' core tasks. Based on that inventory, WSF can then develop strategies and programs to support the transfer of critical skills and knowledge to successors, which may include:

- Mentoring (formal or informal) and apprentice programs
- Establishing work shadowing programs
- Guided experience program that features those with first-hand knowledge providing hands-on training to successors
- Cross-training initiatives
- Establishing communities of practice programs of collaborative learning groups that allow employees to meet and broadly share knowledge with groups over a longer period (can be supported by technology or digital platforms)
- Communication of "Best Practices"
- Leveraging e-learning and instructor-led training

So that this effort is not a one-off but has ongoing use and relevance, WSF must identify tools and technology to house inventory and monitor and track skills needs and gaps on an ongoing basis. This effort should include metrics to benchmark progress and success. It should align with the impacts of any potential turnover (i.e., the highest priority given potential knowledge loss that will have the most significant operational impact).

COLLECTIVE BARGAINING IMPACT

Because succession planning is closely connected to performance management, their impact on collective bargaining is similar. CBAs tightly control what performance issues can be used to dismiss someone from WSF employment and require that seniority and rank rather than performance or potential determine who is next in line for advancement. However, there is potential to use performance management to identify existing crew members to encourage or support through programs like the AB to Mate program or other leadership training so they have the licensure necessary to fill newly open vacancies.

Regarding the knowledge transfer planning, CBAs will require any additional work required to create or maintain the inventory of skills and competencies be accounted for in the compensation. The time required to implement the knowledge transfer program to build resiliency within the organization will also need to be incorporated into the staffing model.

Recruitment & Hiring

In addition to improving retention, to place WSF on a path to a sustainable workforce that can provide reliable, timely services, WSF must also enhance talent acquisition. This recommendation has three components: articulating the Employee Value Proposition (EVP), developing a strategic recruiting and sourcing plan, and allocating additional resources to talent acquisition.

EMPLOYEE VALUE PROPOSITION AND EMPLOYER OF CHOICE INITIATIVE

The first component, creating a strong and compelling employer brand and articulating an Employee Value Proposition (EVP) for current and prospective employees, aligns with WSDOT's goal of being an employer of choice. To do this, WSF must assess the current state of the employer brand, both internally and externally. This assessment must include examining all new employee and recruiting processes, interactions, and branding materials.

We recommend that WSF establish focus groups among deck, engine, and terminal employees to define what employees value and what WSF should include in the EVP. From this work, WSF can develop a specific statement, articulate the employee value proposition, and create a strategy and implementation plan to ensure the employee value proposition is consistent throughout all parts of the organization and during the recruiting experience.

In addition to creating an employee value proposition, WSF should consider launching a formal employer-of-choice initiative to bolster recruiting efforts with specific goals for achieving employer-of-choice status. This initiative must include a targeted plan with supporting resources for achieving and maintaining employer-of-choice status.

STRATEGIC RECRUITING PLAN

Once WSF articulates the EVP, it can develop a strategic recruiting and sourcing plan. This plan may include opportunities to:

- Evolve from a reactive recruiting model that fills vacancies as they occur to a proactive recruiting model that builds a solid workforce that can absorb and adapt to disruptions.
- Create formal talent pipelines for high-demand roles. This plan should focus on developing targeted networks and recruiting for positions with high turnover and high retirement rates, such as Captains and Chief Engineers.
- Work with labor partners, specifically MEBA,[†††††] to align recruiting efforts.
- Determine an appropriate balance between internal and external candidates for future recruiting needs.
- Incorporate internal development programs and career paths.

[†††††] MEBA continues to recruit Assistant Engineers while all other recruiting and hiring have moved from the unions to WSF.

- Continue to advance and evolve the new mate training and experienced mariners pilot program.
- Establish formal partnerships with community organizations, businesses, and maritime academies, as potential candidate sources.
- Consider internship and apprentice programs that support internal recruiting and staffing needs.
- Host networking and educational events and activities within the local community to showcase WSF as an employer.
- Leverage/expand social media recruiting and employer brand promotion (e.g., LinkedIn, Glassdoor, Facebook).
- Consider establishing an employee referral program.
- Incorporate appropriate elements of the employer brand into role descriptions and job announcements.
- Create targeted branding campaigns outlining the benefits of a career at WSF versus a maritime role that requires travel for extensive periods.
- Provide an opportunity for experienced mariners with licenses to move into captain positions swiftly.

TALENT ACQUISITION RESOURCES

To implement the strategic recruiting plan with the EVP, WSF will need additional talent acquisition resources. Additional human resources staff will enable WSF to reach a broader pool of candidates and make the time-to-hire faster. Ensuring these individuals have the skills and competencies in strategic recruiting, talent acquisition, and strengths in working with communities historically excluded from such career opportunities is essential.

COLLECTIVE BARGAINING IMPACT

The recommendation for developing the employee value proposition, a strategic recruiting plan, or additional talent acquisition resources has no anticipated impact on the CBAs.

Cultural Issues

To develop a strong EVP and create an inclusive workplace atmosphere, WSF must address long-standing cultural issues. We recommend conducting an engagement survey and in-depth cultural assessment as the first step. WSF should build an action plan based on the engagement survey and cultural assessment to remediate cultural concerns.

There is concern that employees are experiencing survey fatigue. Thus, this process must be transparent, and there be action directly tied to the feedback given via survey. Based on the survey and assessment, there should be a formal process for confirming priorities and areas of focus. Based on those confirmed priorities, WSF should develop approaches for addressing organization-wide issues and opportunities that surfaced in the survey. WSF leadership should engage leaders and staff through working groups and other forums to develop

targeted plans and initiatives to address survey results and improve employee engagement. These efforts should align with the EVP and employer branding efforts.

This process should not be a one-off event. Instead, a regular schedule and cadence for conducting follow-up surveys should be established. Adequate resources must be allocated to ensure that all employees have a meaningful opportunity to participate in the survey and that management and leadership have the opportunity to act on feedback.

COLLECTIVE BARGAINING IMPACT

The recommendation for regular and meaningful engagement surveys and cultural assessment has no anticipated impact on the CBAs.

PRIORITIZED IMPLEMENTATION ROADMAP

To facilitate the implementation of these recommendations, the project team, in collaboration with WSF leadership, has developed a detailed implementation plan. The complete implementation (Appendix D) plan has been provided to the JTC and WSF as a separate document. Below is the overview of the three implementation phases.

Phase 1: Build a Foundation for the Plan

In phase 1, WSF must develop and allocate a budget and create a short-term staffing plan to address staffing shortages. In this budget, WSF should:

- Continue to offer on-call staff stable hours
- Continue to utilize the staffing model to forecast workforce needs
- Determine operational staffing needs for deck and engine
- Conduct a comprehensive review of WSF data management practices and establish a data governance approach
- Develop an employee engagement and retention strategy and plan
- Add more talent acquisition staff

WSF has already begun a number of the specific elements of Phase 1. However, they do not have the necessary administrative capacity to complete this phase without additional support. Some of this may be available through WSDOT. Other elements may best be supported by consultants. Finally, it will require dedicated, additional WSF staff capacity. Specifically, WSF will need dedicated project management personnel and talent acquisition.

Phase 2: Evolve the Plan

In Phase 2, WSF will start putting into place the structural elements of the plan. One of the critical elements of this phase will be to procure technology to support the staffing model and identify or hire personnel with the requisite skills and competencies to support the new staffing model and technology.

This phase will also focus on creating the employer brand and articulating the Employee Value Proposition (EVP). The brand and EVP will be instrumental in the strategic recruiting and sourcing plan.

The final focus of Phase 2 is succession planning. First, WSF should establish succession planning for leaders and then more broadly throughout the organization. In conjunction with this, the knowledge transfer plan and work will take shape.

Phase 3: Implement Sustainable Workforce Strategies

The final phase of this implementation plan is to integrate it organization-wide. Central to this phase is creating a change management strategy and communications plan to support the staffing model and technology.

It is crucial that existing WSF employees be well-informed and prepared for these changes to prevent any unnecessary turnover and subsequent loss of experience and knowledge. Employee buy-in is also central to the implementation of the EVP and strategic recruiting and sourcing plan.

Finally, WSF will deploy knowledge transfer in Phase 3. If done well, knowledge transfer not only preserves institutional knowledge but highlights and affirms employees' value to the organization and supports their engagement.

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LIST OF ACRONYMS

A

Able Sailor
AB or Senior Deckhand 14

B

Black, Indigenous, and other People of Color
BIPOC 16

C

Collective Bargaining Agreements
CBAs 9

D

Diversity, Equity, and Inclusion
DEI 29

I

International Organization of Masters, Mates, and Pilots
MM&P 28

J

Joint Transportation Committee
JTC 9

M

Marine Engineers' Beneficial Association
MEBA 29
Marine Engineers Benefit Association

O

T

U

W

APPENDIX A

Project Team

Seattle Jobs Initiative	Segal	Emsi-Burning Glass
Ryan Davis **Executive Director** 206.307.1535 rdavis@seattlejobsinit.com	**Scott Nostaja** **Senior Vice President** Organizational Effectiveness 716.462.9797 snostaja@segalco.com	**Dustin Lester** **VP of Consulting** **Community Insights** 513.828.7472 dustin.lester@emsibg.com
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	Rebecca Robb **Senior Associate** Organizational Effectiveness 646.499.1396 rrobb@segalco.com	

APPENDIX B

Working Group

Last Name	First Name	Affiliation
Anisman	Jenifer	Pacific Northwest Regional Council of Carpenters Shipwrights
Catterson	Dave	Washington State Legislature
Crawford	Jane	Washington State Ferries
Forty	Jenna	Washington State Legislature
Griffith	Reema	Transportation Commission
Halbert	Aaron	Transportation Commission
Hansen	Erik	OFM
Lamphere	Todd	Washington State Ferries
MacIntosh	Nicole	Washington State Ferries
Mast	Terri	IBU
Masterson	Danny	Senate Transportation Committee
Monroe	Kim	Washington State Department of Transportation
Morrison	Rachel	Washington State Ferries
Neal	Paul	Washington State Legislature
Nevey	Steve	Washington State Ferries
Redfield	Beth	House Transportation Committee
Rubstello	Patty	Washington State Ferries
Servais	Austin (Ozzy)	Washington State Ferries
Singer	Rick	Washington State Ferries
Thompson	Harry	IBEW 46
Twohig	Dan	MM&P
Vezina	John	Washington State Ferries
Winge	Eric	MEBA
West	Tiff	OFM
Quam	Dana	House Republican Caucus
McCarty	Hannah	Senate Democratic Caucus
Othón	Loren	House Democratic Caucus
Presley	Martin	Senate Republican Caucus

APPENDIX C

Staffing Model

A supplemental staffing model was also created as part of this engagement. This deliverable is a dynamic tool created in Excel that draws on several data sources to provide insights into the number of recommended staff needed to fully operate the vessels and terminals, accounting for employee turnover and forecasted retirements. The model allows for variable inputs such as the percentage of overtime offered to employees and weighted labor rates. These changes will ultimately affect the suggested high and low number of additional crew members and the associated costs and savings.

The model provided to the JTC and WSF is the baseline model. It indicated the number of vessel crew necessary to allow WSF to restore the 2019 sailing schedule with the USCG minimum crewing requirements, given WSF's current training schedule and recent leave (planned and unplanned absences) data.

This staffing model does not fully integrate the recommendations above, including knowledge and succession planning and other components that will vessel crew time and thus demand additional staffing. It also does not address whether the USCG is the correct crewing level. It does not incorporate these elements because these changes depend on decisions and negotiations that have not yet occurred.

APPENDIX D

Implementation Plan

The project team developed a prioritized list of action items based on the recommendations and assigned each item a suggested start and end date. The team worked with WSF leadership to identify the following:

- Items that WSF has already started or completed
- Who is responsible for the action item
- Who should be consulted for the action item
- Estimated time to implement, cost to implement, and complexity
- Make note of any dependencies

The complete implementation plan has been provided to the JTC and WSF as an Excel document to track the progress implementing recommendations.

APPENDIX E

Interview List

Last Name	First Name	Role
Churchwell	Brian	IT Assistant Director
Cirkovich	Stephanie	Director of Community Services & Planning
Crawford	Jane	Training & Credentialing Manager
Dabney	Marcus	WSF IT Applications Manager
Garman	Ann	Transportation Planning Specialist 5
Hanbey	Matt	Operating Program Manager
Lathan	Dale	Director of Safety Systems
Mast	Terri	IBU
Mooney	Jay	Port Captain
Morrison	Rachel	Sr. Bid Administrator
Schweyen	Bill	Senior Port Engineer/Captain
Servais	Austin	Crew Resource Manager
Singer	Rick	Director of Finance & Administration
Sowers	David	Director of Terminal Engineering
Williamson	Alec	Project Management Engineer
Winge	Eric	MEBA

APPENDIX F

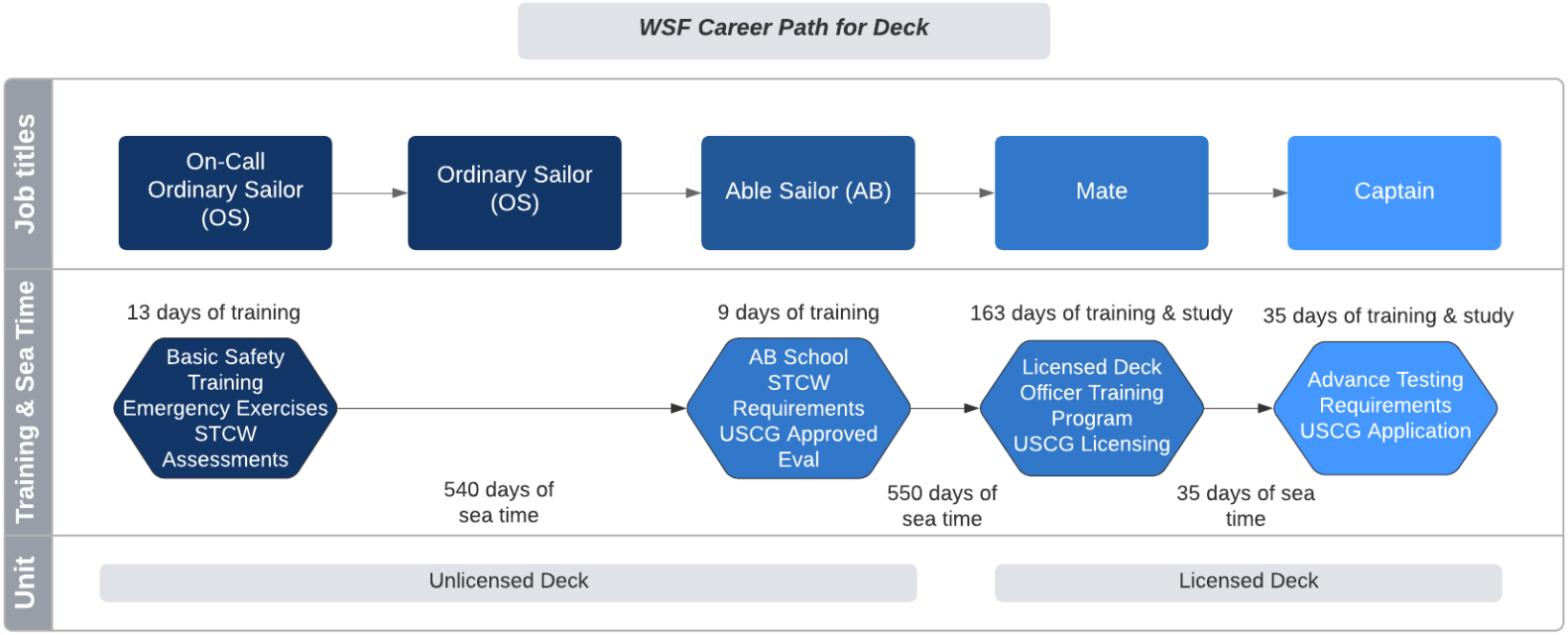
Data Biography

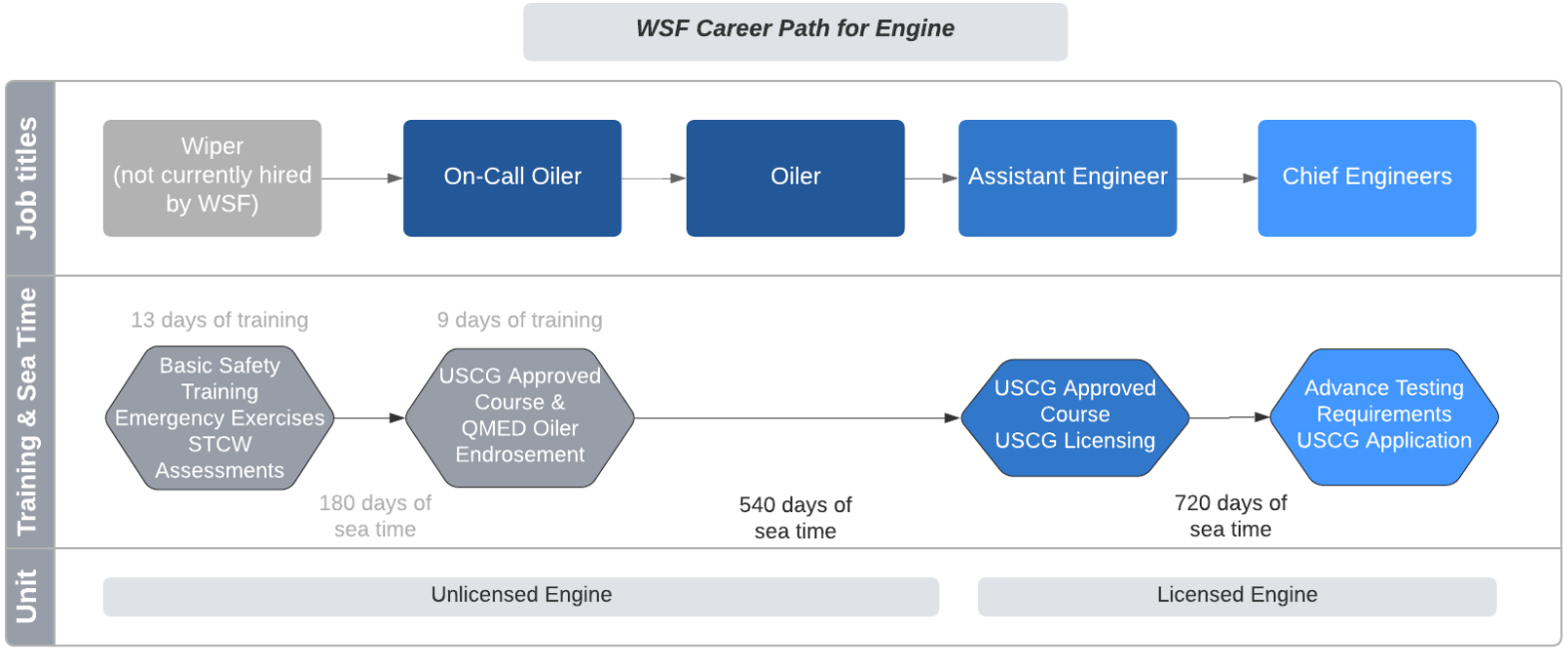
Dataset Name	Who collected the data	Who owns the data	How was the data collected	Who was included/excluded from sample	Why was the data collected
Cancellations	Built by SJI team from the WSDOT Graybook	SJI	WSDOT published Graybook	All reported cancellations by quarter (quarter is annual, not state fiscal)	Assess impact of crewing shortage on cancelations
May 8 - May 21 Headcount by position by day	WSF Budget & Policy	WSF	WSF Budget & Policy, 5/8-5/21/2022	Position head count s5/8-5/21/2022	
Separations due to Covid	Raw HR data & sheets of processed data	WSF	HR records	All job changes FY2019-FY2021	Separations by reason
vessel_crew_requirements	raw USCG-required crewing spreadsheet and vessel schedules	WSF	WSF operations maintained vessel crewing spreadsheet	crewing requirements by vessel class, passenger, and car capacity	To calculate, based on USCG required minimums, how many people WSF should employ
Work Orders	Codebook for work orders	WSF	List of work assignment locations		
WSF Leave Taken Request - 20220603	WSF Payroll	WSF	WSF Payroll, 3/2021-6/2022		

Dataset Name	Who collected the data	Who owns the data	How was the data collected	Who was included/excluded from sample	Why was the data collected
WSF_leave_complete	WSF Payroll	WSF	WSF Payroll records, 2006-2011, 2018-2020	All leave and payroll for operational positions	To calculate the relationship between leave and OT
JTC_20220601 - census	WSF HR	WSF	Employee census - HR records	Operational positions only	Headcount and tenure by position
JTC_20220601 - separations	WSF HR	WSF	Employee census - HR records	FY2017-present	Separations by reason
FY 2023 Labor Rates	WSF Budget	WSF	Weighted rates for each position based on WSF's payroll	FY2023	Cost/savings for expanding staffing
Crew Resource Demand per Work Cycle	WSF HR	WSF	Number of each position needed over a 2-week period	FY2020-FY2022	Minimum staffing per vessel position

APPENDIX G

Career Advancement and Retention




WSF Career Path for Engine
Job titles
Wiper (not currently hired by WSF)
On-Call Oiler
Oiler
Assistant Engineer
Chief Engineers
Training & Sea Time
13 days of training
9 days of training
Basic Safety Training Emergency Exercises STCW Assessments
USCG Approved Course & QMED Oiler Endrosement
USCG Approved Course USCG Licensing
Advance Testing Requirements USCG Application
180 days of sea time
540 days of sea time
720 days of sea time
Unit
Unlicensed Engine
Licensed Engine

APPENDIX H

Median Wages Fiscal Year 2019

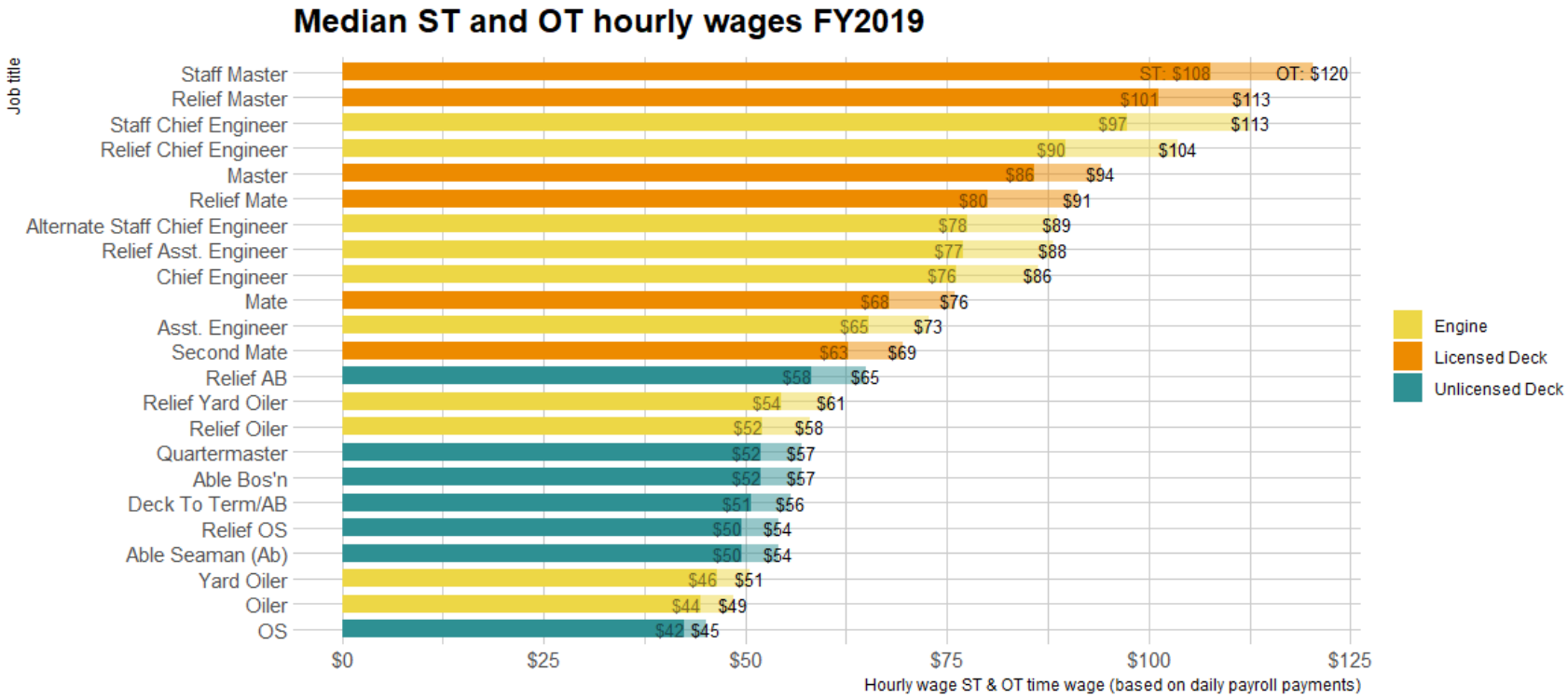


Figure 8. Median Hourly Wages by Position, Fiscal Year 2019

Washington State Ferries

Short-Term Strategies for Overtime Reduction

Seattle Jobs Initiative
Segal
Emsi Burning Glass

December 2021

Prepared for the Washington State Legislature Joint Transportation Committee

Executive Summary

The Joint Transportation Committee (JTC) issued a request for proposals in the summer of 2021 to identify short-term strategies to reduce Washington State Ferries' (WSF) use of overtime (December 2021) and develop a full workforce plan (December 2022). This report fulfills the first of those requirements.

Short-Term Overtime Cost Savings Report

Overtime costs consistently increased between Fiscal Year 2013 and Fiscal Year 2019, from $5.4 to $11.3 million in nominal value (or between $8.1 and $12.1 million in dollars adjusted for inflation using the Seattle-Tacoma-Bellevue area's November 2021 consumer price index). Overtime dipped in Fiscal Year 2020 due to the considerable reduction in the sailing schedule in the early months of Covid-19. However, it rebounded almost to pre-pandemic levels in Fiscal Year 2021 despite extending the winter sailing schedule on several routes.

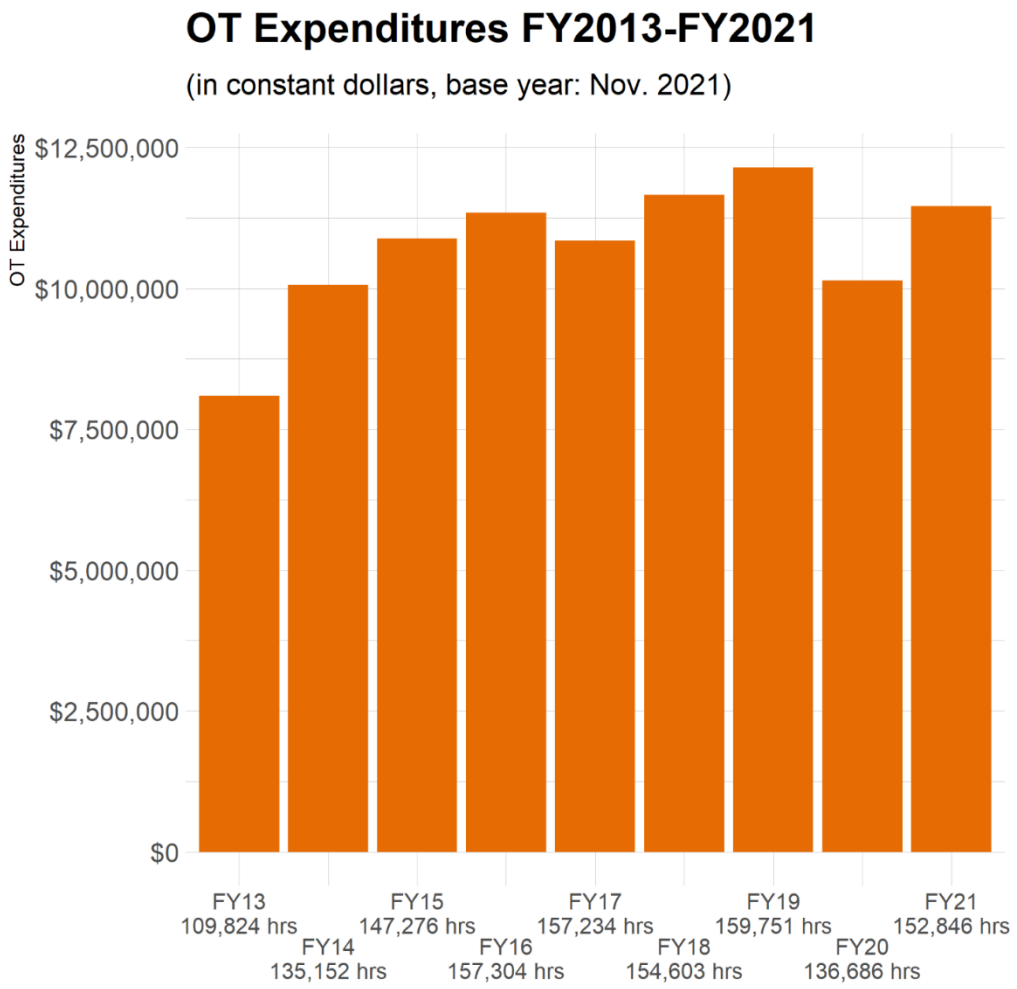


Figure 1. WSF Overtime Expenditures, FY13 to FY21

At the same time, the number of cancellations overall due to inadequate crewing rose sharply, indicating that there are too few crew members available to crew scheduled sailing.

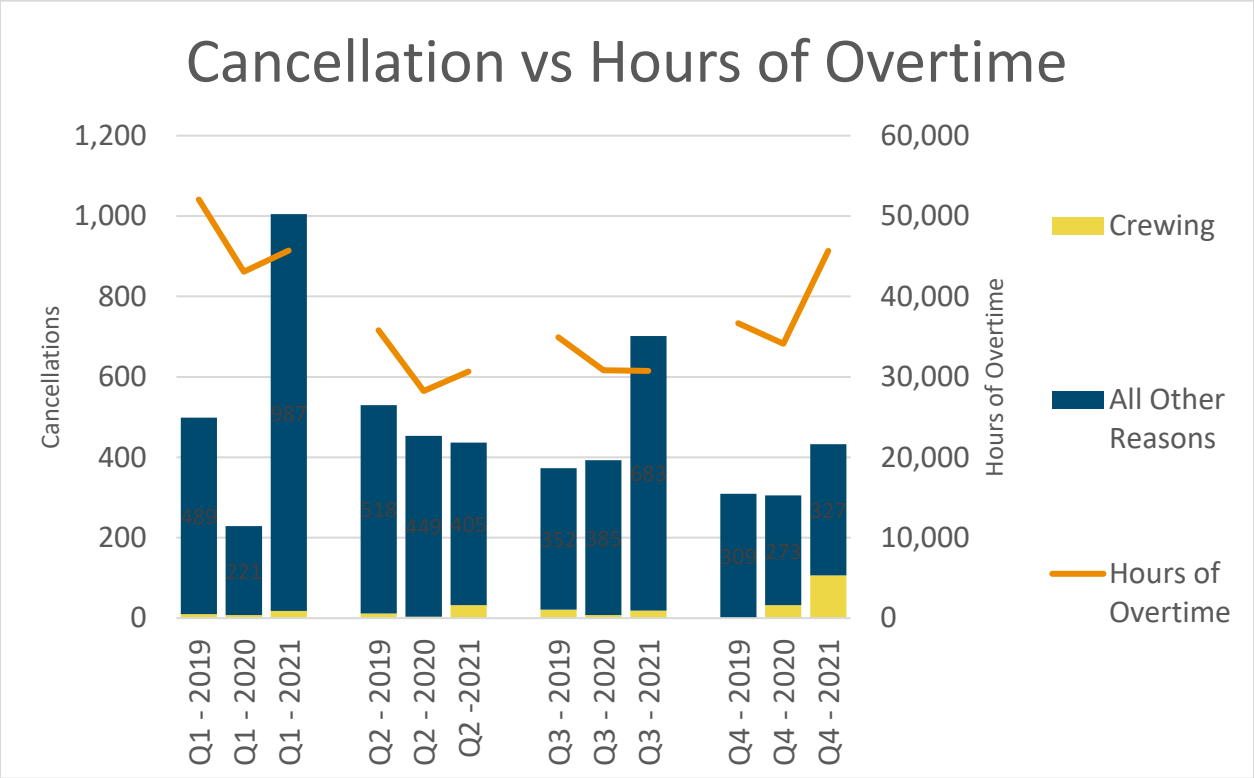


Figure 2. WSF Cancellations vs Hours of Overtime by Quarter, FY19 to FY21

Changing Conditions

The Legislature enacted the requirement for a report on short-term overtime savings strategies in May of 2021. Ferry staffing has changed dramatically in the intervening seven months. Impacts of the Covid-19 pandemic got worse instead of better, exacerbating challenges from long-simmering staffing issues and a tight labor market. These challenges have forced WSF to take the unprecedented step of system-wide service reductions.

Accordingly, the most pressing issue facing WSF as of this writing is restoring baseline service as soon as practicable. Because of the staffing restraints, that restoration will require overtime. This means the overtime cost reduction strategies contemplated in the Legislature's proviso cannot be evaluated, let alone implemented, until WSF can restore reliable service on the regular schedule.

Although the current climate leaves us unable to recommend **short-term** overtime reduction strategies, we have been focusing on the overtime issue as part of the system-wide evaluation and recommendations due in December 2022. This report includes findings on systemic overtime issues that will be addressed in the December 2022 report.

Successful strategies, both short and long term, will enhance WSF's resiliency which is the capacity to absorb, adapt, and recover from shocks and maintain equitable access during shocks. These strategies will

likely recommend additional investment in the ferry system. Still, they will evaluate and balance WSF's need to operate efficiently with its role as critical transportation infrastructure, providing reliable service in the face of changing conditions and serving as a significant employer in the Washington maritime industry.

Summary of Findings

The project team undertook an analysis of WSF human resources, payroll, and service data and completed a series of interviews and focus groups with WSF crew and staff to provide additional insight into the quantitative analysis. The primary findings are:

- There is no buffer to cover unscheduled absences, both typical, pre-pandemic sick and disability leave and the more acute Covid-19 related leave.
- All Deck and Engine crew are hired as on-call Ordinary Sailors or Oilers. The volatile hours and pay make on-call positions unattractive to potential applicants and inaccessible to many.
- Operations seasonality means there is a sharp reduction in hours for on-call employees. The variable income is untenable for many, particularly as they are still expected to fill any shift on short notice.
- Employees remain in on-call positions until a permanent position opens, typically long after they have exited the probationary period, often years.
- The complex licensure and training requirements limit the supply of experienced crew (e.g., Captains, Mates, and Engineers)

The report presents a preliminary crewing model that quantifies the number of employees in each division (Unlicensed and Licensed Deck, Engine, Terminals, and Eagle Harbor) that would cover all schedule sailings and earned time off minimizing staffing overtime costs. Estimates of minimum crew indicate that all crew positions are understaffed for the low seasons except Captains when relief staff is included. However, more permanent Captain positions are needed to meet minimum sailing when the additional demands are factored in. **No positions are adequately staffed to cover training and administrative duties or provide the coverage needed for critical transportation infrastructure**. There is a critical shortage of Engine Room crew, which is required around the clock for all vessels.

The project team will more fully develop this model in the coming year, relying on a framework that balances cost efficiency, service reliability, and resiliency. In addition, the project team will work with the Working Group to develop a comprehensive work plan based on the following analysis of administrative data, additional analysis as needed, and a comprehensive set of interviews with the WSF crew and staff.

While the short-term horizon contemplated in the proviso, i.e., recommendations that can be implemented before the full report in December 2022, has been overtaken by events, there are near-term steps available to set the stage for the long-term workforce plan. These are:

- Leverage local workforce development boards and workforce development organizations to reach new pools of applicants who are unaware of the opportunity for stable, meaningful employment at WSF.

- Redesign job posting wording and reach, emphasizing the potential for career advancement and skills development within WSF and avoiding gender- and racially-coded language and other language well-established to discourage nontraditional applicants.
- Fund TWIC, MMC, and other credentials required to apply to WSF to reduce barriers for low-income applicants
- Expand training to include swimming to expand the number of applicants
- Increase core crewing levels beyond USCG minimums.

Contents

List of Figures

List of Tables

Acknowledgments

Many thanks to the WSF leadership and Human Resources, Budget, and Operations staff for supplying the necessary administrative data and supporting human resources and payroll data analysis. Thank you to the dispatch staff and vessel crew for sharing their insights. Finally, thank you to the Working Group (see Appendix G) for their feedback and insights.

Abbreviations

BIPOC	Black, Indigenous, and Other People of Color
CBA	Collective Bargaining Agreement
FTE	Full-Time Equivalent
JTC	Joint Transportation Committee
MITGS	Maritime Institute of Technology and Graduate Studies
MMC	Merchant Mariner Credential
TWIC	Transportation Worker Identification Credential
STCW	Standards of Training, Certification, and Watchkeeping for Seafarers
USCG	United States Coast Guard
WSDOT	Washington Department of Transportation
WSF	Washington State Ferries

Introduction

The Joint Transportation Committee (JTC) of the Washington State Legislature contracted with Seattle Jobs Initiative and two project partners, Segal, and Emsi Burning Glass, to develop a workforce plan for Washington State Ferries (WSF). This project has two phases: initial short-term strategies and a long-term workforce plan. To guide the recommendations and strategies, the project team adopted the following definitions of these timeframes:

- Short-term: strategies to improve existing workforce capacity to be implemented in 2022 before completing the complete workforce plan. WSF can implement these strategies with limited legislation changes and little or no changes to collective bargaining agreements.
- Long-term: strategies that are not constrained by existing workforce capacity. These strategies may require legislation and changes to collective bargaining agreements.

The following report is phase one, short-term strategies for reducing overtime use. The impetus is the rapid growth of WSF overtime use. Overtime hours requested by the Ferries to the Legislature have increased by 45%, from 109,687 hours in Fiscal Year 2013 to a peak of 159,285 hours in Fiscal Year 2019. As a result, the overtime budget requested also more than doubled between these years, reaching $5.8 million in 2019.

This report builds on the work of two previous reports commissioned by the Legislature, examining how overtime had changed over the years and providing broad recommendations to address the issue but without a practical implementation plan. The first report, "Washington State Ferries Overtime Analysis" by KPFF Consulting Engineers and Progressions, quantified overtime change, categorizing use by occupation and issuing preliminary recommendations.[1] The second report, "Washington State Ferries Workforce Management Analysis" by the Consulting & Development Center of the University of Washington Foster School of Business, created a financial model to compare filling vacancies with only straight time versus overtime employees but did not establish how to use overtime optimally.[2] Both reports noted the need for a workforce development plan on which SJI and its partners are currently working.

Changing Conditions

Operating and labor market conditions have changed often and rapidly throughout the pandemic. Since the Legislature issued the proviso, changes in the national and regional labor market and regulations severely impacted the goal and roadmap of this report. First, the Covid-19 pandemic exacerbated pre-existing labor shortages in the maritime labor market[3]. An estimated 3.2 million workers nationwide left the labor market between 2019 and 2021, impacting every sector of the economy.[4] Second, WSF was particularly hard hit by employees not complying with the state vaccine mandates. It lost 120 crew members or approximately 6% of its operational workforce. Not only is this nearly double the state employees' rate of 3.2%, but the losses were also concentrated in critical occupations: 20 oilers and 40 temporary assistant engineers left their positions.

The combination of these pressures has brought WSF to a crisis point. In the summer and fall of 2021, sailing cancellations rose sharply due to crew shortages.[5] It became clear that overtime served as a

stopgap for chronic labor issues, and overtime alone was no longer enough to maintain service. As a result, the priority for this report has thus shifted from identifying short-term strategies to decrease overtime spending to providing the first step in identifying what is needed to put WSF on a path to a sustainable workforce.

Framework

In partnership with Segal and Emsi Burning Glass, Seattle Jobs Initiative conducted an in-depth quantitative analysis of WSF human resources and payroll data and staff and crew interviews. The aim was first to understand why overtime had grown over the years and second what could be done to reduce it (see Appendix A for detailed Methodology).

In keeping with the Washington Department of Transportation's goal to be an employer of choice,[6] this work aims to allow WSF to:

- Provide reliable scheduled ferry service
- Increase workforce diversity
- Improve employee satisfaction
- Minimize avoidable costs

These priorities highlight the continuum and tradeoffs in balancing running cost control and resiliency. Resilient systems have the capacity that allows them to absorb or resist shocks, adapt to shocks, restore function to a pre-shock state, and maintain equitable access in the presence of shocks.[7] To some extent, resiliency capacity is redundant under normal conditions. However, it is essential to maintain service or recover to regular service when the system is disrupted or stressed. The lack of such capacity leads to operations breakdown during or after periods of stress. Efficiency and resiliency are not either-or but exist on a continuum, and where along that continuum an organization exists should be guided by how likely a disturbance is and how much tolerance there is for service disruption or organizational failure.[8]

Figure 3. The Tradeoff between Efficiency and Resiliency

Report Structure

Using data from WSF payroll and Human Resources and Dispatch, this report shows how overtime has changed throughout the years, where WSF uses it most, and why WSF is using it. Building on the previous reports, this report categorizes overtime into three categories:

1. Overtime hours outside of WSF's control, for example, medical emergencies, inclement weather.
2. Cost-effective overtime hours, cases where it is less expensive to pay a regular employee overtime than backfill with a second, often relief employee at the same or higher rate.
3. Overtime hours that WSF could avoid with different crewing levels and practices.

The report presents a preliminary crewing model that quantifies the number of employees in each division (Unlicensed and Licensed Deck, Engine, Terminals, and Eagle Harbor) that would cover all schedule sailings and earned time off minimizing staffing overtime costs. The project team will more fully develop this model, relying on a framework that optimizes cost efficiency while maximizing service reliability and ensuring resilience. The report then suggests some short-term strategies to begin to reach those levels.

Still, given the underlying labor market conditions, even worthwhile strategies are unlikely to appreciably change overtime use or the underlying staffing issues in the coming year. Long-term strategies and their implementation will be discussed in a subsequent workforce plan in December 2022.

This report is organized as follows:

1. Washington State Ferries Background
2. National and Regional Maritime Labor Market
3. Overtime Use
4. Minimal Crewing Requirements
5. Changing Conditions
6. Conclusions and Recommendations
7. Next Steps in Project

1. Washington State Ferries Background

Washington State Ferries (WSF) is the largest operating public ferry system in the United States. Created in June 1951, it provides essential transportation services to 23.4 million customers annually in the Puget Sound area.[9] Its 21-vessel fleet and 20 terminals support ten routes from Sidney, British Columbia to Point Defiance. WSF plays an essential role in the state economy, providing essential transportation to residents and tourists and freight and commercial vehicles.

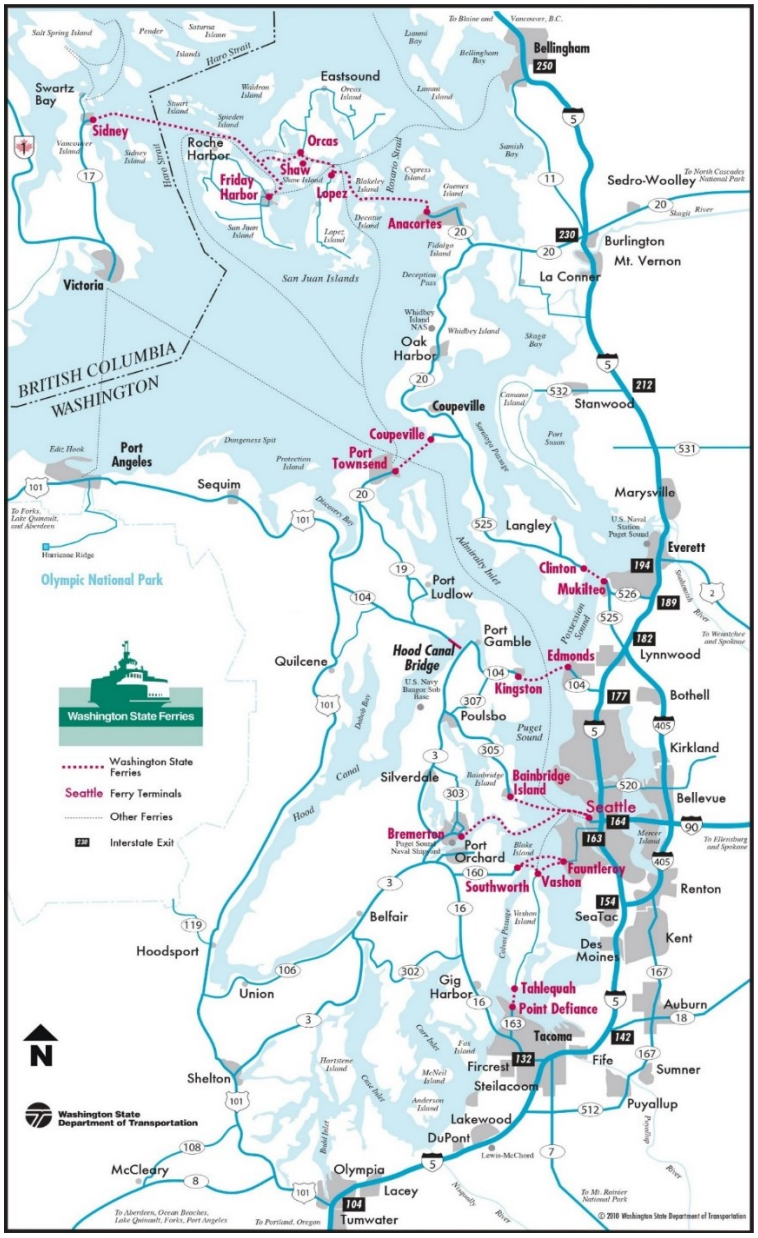


Figure 4. Washington State Ferries, Route Map, WSDOT, 2010

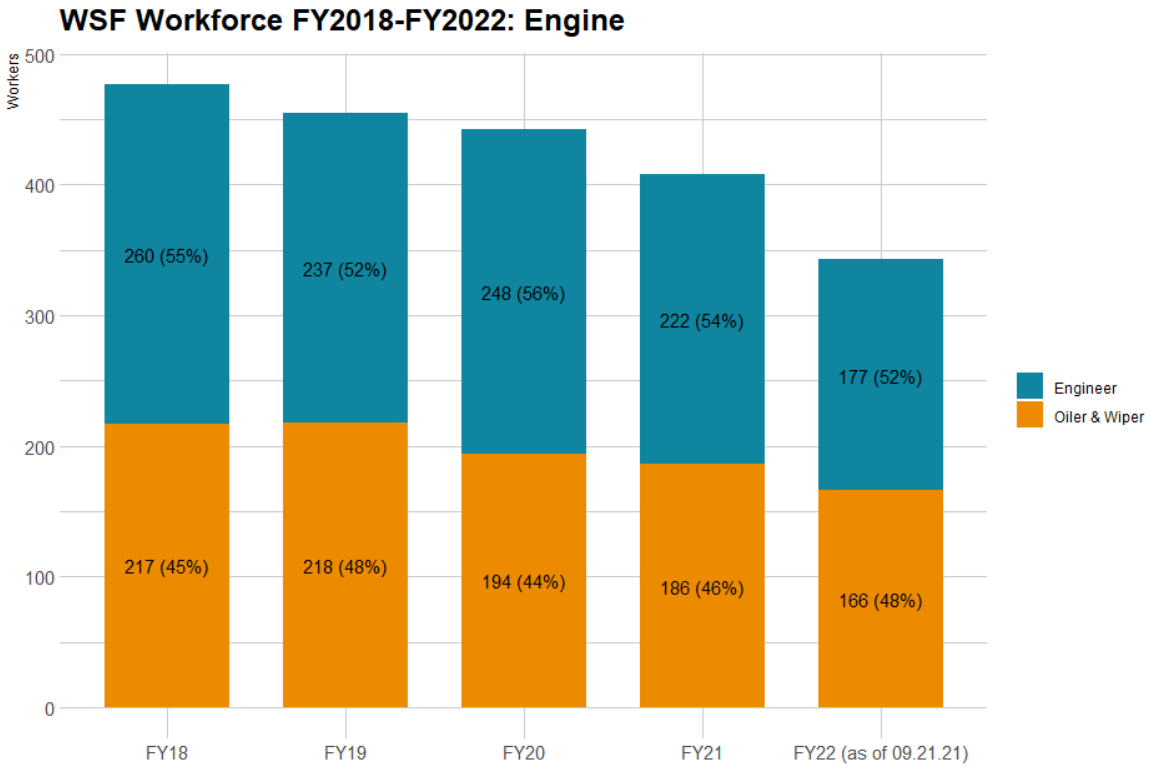
Workforce Overview

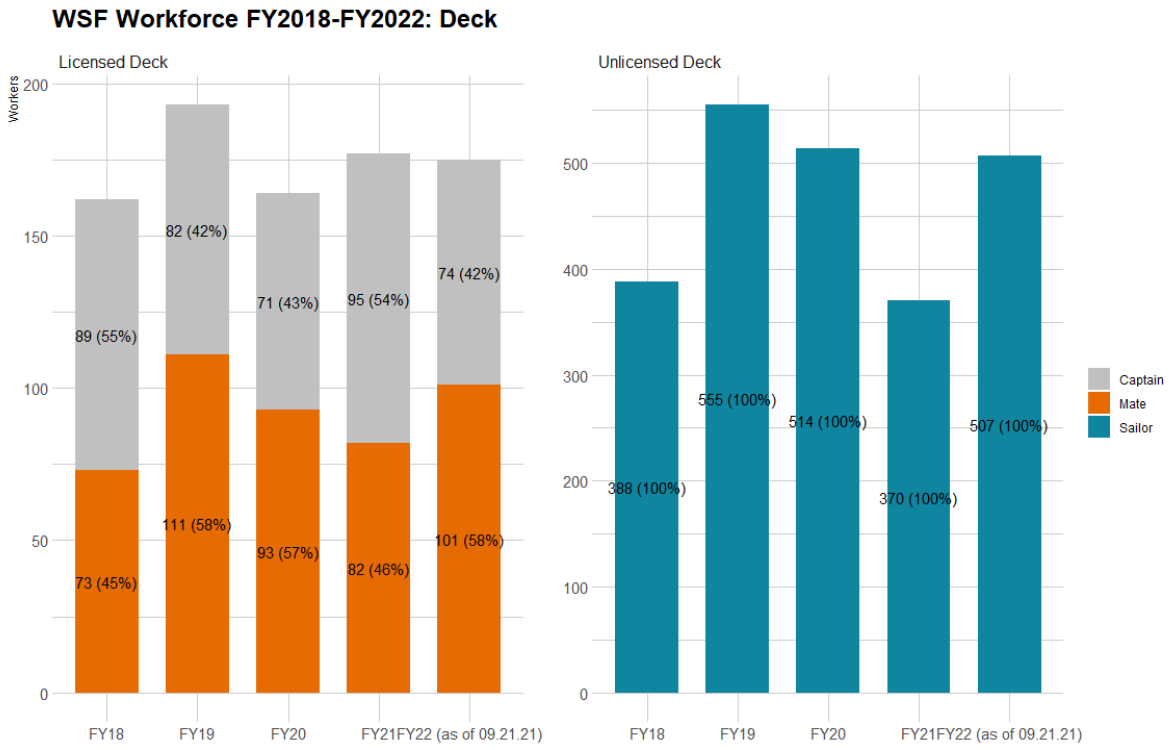
WSF is also a significant employer in the state, historically providing high-quality, desirable jobs in the state's maritime industry. The ferry system employs nearly 1,900 workers in various divisions, including administrative services and other professionals (see Appendix B). Operations employs the following number of workers in trade and technical occupations:

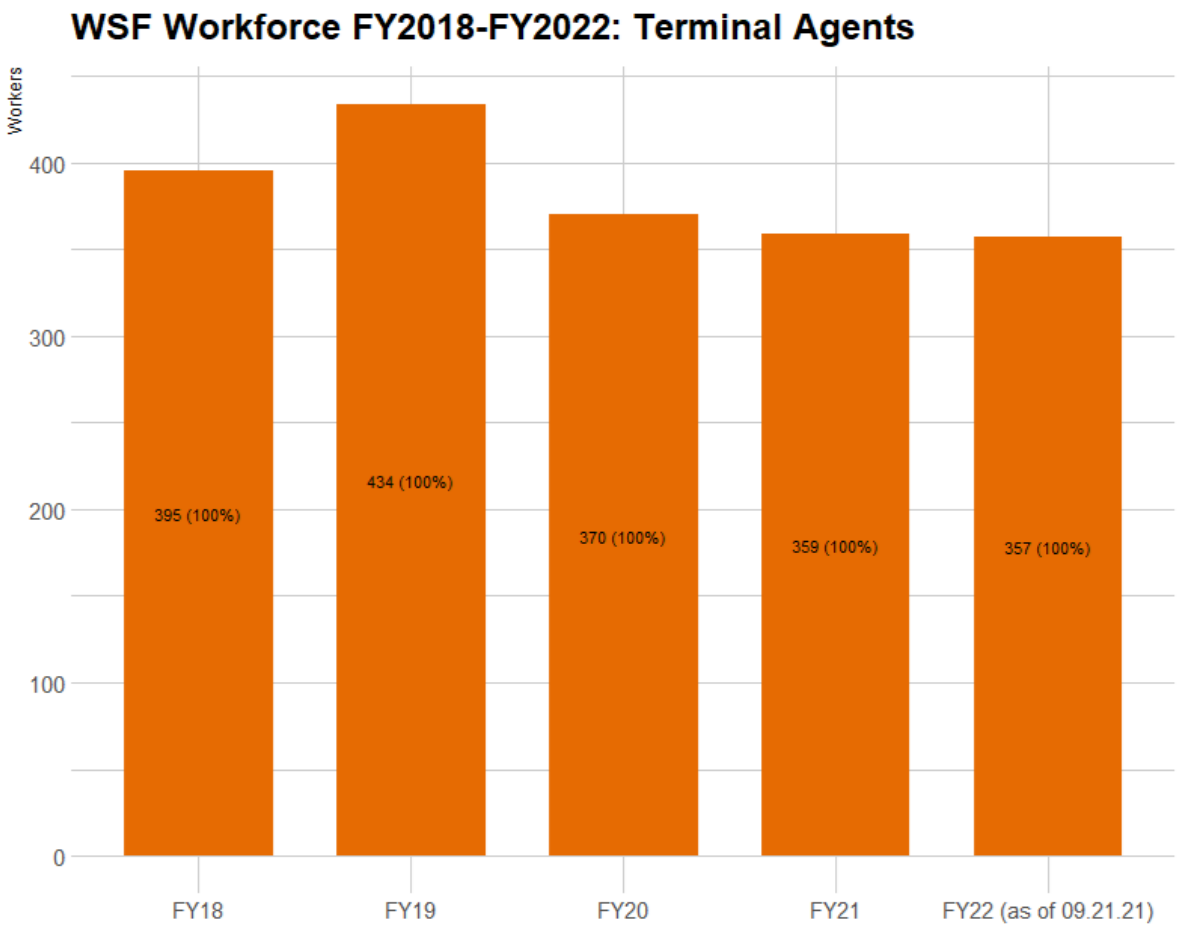
Table 1. Number of WSF Operational Employees by Category as of September 21, 2021, adjusted for workers who separated due to the vaccine mandate in October 2021

Division	Number of Employees (post-Covid vaccine mandate)
Licensed Deck	175
Unlicensed Deck	507
Engine	343
Terminal	357
Eagle Harbor (trades)	102
Total	1,484

These workers are represented by 16 unions and 13 collective bargaining agreements (see Appendix A). Because WSF relies on such a diverse workforce, the agency needs to adapt to changing conditions in multiple labor markets, facing a labor shortage in maritime and trades sectors. Across positions, recent workforce numbers have been declining since 2019.


WSF Workforce FY2018-FY2022: Engine
Workers
500
400
300
200
100
0
260 (55%)
237 (52%)
248 (56%)
222 (54%)
177 (52%)
217 (45%)
218 (48%)
194 (44%)
186 (46%)
166 (48%)
FY18
FY19
FY20
FY21
FY22 (as of 09.21.21)
Engineer
Oiler & Wiper


WSF Workforce FY2018-FY2022: Deck
Licensed Deck
Workers
200
150
100
50
0
89 (55%)
82 (42%)
71 (43%)
95 (54%)
74 (42%)
73 (45%)
111 (58%)
93 (57%)
82 (46%)
101 (58%)
FY18
FY19
FY20
FY21FY22 (as of 09.21.21)
Unlicensed Deck
500
400
300
200
100
0
388 (100%)
555 (100%)
514 (100%)
370 (100%)
507 (100%)
FY18
FY19
FY20
FY21FY22 (as of 09.21.21)
Captain
Mate
Sailor


WSF Workforce FY2018-FY2022: Terminal Agents
Workers
400
300
200
100
0
395 (100%)
434 (100%)
370 (100%)
359 (100%)
357 (100%)
FY18
FY19
FY20
FY21
FY22 (as of 09.21.21)

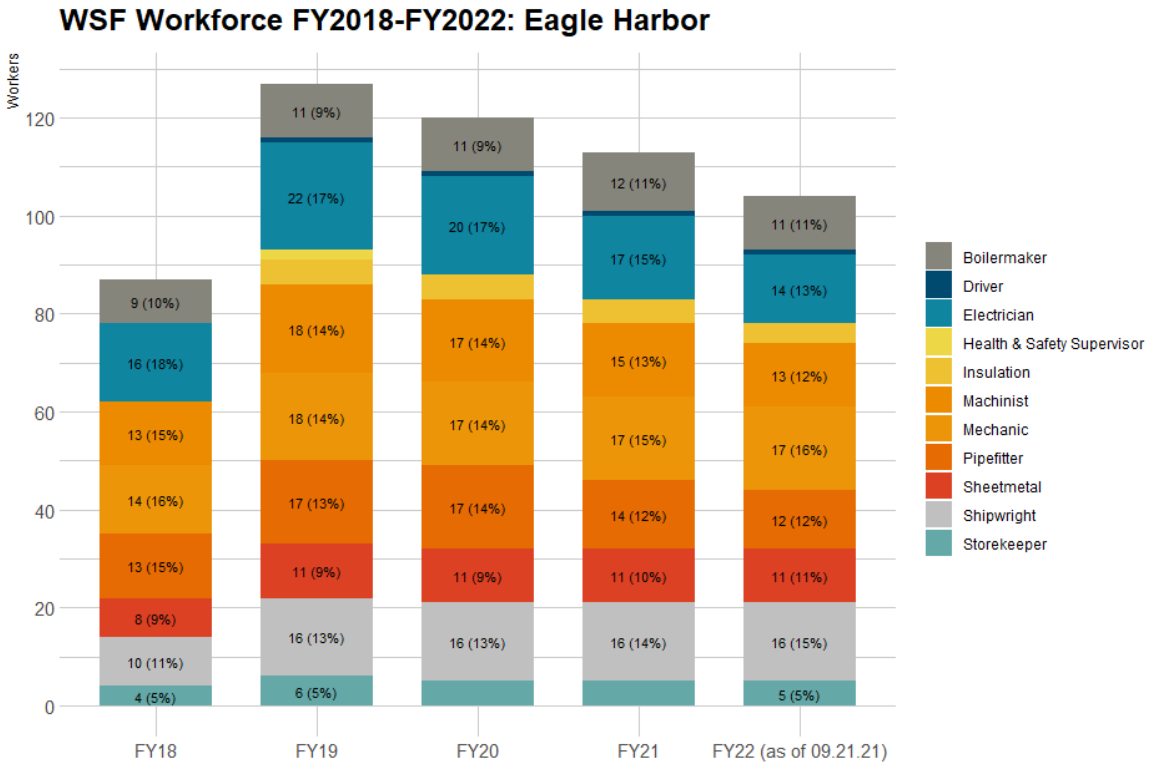


Figure 5. WSF Workforce by Category, FY18-FY22

Timeline

Over the last two-plus decades, several events have directly impacted WSF's current operating conditions (Figure 4). In 1999, Initiative 695 passed, eliminating the Washington state motor vehicle excise tax, slashing the state's transportation funding. This revenue loss cut 22% of the WSF operating funds and 100% of the capital budget. The immediate impact was the cancel plans to expand service and cancel orders for new ferries.[10]

In 2007, four aging ferries were retired, leaving WSF with little buffer. These vessels have been replaced gradually over the last 14 years. Three new ferries came into service in 2010 and 2012 and four more between 2014 and 2018. However, this still leaves WSF three vessels short of the 24 that the WSF plans indicate they need to cover routes with adequate capacity to cycle ferries out for routine maintenance and cover for unplanned repairs on the ferries more than 40 years old (came into service before 1982).[11]

In 2010-2011, King 5 conducted an investigation prompting the Legislature to pass and the governor to sign House Bill 1516.[12] The legislation aimed to improve ferry management and internal controls and address the apparent misuse of overtime, special assignments, and travel pay with an estimated $10 million in savings.[13] However, the loss of key benefits, particularly travel pay, has affected WSF's ability to crew vessels.

In 2012, WSF implemented a new reservation.[14] While this was a system improvement, it changed ridership patterns in conjunction with an upward trend in ridership. Time at dock increased across the schedule as riders were nudged toward previously low-demand routes when Captains had previously been able to make up time and get back on schedule when running behind. Individually, these delays are small, but they have increased, and they accumulate over the course of the day, making it increasingly difficult to maintain the schedule.

In 2012-2013, the US Coast Guard reassessed crewing requirements, changing them twice during the period, concluding with an increase in crewing. If the WSF does not meet USCG crewing requirements, it cannot legally sail. The revised crewing requirements:

- Eliminate the projected savings from HB-1516, and
- Eliminate crewing redundancy. Before the increase in crewing requirements, WSF scheduled one extra standby person per shift to fill in for a last-minute absence, thereby increasing resiliency.

In 2017, there were a series of unplanned mechanical failures and repairs that took longer than estimated on four vessels. Because there were not enough vessels in reserve, there were a historic number of cancellations in the first quarters of Fiscal Year 2018.[15]

In 2018, Governor Inslee issued Executive Order 18-01, requiring ferries to slow to save fuel.[16] Captains had increased speeds over the preceding years in response to the tightening of the schedule thanks to the change in ridership pattens and increasing ridership that started with the reservation system implementation. Fuel use was at an all-time high but the time savings from the high speeds were minimal. However, it highlighted the challenge of keeping the schedule over the course of a day, particularly on multi-stop routes like the San Juan Islands.

Finally, the Covid-19 pandemic severely disrupted service in 2020 and 2021. Crewing was substantially disrupted by illness and quarantining exposed employees. Governor Inslee required that all employees of executive agencies be vaccinated for Covid-19 by October 18, 2021, to halt the spread of Covid-19, minimize further disruption in state services, and protect critical infrastructure.[17] WSF crews were particularly vocal in opposition to the mandate and 132 separated from WSF on October 18, 2021 due to noncompliance with the mandate.

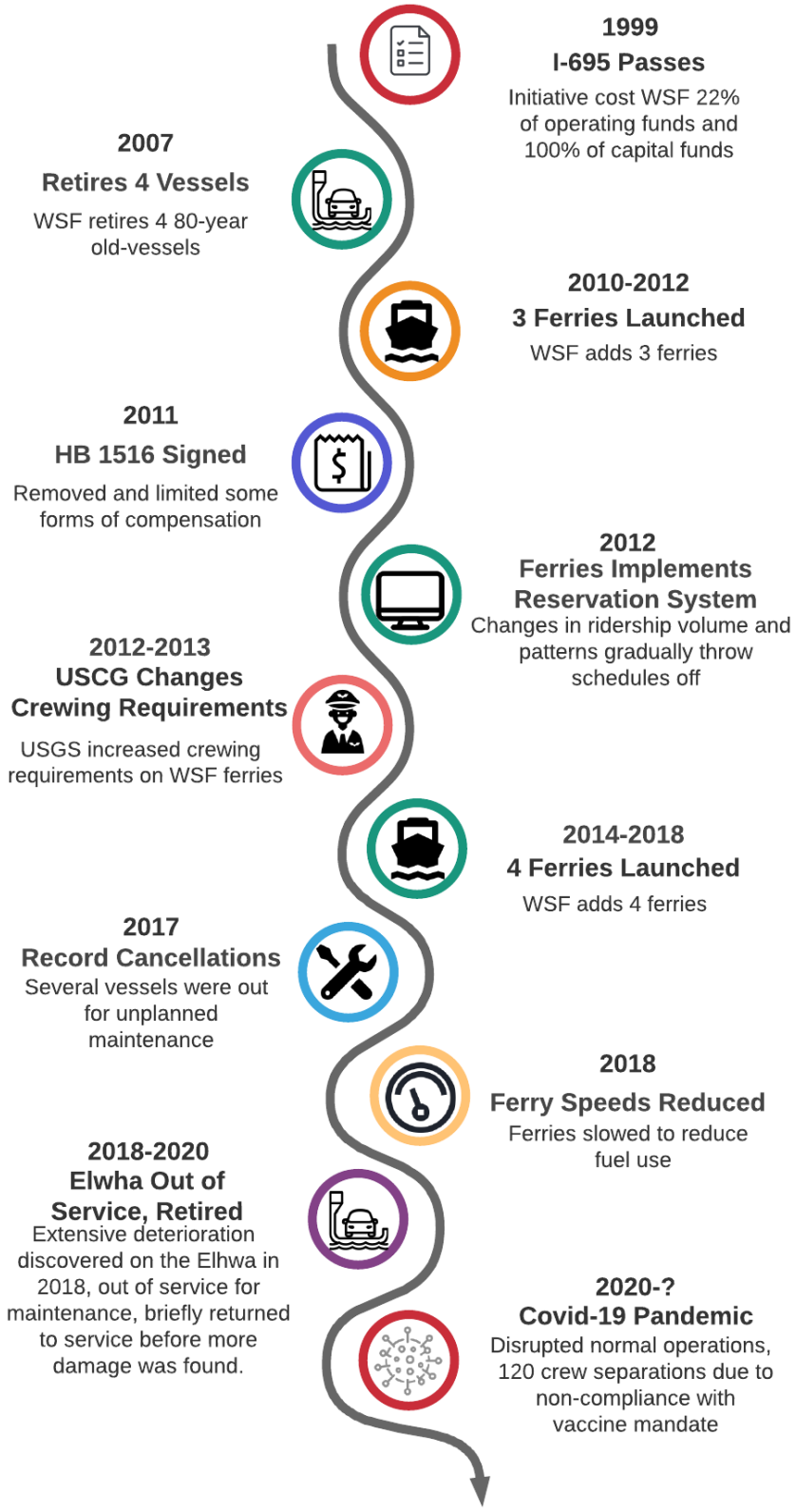


Figure 6. Timeline of Key Events

2. National and Regional Maritime Labor Market

The national maritime labor market is very cyclical, with demand for sailors, oilers, captains, and mates increasing as the demand for oil and goods increases. The widely reported supply chain issues were, in part, due to labor shortages, including mariner shortages. This shortage extends well beyond the US. However, everything from large container ships, fishing vessels, and supply vessels for offshore oil and offshore wind projects are competition for US mariners. As the economy continues to recover from the Covid-19 pandemic, the demand for them will also increase. In the next ten years, the Bureau of Labor Statistics projects the demand for water transportation workers will increase by 12%.[18] However, the Employment Security Department projects Washington state's water transportation employment will contract by 6% in the next decade (Table 2).[19]

Table 2. Labor Demand for Water Transportation Workers In Washington and the US. 2019-2030 [18,19]

	Washington			US		
Occupational Title	Employment 2019	Projected 2029	Percent Change	Employment 2020	Projected 2030	Percent Change
Water transportation	4,914	4,596	-6%	66,600	74,400	12%
Sailors & marine oilers	2,173	2,075	-5%	26,400	29,200	10%
Captains, mates, & pilots	1,731	1,584	-8%	29,900	33,900	13%
Ship engineers	935	860	-8%	7,800	8,400	8%

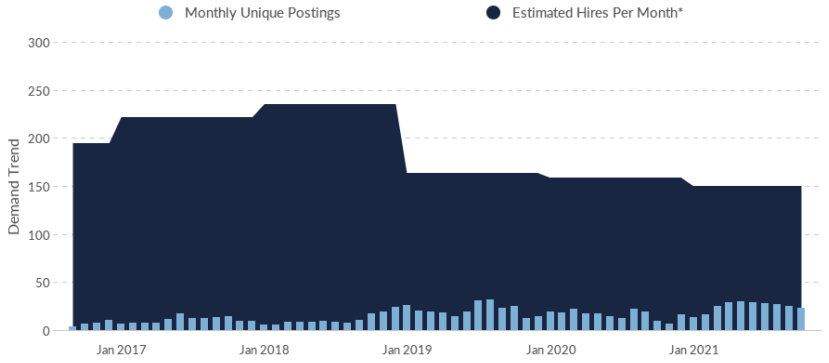
The maritime labor pool is regional, if not national or international. Washington state employers compete with employers in other Pacific Coast states (Alaska, Oregon, California, and Hawaii) and, to a lesser extent, employers on the East and Gulf Coasts and beyond. The decline in water transportation employment in Washington state does not necessarily indicate that an employers' labor market is on the horizon.

The national trends of an industry growing faster than the economy overall indicate that Washington state employers, including WSF, may struggle to compete with employers elsewhere for qualified talent and the state may lose competitive advantages in the maritime industry. As we can see with the increase in posting relative to hires in Washington state and especially in Pacific Coast state, employers must make more effort to hire at all levels with the shortage of engineers being particularly acute (Figure 5).

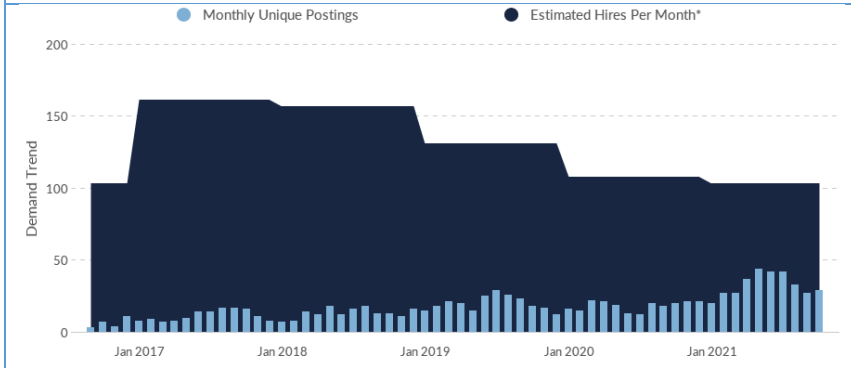
In addition to the decline in projected employment, the maritime industry in Washington is facing an aging workforce. Compared to the US and the other Pacific Coast states, the Washington maritime workers are older and closer to retirement. Both the Unlicensed Deck (Sailors and Marine Oilers)* and Marine Engineers are at high risk of losing a large share of experienced workers eligible for retirement (Figure 6).

* The US Bureau of Labor Statistics uses Standard Occupation Codes (SOC), which group together sailors and oilers.

Washington State

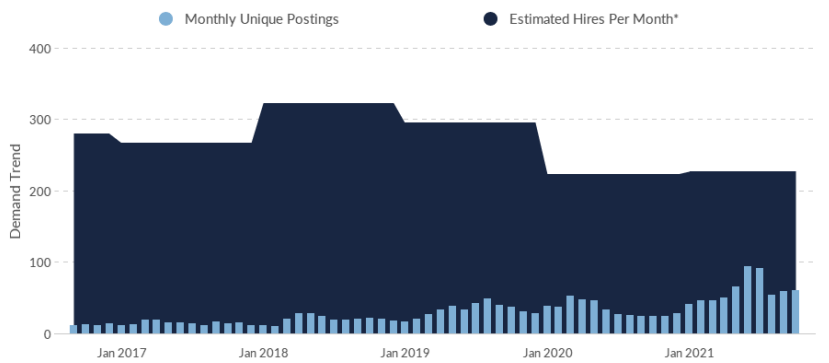


Occupation	Avg Monthly Postings (Nov 2020 - Oct 2021)	Avg Monthly Hires (Nov 2020 - Oct 2021)
Sailors and Marine Oilers	22	151

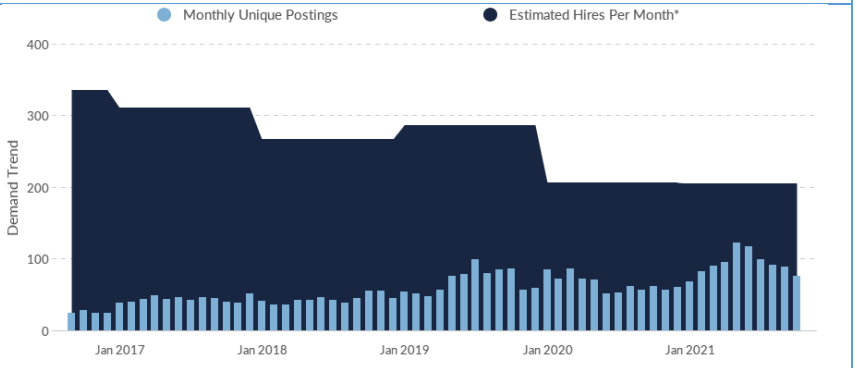


Occupation	Avg Monthly Postings (Nov 2020 - Oct 2021)	Avg Monthly Hires (Nov 2020 - Oct 2021)
Captains, Mates, and Pilots of Water Vessels	31	104

Pacific Coast States



Occupation	Avg Monthly Postings (Nov 2020 - Oct 2021)	Avg Monthly Hires (Nov 2020 - Oct 2021)
Sailors and Marine Oilers	55	226



Occupation	Avg Monthly Postings (Nov 2020 - Oct 2021)	Avg Monthly Hires (Nov 2020 - Oct 2021)
Captains, Mates, and Pilots of Water Vessels	88	205

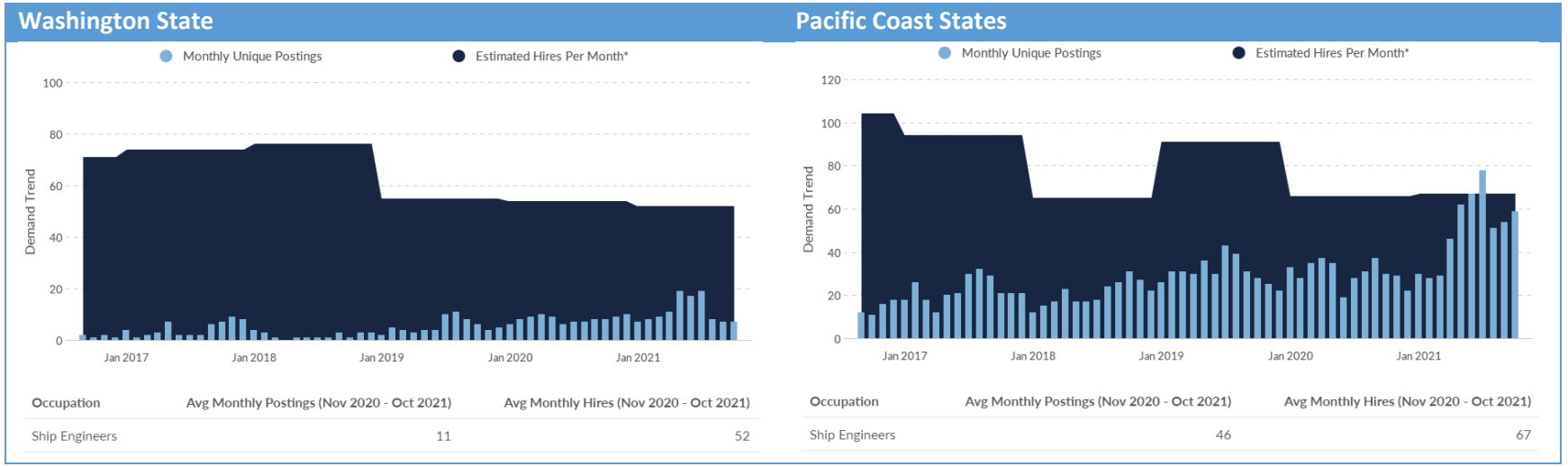


Figure 7. Job Postings vs. Hires for Mariners in Washington State and the Other Pacific Coast States, January 2017-October 2021

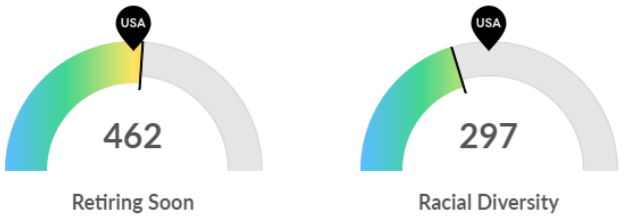
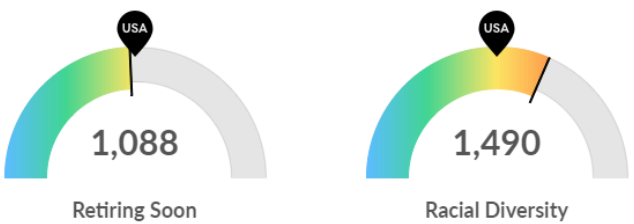
Washington State	Rest of the Pacific Coast (Alaska, Oregon, California, & Hawaii)
Unlicensed Deck - 53-5011 Sailors and Marine Oilers	
Retirement Risk Is High, While Overall Diversity Is About Average 	Retirement Risk Is About Average, While Overall Diversity Is High 
Licensed Deck - 53-5021 Captains, Mates, and Pilots of Water Vessels	
Retirement Risk Is About Average, While Overall Diversity Is About Average 	Retirement Risk Is About Average, While Overall Diversity Is High 
Engine - 53-5031 Ship Engineers	
Retirement Risk Is High, While Overall Diversity Is Low 	Retirement Risk Is Low, While Overall Diversity Is High 

Figure 8. Retirement Risk & Racial Diversity of the Maritime Workforce in Washington State & Other Pacific Coast States

Washington's maritime labor force lack of diversity. At all levels, from Ordinary Sailors to Captains, Washington state's labor force is notable less racially diverse than both the maritime industry in US overall and the rest Pacific Coast. The diversity of the Pacific Coast maritime industry is undoubtedly due in part to the high proportion of Black, Indigenous, and Other People of Color (BIPOC) in the military, the Navy being a significant employer in Pacific Coast states. It also indicates an opportunity for Washington maritime in general and WSF in particular. BIPOC workers are represented in the regional maritime workforce, but BIPOC communities are untapped in Washington state. Navy veterans are particularly promising for recruitment.

3. Overtime Use

Between FY2013 and FY2021

WSF overtime increased significantly between Fiscal Year 2013 and Fiscal Year 2021. The resulting increase in overtime expenditure is due to a simultaneous increase in overtime hours (extensive margin) and hourly overtime rate (intensive margin). For example, overtime hours grew by 45% between FY2013 (109,687 hours) and FY2019 (159,459 hours). Similarly, nominal overtime hourly rate consistently increased for all occupations, particularly for Licensed Deck (Captains and Mates) (+52% in the past eight years), while growth was most moderate for Terminal Agents (+36.6% between FY2013 and FY2021).

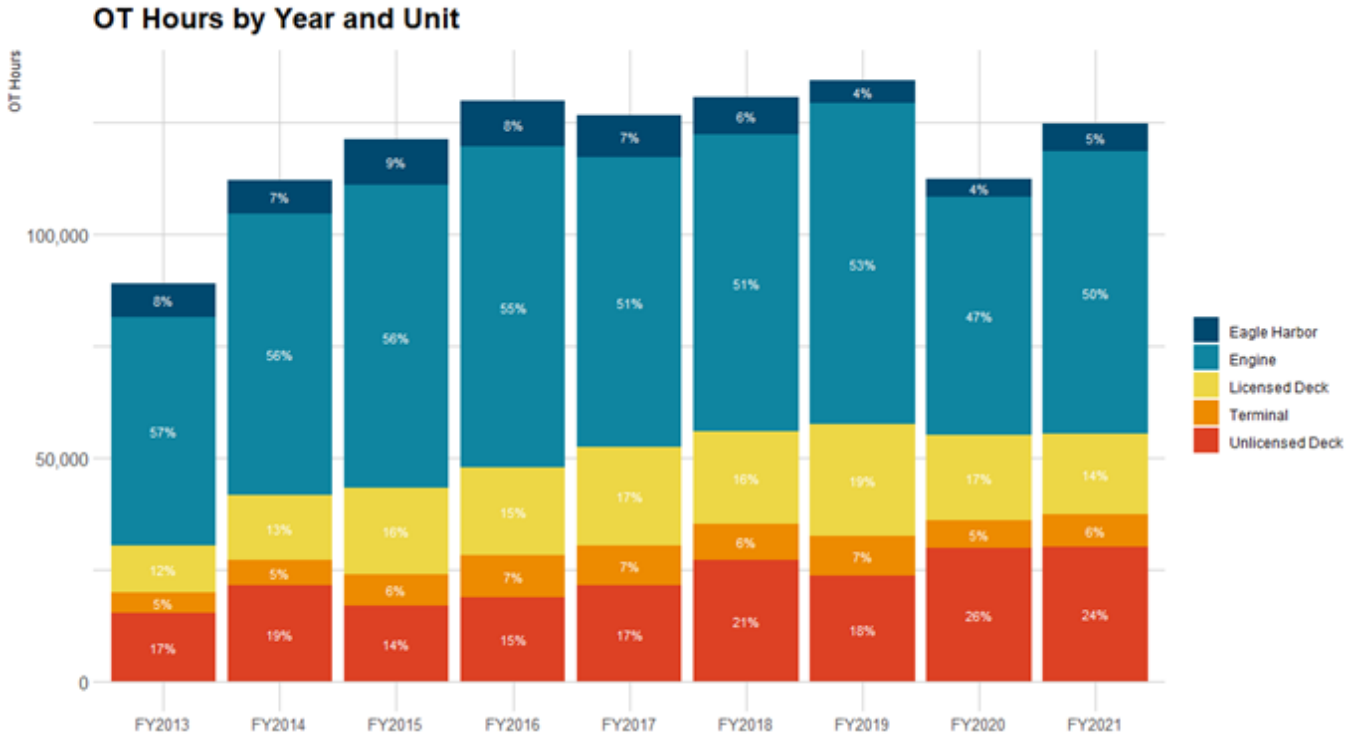


Figure 9. WSF Overtime Hours by Year and Unit, FY13 to FY21

However, despite the yearly increase in hourly rates provisioned in collective bargaining agreements to keep up with the cost of living and reward seniority, hourly overtime rates adjusted for inflation have failed to keep up with inflation, except for Engineers and Captains/Mates. Improving remuneration to match changes in the cost of living will help attract recruits in the competitive maritime labor market.

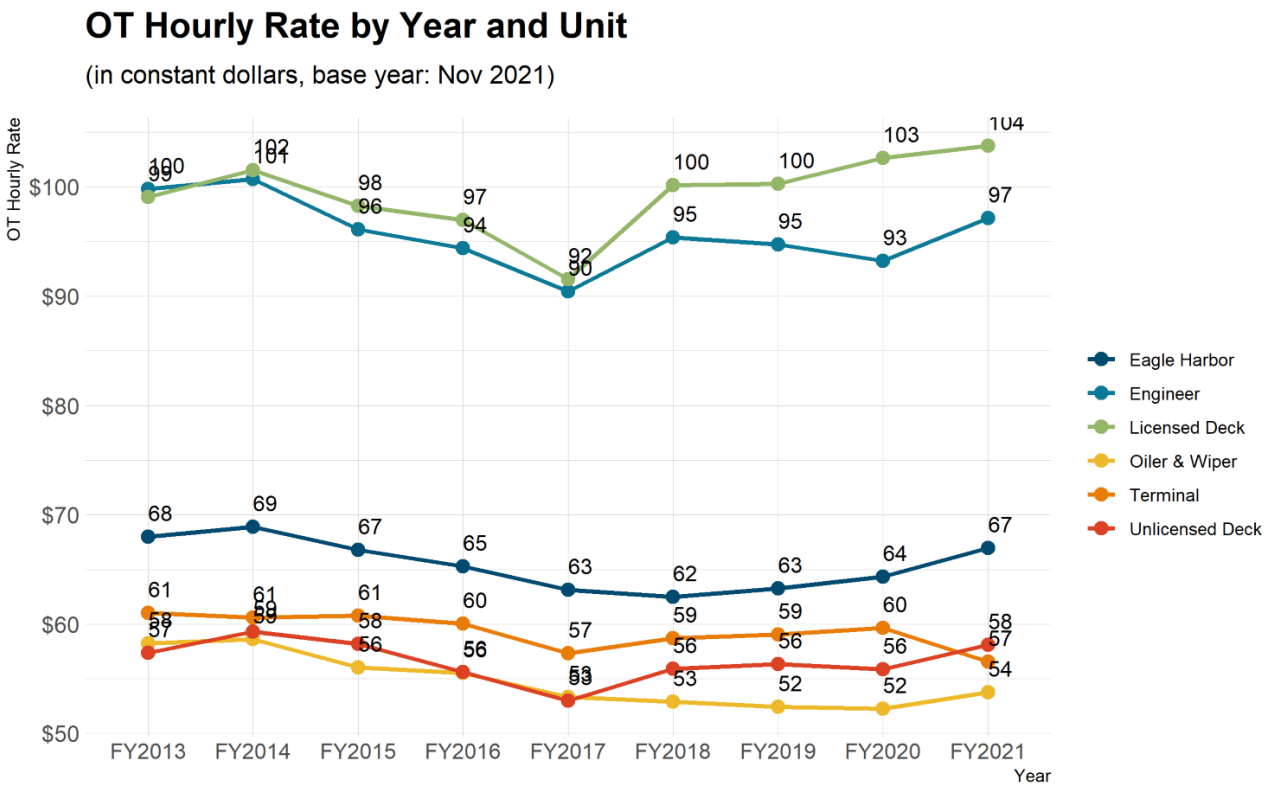


Figure 10. WSF Hourly Overtime Rates Adjusted for Inflation, FY 13-FY21

The combination of increased hours and increased rate caused overtime expenditures to double during that period, growing by $5.8 million and reaching a peak of more than $11 million in FY2019. Expenditures grew for all occupations but are by far the largest for Engine Room occupations (48% of overtime expenditures in FY2019). However, Unlicensed and Licensed Deck have been consistently increasing overtime expenses since the beginning of the study period: in FY2013, they accounted for 12% and 15% of total overtime expenses, respectively, which grew to 14% and 25% in FY2019.

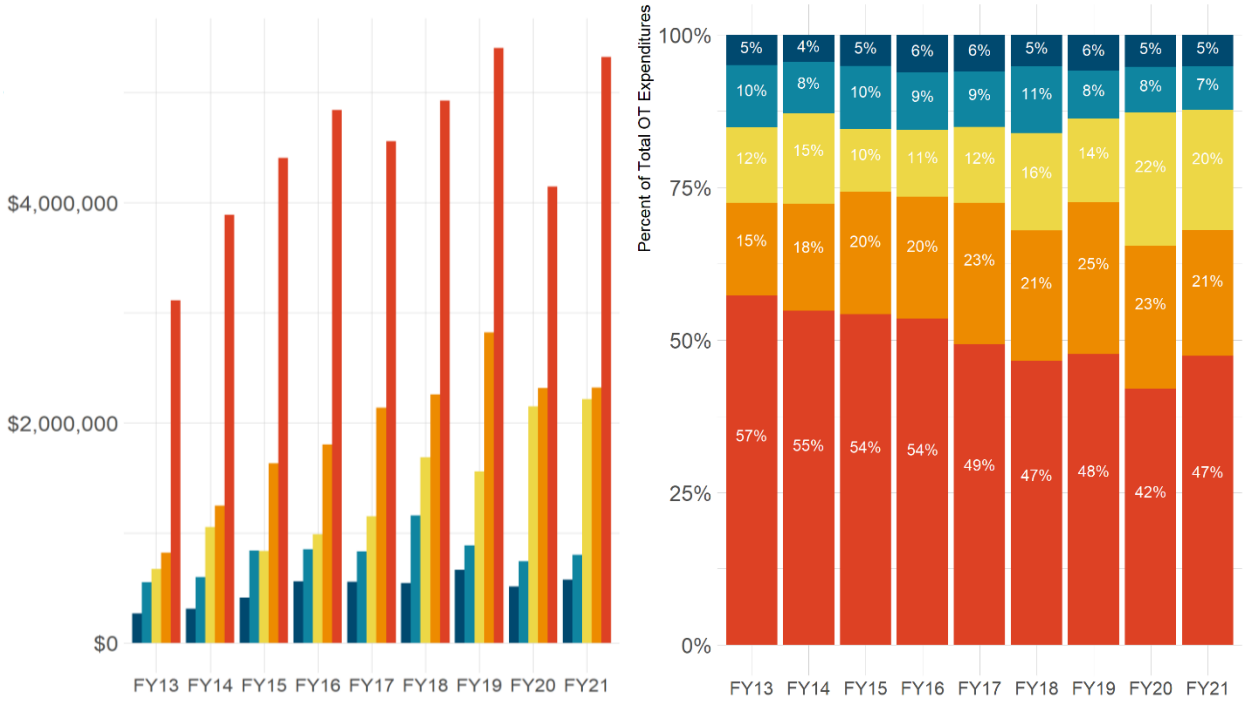


Figure 11. Overtime Expenses by Year and Unit

The two occupation categories with the largest overtime use and expenses are Engine Room (Maritime Engineers and Oilers) and Licensed Deck (Captains and Mates). In FY2019, Maritime Engineers accounted for 33% of WSF overtime expenses while Oilers used up 14% of expenses, meaning that 47% of overtime expenses were due to Engine Room that year. Licensed Deck accounted for 25% of overtime expenditures in FY2019 (Captains – 14%, Mates - 11%). Ordinary and Able Sailors (13% for Unlicensed Deck). Other occupations, most of which are in the Terminal and the trades working at or out of Eagle Harbor, represent a marginal share of WSF overtime expenditures (see Appendix D for descriptions of occupations)

The large amount of overtime observed in the Engine Room and Licensed Deck indicates there are not enough workers to fulfill these roles. This is consistent with the economy-wide labor shortage of licensed mariners detailed above. In addition, WSF hiring practices are vulnerable to shortages because they hire all vessel crew into the WSF entry-level[†] positions (Ordinary Sailors (OS) and Oilers). All new employees, regardless of qualification and work experience (see Appendix D), must work as an on-call OS or Oiler until they have earned enough seniority to bid on a permanent position. As a result, there is no easy way to rapidly expand the number of Mates, Captains, and Engineers as direct hire of experienced employees is not allowed by the collective bargaining agreements.

This rule was implemented to guarantee regular promotions to current employees. However, the long process to obtain required certifications to become an Engineer or a Captain, combined with the maritime labor shortage and high attrition rate of on-call employees due to the unpredictable schedule and pay,

[†] Oiler is not an entry level because it requires sea time and USCG-approved examination. However, it is the lowest level position WSF hires for the Engine Room. The standard entry-level position for the engine room in the maritime industry is Wiper.

result in a small pool of internal qualified candidates. As WSF has trouble hiring and retaining new qualified talents, the current crew in these occupations must work long hours to maintain service. Therefore, strategies to reduce overtime described in the following sections will focus on expanding recruitment for Engine and Deck workers.

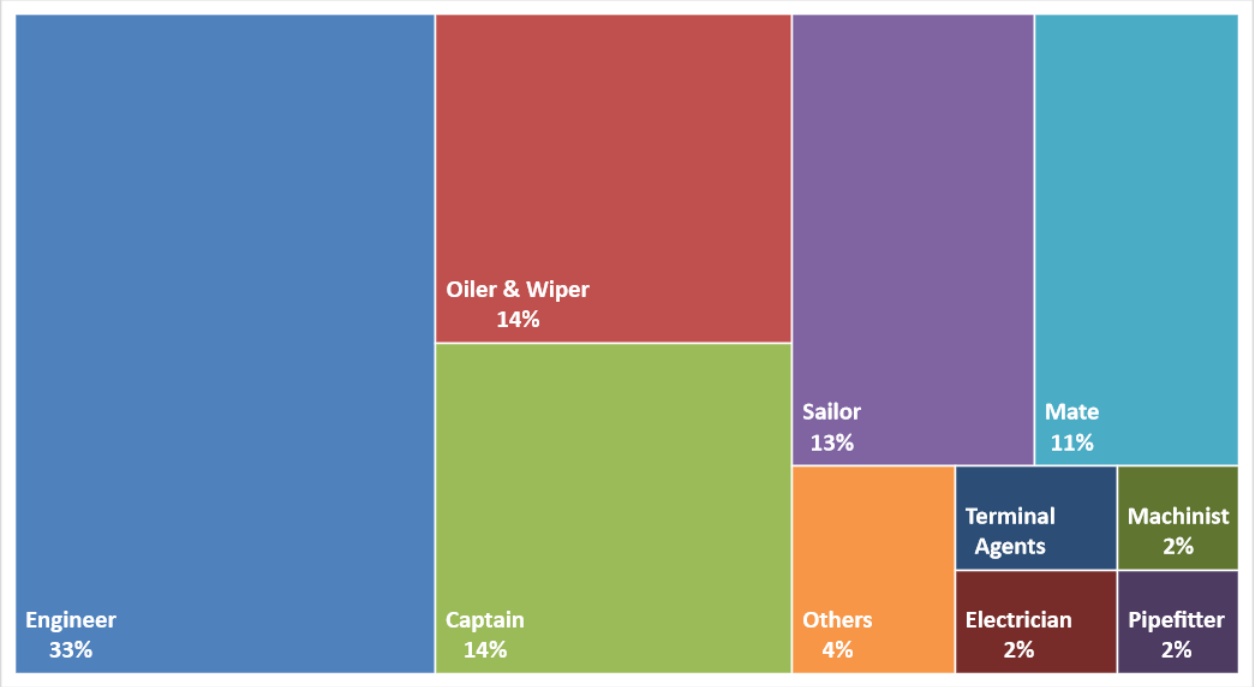


Figure 12. Overtime Expenditures in Fiscal Year 2019 by Job Title

Impact of the Covid-19 Pandemic

Ferry Ridership

The Covid-19 pandemic severely impacted Washington State Ferries like any other transportation service provider. Remote work, the decline in business activities, and stay-at-home mandates curtailed business and recreational users' need to travel around Puget Sound. This resulted in a significant drop in ridership for all routes between 2019 and 2020. The most significant decline was observed for the Seattle-Bremerton route, whose ridership contracted by 91% between the end of March 2019 and March 2020. In 2021, all routes still exhibit a decline in ridership compared to 2019, with the notable exception of the Interisland, Port-Townsend-Coupeville, and Point-Defiance-Tahlequah routes, for which ridership at times increased beyond 2019 levels.[20]

Training & Hiring

However, the pandemic had other effects, notably in the labor market and training institutions, that indirectly impacted WSF. First, despite the record-high yet short-lived unemployment rates observed at the height of the pandemic in Q2-Q3 2020, employers ramped up hirings in 2021 to compensate for recruitment freezes that occurred in 2020. Yet, workers are hard to come by. While open jobs reached 10.4 million nationwide in August, 4.3 million workers left their jobs that same month, the highest in the

past two decades. There were more vacancies in August than unemployed workers. Attempts to attract workers by increasing wages were unsuccessful, and the labor force shrank in September. New variants and lack of dependent care (daycare, schools, etc.) continue to make in-person jobs inaccessible to many people.

Staff Availability and Attrition

In addition to the impact on hiring, Covid-19 had two direct effects on existing staff. First, crew members were out sick with Covid-19. They also had difficulties stemming from the lack of dependent care and some were concerned about exposure on the job. To that end, when one crew member tested positive for Covid-19, other crew members that had worked within the defined period before testing positive would have to quarantine. This was particularly problematic in the Engine Room because all the other members of the Engine Room on that shift would also have to quarantine, taking up to three additional employees in high demand out of their regular work schedule.

In light of the impact of Covid-19 on state operations and to minimize the spread, Governor Jay Inslee mandated that all employees of state agencies be fully vaccinated by October 18, 2021 or have an approved exemption. Also, according to state mandate, employees were allocated additional sick days to recover from receiving the vaccination. Despite this and the impact of exposure on crewing, WSF crews, especially Engine Room crew, were particularly vocal about their opposition to the mandate. At the close of the first quarter of Fiscal Year 2022, 120 employees separated from WSF employees due to non-compliance with the mandate, and an additional 46 retired. More employees have separated from WSF in the first quarter of FY2022 than have separated each of the last three years. The separations were heavily concentrated in the Engine Room, with Engine Room employees accounting for 55% of the non-compliance separations and 43% of all separations in the first quarter.

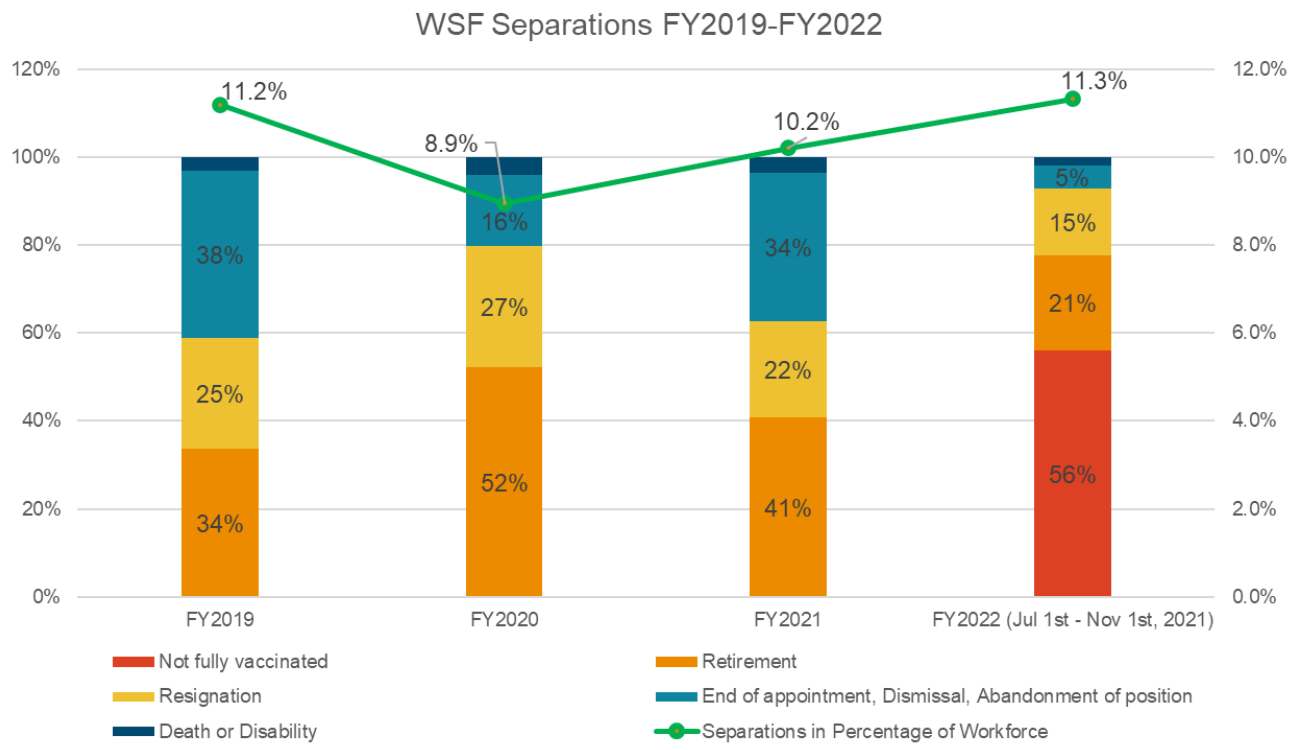


Figure 13. WSF Separations, Fiscal Year 2019-First Quarter Fiscal Year 2022

Cancellations

The drop in ridership and lack of qualified workers, combined with decreased vessel availability due to regular and deferred vessel maintenance in a small reserve fleet,[11] made it impossible to maintain services at their regular level. Since vessels can only sail with the required crewing level set by the United States Coast Guards (USCG), a worker shortage will directly impact the ability to meet these requirements. This resulted in a spike in trip cancellations throughout 2021 compared to the two previous years. Cancellations grew gradually during the year, to reach a peak in October where 559 cancellations occurred.[21] Disruptions due to lack of qualified crew have also been more frequent, increasing from 6% of cancellations in March 2021 to 67% in September.[21] To minimize disruptions for riders, WSF adopted a temporarily reduced sailing schedule, which entailed removing one vessel from each route and reassigning crews previously assigned to non-operating vessels to other vessels.

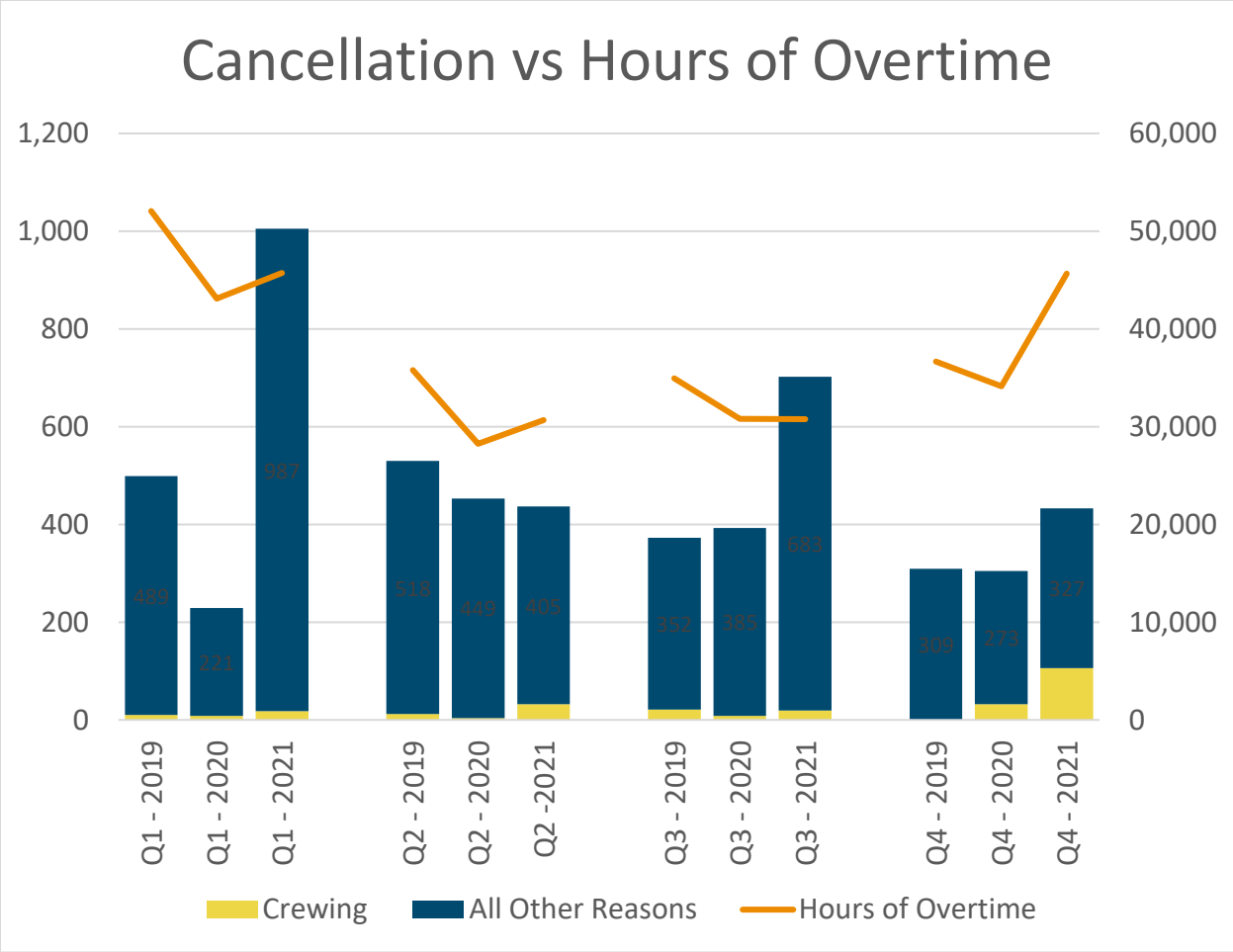


Figure 14. Cancelations by Quarter vs. Overtime and Reason, 2019-2021

The Covid-19 pandemic severely impacted Washington State Ferries like any other transportation service provider. Remote work, the decline in business activities, and stay-at-home mandates curtailed business and recreational users' need to travel around Puget Sound. This resulted in a significant drop in ridership for all routes between 2019 and 2020. The most significant decline was observed for the Seattle-Bremerton route, whose ridership contracted by 91% between the end of March 2019 and March 2020. In 2021, all routes still exhibit a decline in ridership compared to 2019, with the notable exception of the Interisland, Port-Townsend-Coupeville, and Point-Defiance-Tahlequah routes, for which ridership at times increased beyond 2019 levels.[20]

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The drop in ridership and lack of qualified workers, combined with decreased vessel availability due to maintenance and deferred vessel maintenance due to a small reserve fleet,[11] made it impossible to maintain services at their regular level. Since vessels can only sail with the required crewing level set by the United States Coast Guards (USCG), a worker shortage will directly impact the ability to meet these requirements. This resulted in a spike in trip cancellations throughout 2021 compared to the two previous years. Cancellations grew gradually during the year, to reach a peak in October where 559 cancellations occurred.[21] Disruptions due to lack of qualified crew have also been more frequent, increasing from 6% of cancellations in March 2021 to 67% in September.[21] To minimize disruptions for riders, WSF adopted a temporarily reduced the sailing schedule by removing one vessel from each route, thus reducing the number of rotations and required staff. Crews assigned to canceled sailings have been reassigned to trips that are still scheduled.

Overtime Categories

The main goal of the first deliverable from this project was to identify short-term strategies to reduce overtime use at WSF. Identifying the most effective strategies requires understanding the root causes of the problem and why WSF must resort to overtime. Combined analysis of payroll and dispatch data from WSF provides necessary insights. This data reported when overtime was used and why as different overtime codes and pay reasons are recorded depending on the situation. For example, suppose overtime was incurred because a medical emergency happened onboard. In that case, workers who were delayed because of this situation and paid overtime were recorded in the dataset with a specific code indicating medical emergencies. Similarly, when a worker receives training on overtime, payroll will record these hours with an overtime code indicating training. These detailed payment codes made it possible to categorize overtime in three sections.

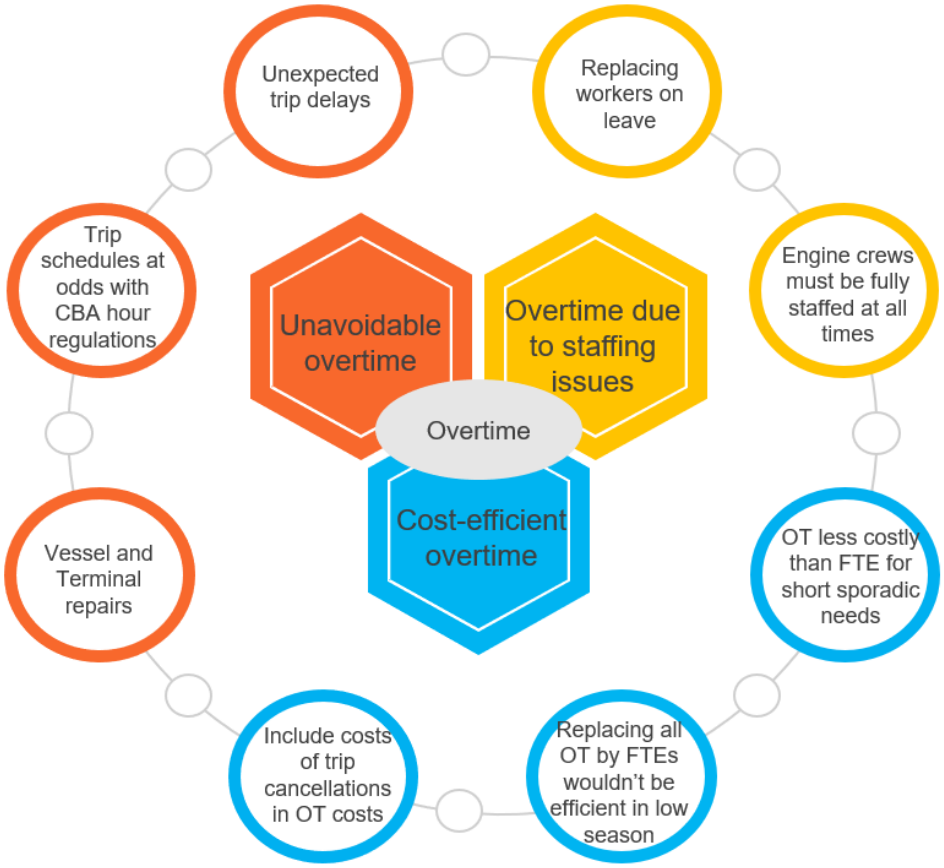


Figure 15. Categories of Overtime Hours

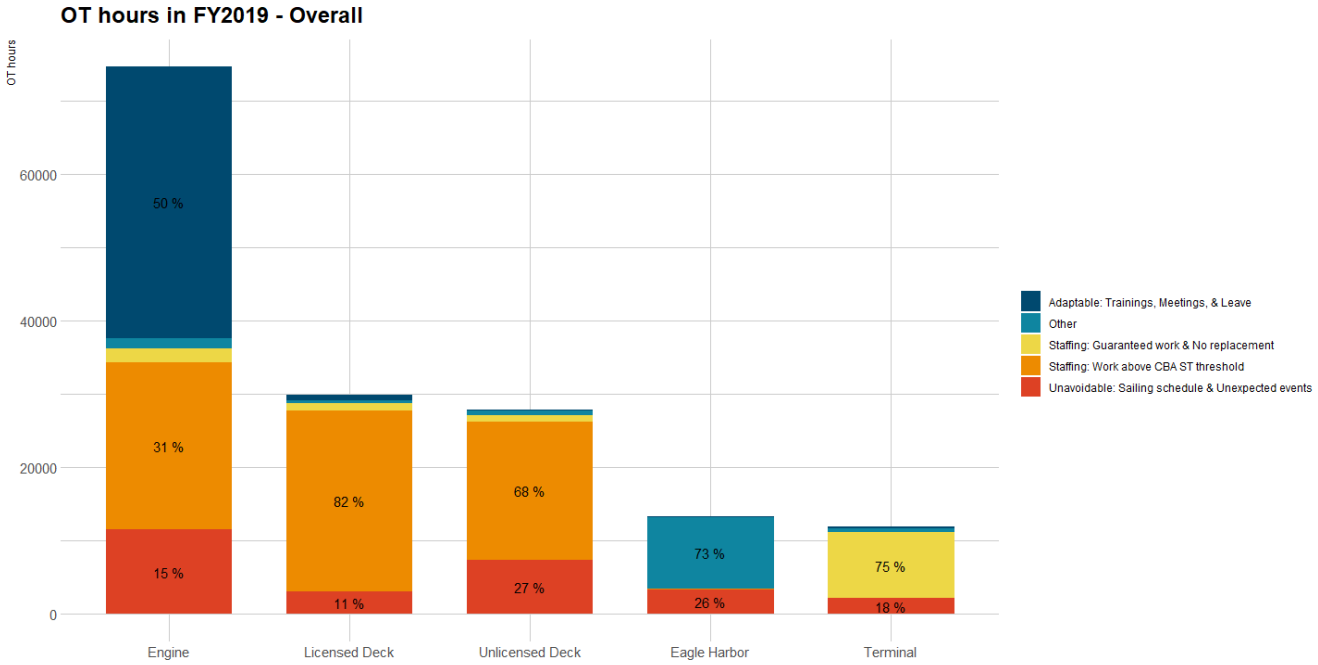
- Unavoidable overtime: overtime hours that can be difficult or even impossible to predict and which would require significant investments to eliminate. This category includes overtime hours incurred because of medical emergencies onboard, inclement weather, or when working during a time changeover from Pacific Daylight-Saving Time to Pacific Standard Time (as provisioned in some collective bargaining agreements).

- Adaptable (cost-effective) overtime: overtime hours could be reduced by reorganizing some internal events, such as administrative meetings, medical visits, or training. However, decreasing overtime in these categories is often cost-effective. Engine Room training, for example, often happens on overtime. The overtime rate for Engine Room crew is 1.5 their straight time rate. However, rotating a worker off-boat to complete their training on straight time requires backfilling that position with another worker also on straight time. Otherwise, the vessel cannot sail according to USCG regulations. Backfilling means the training time would effectively cost double or more depending on whether the position is filled with an on-call or relief employee.

- Overtime due to crew shortage: overtime hours incurred because of a lack of qualified crew members. Due to USCG requirements, vessels cannot sail when it is not fully crewed. Since WSF only has funding to crew vessels based on minimum crewing requirements, the vessel cannot sail

if one worker calls in sick or is delayed. To make scheduled sailings, dispatch fills these unplanned absences by going first through the list of on-call employees, then relief employees, and finally, when they have exhausted the first two lists, the list of employees who will be working overtime if they fill some or all of a shift or they may hold over crew members from the prior shift. These methods of backfilling positions prioritize minimizing overtime. Still, employees frequently reach the maximum number of straight time hours. Increasing permanent crew levels, expanding the relief pool, and improving the year-to-year retention rate of on-call employees would help ensure that vessels are adequately crewed and minimize using overtime to cover for missing workers.

Due to their large share of total overtime hours and expenses, strategies identified in this report will focus on overtime due to crew shortage and Engine Room training.



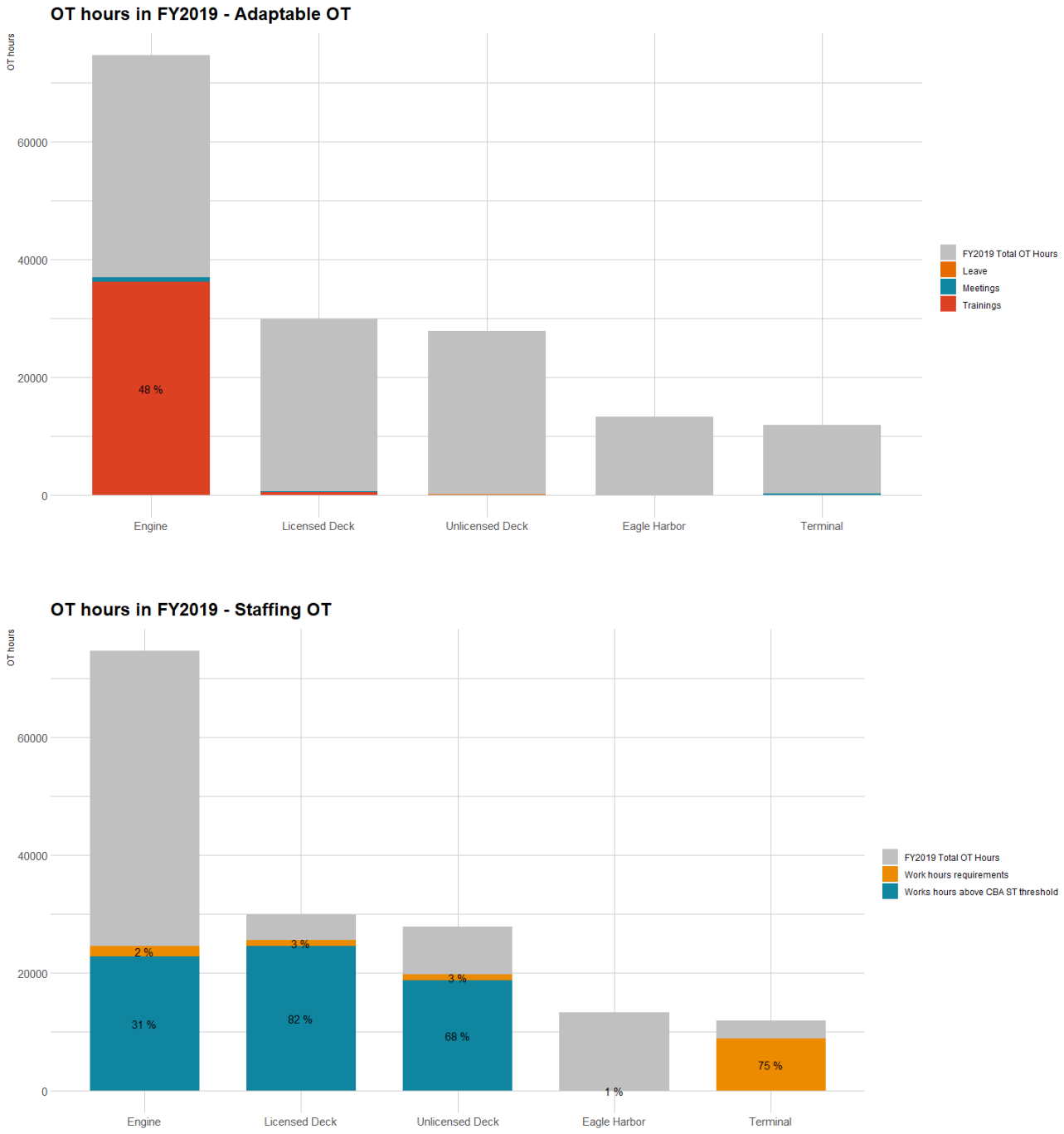


Figure 16. Categories of Overtime Hours by Unit

4. Minimum Crew Requirements

Most cancellations and overtime use can be attributed to low crew levels, particularly among the Engine Room and Deck crews. With 23.4 million customers annually and an average of more than 400 daily sailings, WSF needs a sizeable crew to ensure that all vessels abide by USCG regulations and have enough crewmembers to sail. The crew size needed to operate all vessels varies significantly throughout the year.

Winter is typically the calmest season as the cold weather curbs tourist activities in the Puget Sound area. All vessels must be crewed with at least a Maritime Engineer and an Assistant Maritime Engineer. Vessels in operations must have a Captain and a Chief Mate. To support these positions and depending on vessel class, USCG requirements also call for four to five Able-bodied Sailors, two to four Ordinary Sailors, one Oiler, one Wiper, and a Second Mate for a minority of boats (Appendix E).

This section presents the minimum number of full-time equivalent positions required to allow all scheduled sailings to occur. WSF sailing schedule data, which includes the vessel classes used for each route, is available alongside Deck and engine crew shift schedules. Additionally, linking vessel class to USCG requirements helps estimate how many employees of each position are required for each vessel to be allowed to operate. Multiplying the number of employees by their respective shift length and days worked gives the total weekly work hours needed per position. Since overtime is most prevalent for vessel-bound occupations (Licensed and Unlicensed Deck, and Engine), this section focuses on the following occupations: Captains, Mates, Ordinary and Able Sailors, Maritime Engineers, and Oilers and Wipers.

Deck crew shifts differ significantly from engine crew shifts. While Deck employees follow a typical 40 hours over seven day-workweek, engine employees work 12 hour-shifts every day for seven days on a week-on/week-off schedule. So, while the same deck crew could work two weeks in a row, this is not possible for the Engine crew as these crews must alternate every week. As a result, while the minimal crew level for Deck is the weekly required crew level, the minimal crew level for Engine will be twice the weekly required crew level.

Additionally, all workers are entitled to days off, including sick leave and paid time off. Administrative leave data provided by WSF was used to estimate the average weekly hours taken off by position (Captains, Mates, Ordinary and Able Sailor, Maritime Engineers, and Oilers and Wipers). The required weekly crew hours described earlier are then adjusted by this factor to take into account workers taking time off they are entitled to. The minimal crewing has not yet been adjusted to account for USCG or WSF required training or administrative duties, nor does it include a buffer that critical transportation infrastructure requires to allow it to absorb, adapt, and recover from shocks. The minimal crewing estimates are solely the FTE required to meet the sailing schedule.

This process is used for both winter and summer sailing schedules to estimate the required Deck Crewing level. In contrast, the Engine Room in all vessels must be fully crewed around the clock, whether the ships are sailing or not, per USCG requirements.

In the low season (winter), WSF needs the following to crew 18 vessels in operations and three vessels on standby:

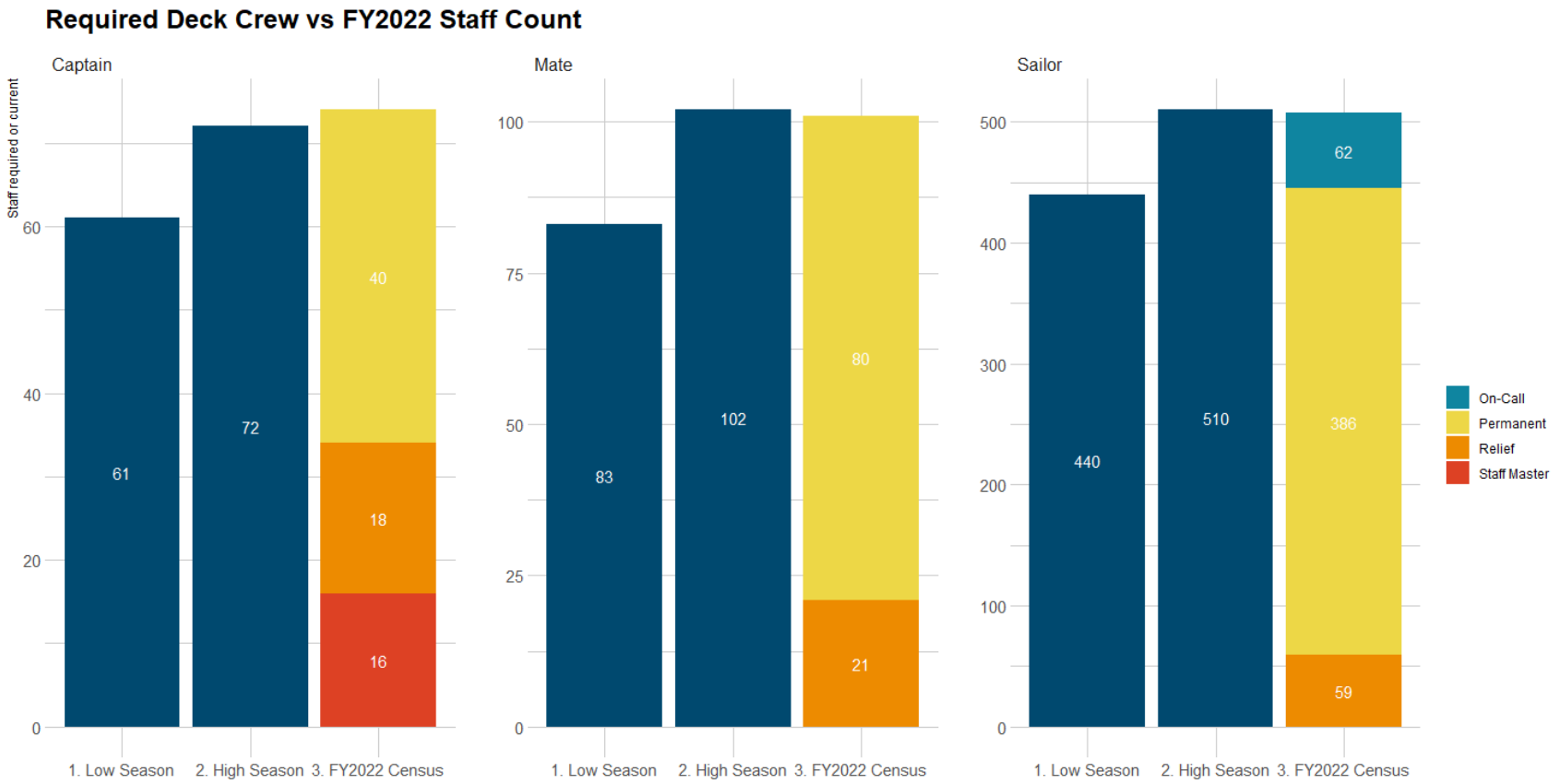
Table 3. Minimum Crewing Estimates for Low Season and WSF Workforce dated September 21, 2021

Position	Number of FTE needed for Winter Season	WSF permanent employees (As of September 21st, 2021, adjusted for the vaccine mandate separations)	Hiring Needs (Required minus permanent)
Captains	61	40	21
Mates	83	80	3
Ordinary & Able Sailors	440	396	44
Engineers	350	142	208
Oilers & Wipers	362	154	208

Comparing these estimates to the early fiscal year 2022 workforce (workforce as of September 21, 2021, reduced by employees who separated due to the vaccine mandate), WSF does not have enough permanent employees to adequately crew its Deck and Engine, even during the low season.

Winter is when the fewest number of employees will be needed throughout the year due to fewer sailings. Filling these positions with permanent year-round crew is the minimum needed to adequately crew scheduled sailings in the low season but doing so still makes no allowance for out-of-the-norm disruptions or training. Considering its current permanent workforce and relief pool, WSF would have to expand the number of permanent Captains by five, permanent Mate positions by three, and the permanent Ordinary and Able Sailors by 54 to have enough permanent year-round positions to meet crewing requirements.

The Engine Room has the largest crewing need due to stringent USCG requirements. Each of the 21 vessels requires at least one Chief Engineer, one Assistant Engineer (for 17 vessels), and one to two Oilers, depending on the ship class. This crew will work 12-hour shifts for seven consecutive days and be off the following seven days in standard conditions. Therefore, 350 engineers are needed year-round, while only 177 are currently employed by WSF (most temporary assistant engineers resigned due to the vaccine mandate). So, WSF needs to hire an additional 173 engineers. Similarly, weekly winter sailings require 326 Oilers & Wipers while WSF only employs 166 (20 oilers resigned following the vaccine mandate), resulting in a hiring need of 160 additional Oilers & Wipers.


Required Deck Crew vs FY2022 Staff Count
Captain
Mate
Sailor
Staff required or current
0
20
40
60
0
25
50
75
100
0
100
200
300
400
500
61
72
40
18
16
83
102
80
21
440
510
62
386
59
1. Low Season
2. High Season
3. FY2022 Census
On-Call
Permanent
Relief
Staff Master

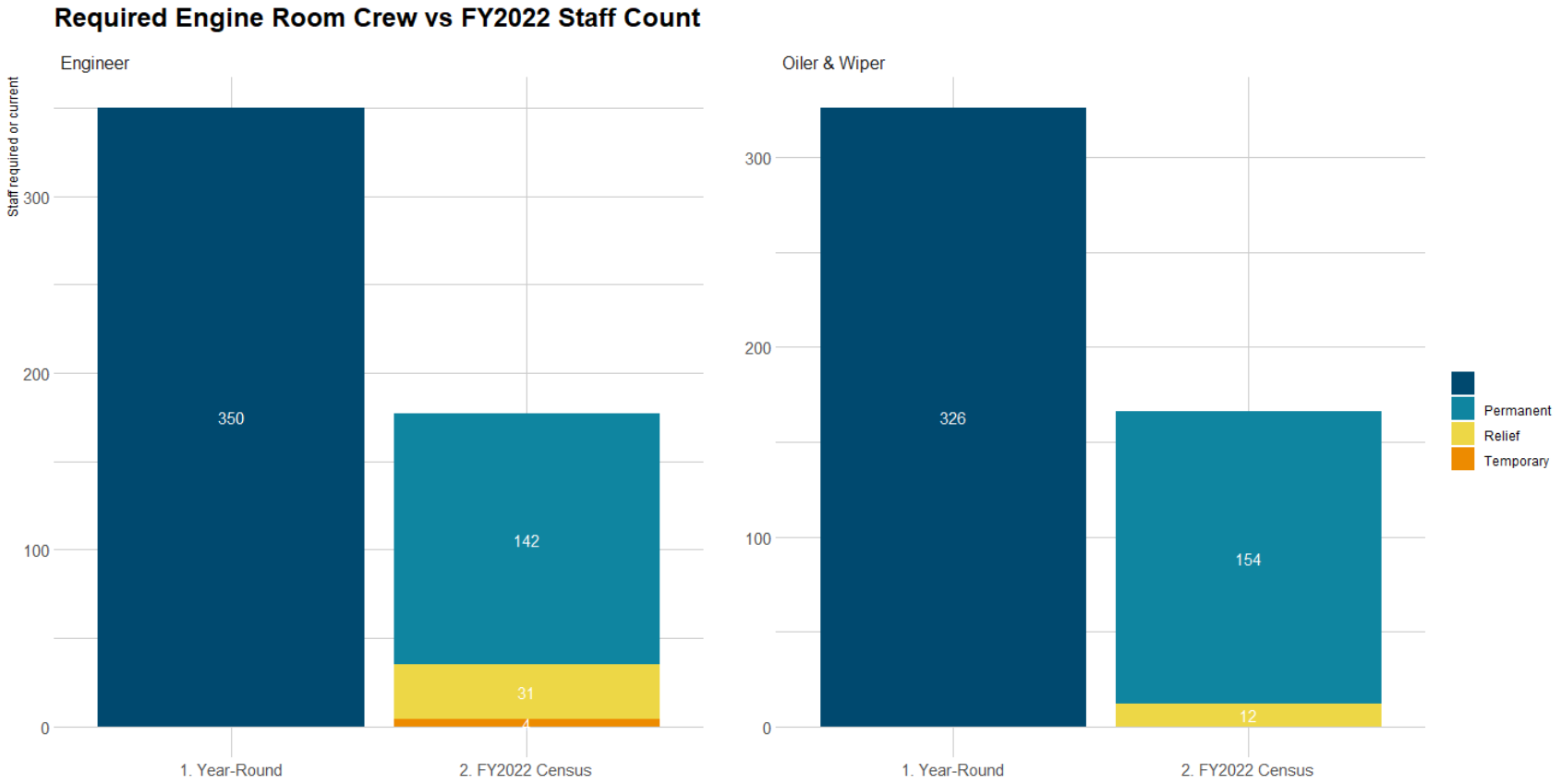


Figure 17. Minimum Crewing Level in Low and High Seasons vs. 2021 WSF Workforce

Once adequate crewing is reached to support the low season, the WSF workforce must be adjusted to ensure that all sailings scheduled during the summer will be completed. Ridership increases during the summer months because of the increase in tourism in Puget Sound. WSF needs additional crew to take on extra shifts and support enhanced business activity. Consequently, the number of full-time equivalent employees needed onboard is significantly larger than in winter.

To accommodate both the increased number of sailings and the increased capacity on those sailing, WSF needs 19 additional Mate FTEs and 70 additional Ordinary and Able Sailors FTE in the summer compared to winter. In contrast, the Engine Room crewing level remains the same year-round.

Table 4. Minimum Crewing Estimates for High Season

Position	Number of FTE needed for Summer Season	Number of WSF permanent employees (As of September 21, 2021, adjusted for the vaccine mandate separations)
Captains	72	40
Mates	102	80
Ordinary & Able Sailors	510	396
Engineers	350	142
Oilers & Wipers	362	154

Filling some of these positions with permanent year-round crew would build the buffer (to be determined) and allow WSF to backfill for training, now frequently done on overtime, if WSF concentrates training in the low season. However, filling all these positions with permanent year-round crew is not cost-effective. Minimizing total labor costs would entail hiring temporary workers hired only for the high season and paid only for these months. But the shortage of maritime workers nationwide and on the West Coast makes this problematic. The long-term workforce plan will explore options for filling these additional entry-level positions needed for the high season while encouraging current crew to earn sea time and get certified to cover more experienced positions (Mates, Captains, Oilers, and Engineers).

5. Recent Changes in Context

Merely Reducing OT is No Longer Relevant Considering Expanding Labor Shortage

This report is the first step of a multi-year proviso to curb overtime use and establish a workforce management plan for WSF. The report was intended to identify strategies to reduce overtime in the short term. However, the proviso was issued before the full impact of the Covid-19 pandemic on WSF was apparent. These recent factors severely impacted the maritime sector in Washington state. For example, WSDOT lost 402 employees to the vaccine mandate, including 120 from WSF. Additionally, eight workers chose to retire, and another 33 had been placed on leave as of October 19, 2021, while waiting to receive their second dose.[23] Similarly, the Covid-19 crisis reshaped the labor market as many workers laid-off at the beginning of the pandemic relocated, temporarily exited the labor force to reduce exposure risk, or switched careers. The labor force shrank across all industries, and the maritime sector was equally impacted. The sector lost 711 workers in Washington State between 2019 and 2021, corresponding to a 34% decline.[24]

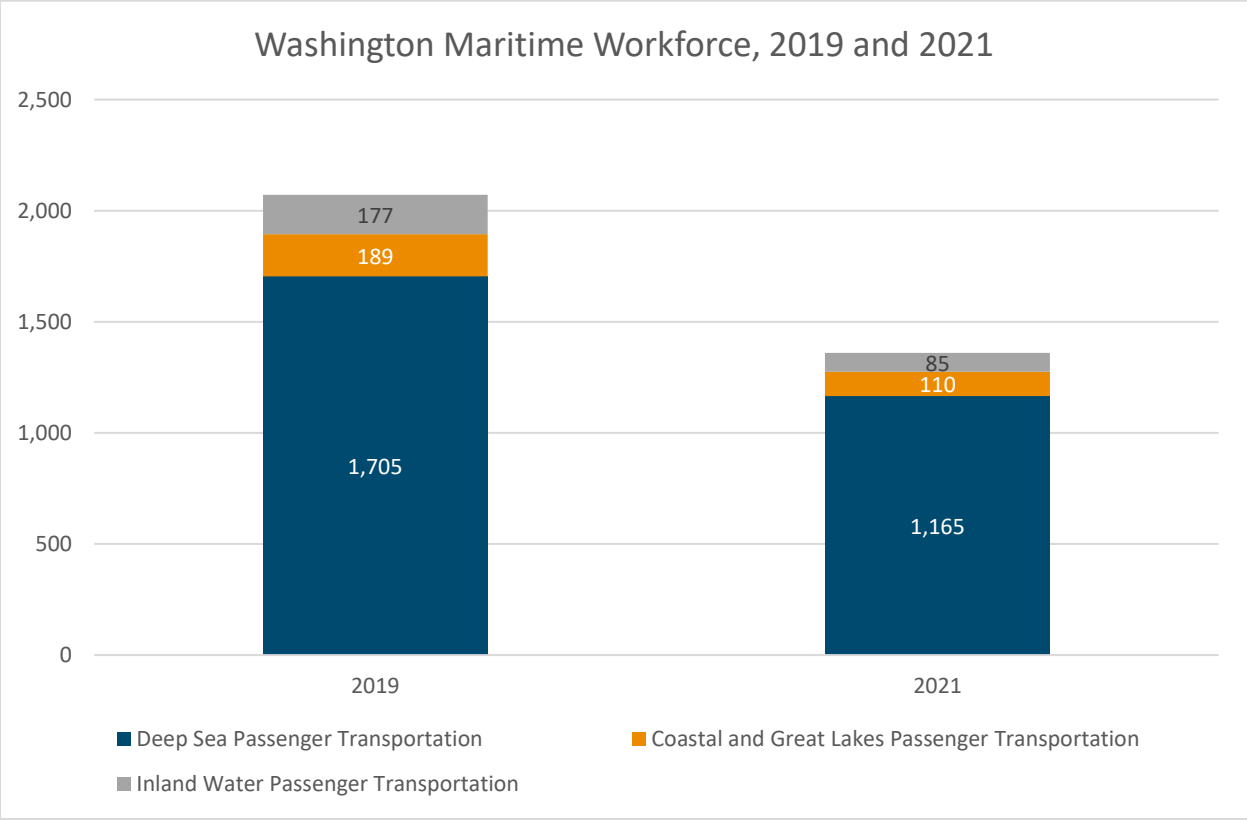


Figure 18. Maritime Workforce, Washington State, 2019 and 2021[24]

Consequently, these recent shifts make it extremely difficult to adopt any significant short-term strategies. Solving the WSF labor shortage requires meaningful strategies that focus on increasing crewing levels, identifying new recruitment pools, developing training pathways in partnership with local

institutions, and negotiating changes in the collective bargaining agreements. These solutions will take time to develop and implement and will be described in greater detail in the Workforce Plan to be delivered to the Joint Transportation Committee in December 2022. The recommendations presented in this report are unlikely to have little immediate impact due to the overwhelming circumstances two years into a global pandemic. Though they have a smaller scope of impact, they are steps in the right direction and can be implemented in the coming year.

6. Recommendations and Conclusions

Short-Term Recommendations

Expanding Local Recruiting Network

WSF advertises vacancies through the official State of Washington Job Opportunities website.[25] They can only be found on the State of Washington Job Opportunities website if the individual knows that WSF is part of WSDOT or searches for a specific job title (e.g., Oiler or Sailor).

The job postings can also be found on well-known job search engines (Indeed.com and SimplyHired.com, for example), as well as maritime sector-specific websites, such as relevant unions websites and maritime education institutions. Still, these job postings will most likely be seen by those already working in the sector or familiar with WSF.

Given the current labor shortage, WSF should leverage local workforce boards,[26] WorkSource,[27] and workforce development organizations to tap into new groups of jobseekers who may be unaware of the opportunity WSF presents for stable, meaningful employment. Workforce development organizations have funding streams and case management personnel who can support new applicants in fulfilling all the application requirements detailed below.

Job Posting Wording and Advertisement

Additionally, job description wording plays a crucial role in potential candidates' decision to apply to a position. Gender- and racially-biased language or other language choices can discourage nontraditional applicants. Using male-coded language to describe the position discourages women from applying, and entry-level workers are discouraged by a strong emphasis on required qualifications. Similarly, job postings are more inviting to BIPOC candidates if they mention the employer's commitment to diversity and steps taken to diversify their workforce.[28] The demanding nature of on-call positions at WSF is likely off-putting to many potential applicants, particularly candidates with caretaking responsibilities (Figure 16). Additionally, there is no mention of WSF's internal diversity initiatives.

Finally, there is a general lack of clarity in the maritime industry and WSF in particular about career advancement opportunities. One of the biggest appeals of working in the maritime industry is that one can start working with no credentials and work their way up from entry-level position to captain or chief engineer based on time and on-the-job experience and training. However, it is difficult to find information about how this works. The WSF only posts jobs for on-call ordinary sailors and oilers as those are the only positions the WSF hires. However, these job postings do not routinely include information about how individuals hired on on-call eventually can bid on permanent positions with regular, guaranteed schedules. These postings also do not routinely include information about how they have the opportunity to advance from Ordinary Sailor to Able-Bodied Sailor, Mate, then Captain or from Oiler to Assistant then Chief Engineer.

WSF, which recently hired a recruiting consultant, is taking steps in this direction. They are updating job titles, eliminating the use of gendered job titles (e.g., Sailor instead of Seaman) and titles with racial baggage (e.g., Captain instead of Master). They should redesign and improve job posting wording to entice more people to apply. Current job postings can be seen as dry and unappealing. They primarily emphasize

the job's harshest aspects, particularly the requirement that on-call positions require one to be available to work 24/7 but do not guarantee work or pay. While the positions indeed call for extreme availability from workers, communicating about the job's positive aspects, for example, on work environment and potential career advancement, could foster more applications.

What to Expect

As an on-call employee, you must be available for all shifts including morning, mid-morning, evening, weekends, and holidays. These essential on-call positions provide back-up for scheduled absences, but are even more critical when it comes to filling last minute staff shortages that require a quick response time.

Among the varied range of responsibilities held within this role, you/the Deckhand will:

- Help foster a safe experience for the customers, crew, and vessel
- Assist passengers as required, including response to inquiries, assistance with boarding, response to problems escalating to the Mate when necessary
- Perform a full range of general maintenance duties: general cleaning, stripping and waxing floors, restocking supplies, clearing litter, etc.
- Operate lift to secure vehicle-loading bridge using an automated system
- Support directing traffic onto the car deck and securing the vehicles before departure and assist in removing inoperable vehicles from the deck
- Participate with crew in fire, abandon ship, and rescue drills, performing aspects of the drill such as handling fire hose for testing and preparing rescue boat for launch and recovery
- During emergencies, fulfill duties on the muster list, or duties as assigned, and assist in rescue procedures
- Participate in training as directed

Qualifications

To be considered for this opportunity, the following are required:

- High School Diploma or GED Equivalent
- A valid Transportation Worker Identification Credential (TWIC)
- A valid Merchant Mariner Credential (MMC), with a minimum of an OS or AB endorsement
- A valid United States Coast Guard Medical Certificate using the 719K long form
- A Valid unrestricted Driver's License and ability to operate heavy equipment, such as a bullnose tractor and transfer spans

It is preferred that qualified candidates also have:

- Accept work on-call 24/7, including holidays, and be punctual and reliable at all times
- Exceptional communication skills, other written and verbal
- Excellent customer service skills
- Ability to respond to vessel emergencies
- Knowledge of commonly used nautical terms
- Experience from the maritime environment

Figure 19. WSF Job Posting Advertised on Careers.wa.gov For On-Call OS/AB Deckhand

Similarly, lowering barriers for entry-level applicants would expand the applicant pool. WSF currently requires individuals to hold multiple certifications, including a Transportation Worker Identification Credential (TWIC) and Merchant Mariner Credential (MMC), to apply to a WSF vessel-bound position. Unlike some competitors (King County Water Taxi, for example),[29] WSF does not offer to help with the certification process, discouraging the most disadvantaged candidates from applying.

EXPERIENCE, QUALIFICATIONS, KNOWLEDGE, SKILLS:

- Ability to work effectively with others in a work environment that embraces and encourages diversity in its workforce and where differences are valued
- Demonstrates behaviors that include fairness, respect, and inclusiveness
- Knowledge of applicable regulations, emergency and safety procedures, navigation and marlinspike seamanship
- Knowledge of proper use of fire fighting and lifesaving equipment
- Knowledge of safe lifting techniques
- Knowledge of safe work practices, including proper use of personal protection equipment
- Skill in effectively handling multiple competing priorities
- Skill in working with a variety of individuals from diverse backgrounds
- Skill in establishing and maintaining effective working relationships
- Ability to respond safely, effectively and expeditiously during an emergency
- Ability to work in a team environment
- Dependable and reliable attendance
- Demonstrated excellent written and oral (English) communication skills
- Demonstrated excellent customer service and interpersonal skills

LICENSING AND CERTIFICATION REQUIREMENTS
King County Metro Marine Division will assist selected candidates to obtain a valid United States Coast Guard (USCG) Merchant Mariner's Document (MMD) or Merchant Mariner's Credential (MMC) with minimum rating of Ordinary Seaman (OS) and/or a valid Transportation Workers Identification Credential (TWIC) issued by the Transportation Security Administration (TSA).

Able Body Seaman (AB) rating is preferred.

DESIRABLE LICENSES AND TRAINING
USCG rating on your MMD or MMC at the AB level Certification in Fire Safety Training and Life Saving Training
Satisfactory completion of the training and experience necessary to qualify as a Senior Deckhand in compliance with USCG Navigation and Vessel Circular (NVIC) No. 1-91

Figure 20. King County Water Taxi Job Posting Advertised on the King County Career Portal for Marine Deckhand

Finally, it is urgent to improve training conditions for apprentices with the Maritime Institute of Technology and Graduate Studies (MITAGS) in the Licensed Deck program. Currently, apprentices are unpaid for the entire duration of their training program, unlike most other registered apprenticeships in Washington State. They must also pay for transportation to and from the vessel and provide their meals while onboard. Similarly, oiler internships pay only $70 per day with no transportation or meals included. Many other trades compete for interested jobseekers that provide paid apprenticeships in Washington State. Though apprenticeships are largely seen as superfluous in the maritime industry as one can work as a sailor and gain the necessary sea time to advance to mate and then captain, apprenticeships make other resources available to apprentices. The structure, support, and resources available through an apprenticeship can be critical for people with high barriers completing the training and advancing to more senior positions. A partnership between WSF, MITAGS, and the unions could lead to a paid pathway from apprenticeship to permanent positions and help WSF maintain a baseline workforce for positions experiencing a significant labor shortage.

Fund TWIC and Other Documentations

Over the years, the list of certifications required by the USCG, and thus WSF, for mariner positions has expanded significantly. As mentioned above, candidates must hold multiple certifications to be recruited by WSF. First, all employees working aboard vessels, in the trades at Eagle Harbor, and at the terminals as ticket sellers and takers, terminal attendants, or shore gang must hold a valid TWIC card (Transportation Worker Identification Credential).

Created by The Transportation Security Administration in 2007[30] following the Maritime Transportation Security Act of 2002, this card is required of workers to help maintain security conditions at maritime facilities and aboard vessels. The Department of Homeland Security issues the card following a security threat assessment in which the applicant undergoes drug tests and a comprehensive background check

that includes terrorist watch lists, immigration status, criminal history, and outstanding warrants. This credential must be renewed every five years and costs $125.[30]

After obtaining their TWIC card, mariners must obtain a Merchant Mariner Credential (MMC) from the USCG that sanctions their aptitude for relevant job duties. Complete applications include an application form, relevant training course certificates, periodic drug tests, a fee ranging from $140 to $280 depending on the applicant's position.

§ 12.405 Examination and demonstration of ability for able seaman (A/B) endorsements.

(a) Before an applicant is issued an endorsement as an A/B, he or she must prove, to the satisfaction of the Coast Guard, by oral or other means of examination, or by actual demonstration in a Coast Guard-approved course, his or her knowledge of seamanship and the ability to carry out effectively all the duties that may be required of an A/B, including those of a lifeboatman or lifeboatman-limited.

(b) The examination, whether administered orally or by other means, must be conducted only in the English language and must consist of questions regarding -

(1) The applicant's knowledge of nautical terms, use of the compass for navigation, running lights, passing signals, and fog signals for vessels on the high seas, inland waters, or Great Lakes, and distress signals; and

(2) The applicant's knowledge of commands in handling the wheel by obeying orders passed to him or her as helmsman, and knowledge of the use of the engine room telegraph.

(c) The applicant must provide evidence, to the satisfaction of the Coast Guard, of the knowledge of principal knots, bends, splices, and hitches in common use by actually making them.

(d) The applicant must demonstrate, to the satisfaction of the Coast Guard, knowledge of pollution laws and regulations, procedures for discharge containment and cleanup, and methods for disposal of sludge and waste material from cargo and fueling operations.

Figure 21. Merchant Mariner Credential Ability Requirements for Able Seaman Endorsements[31]

WSF does not pay for any of these credentials, costing up to $405. Applicants must also spend time researching information, gathering documentation, and sending their applications with little to no guidance. These many steps could prevent low-income candidates and those who have limited access to the internet from getting proper certification.

The decision not to pay for these credentials has a rationale. They are issued to the worker and are not tied to the employer, which means that if an employer pays for a worker's certification, there is no guarantee that the worker would stay with the employer for much longer. However, in a context of severe labor shortage and intensive competition among employers, a little would go a long way in attracting candidates. The State of Washington could invest in getting more residents qualified to work not only for WSF but more broadly in the maritime industry by funding these credentials and providing support for entry-level workers navigating the somewhat complicated process of getting and maintaining credentials. This would help attract applicants and help diversify the WSF workforce and the maritime workforce in Washington overall.

More Inclusive Training: Swimming Classes

The International Convention sets physical and qualification standards for ship personnel on Standards of Trainings, Certification, and Watchkeeping for Seafarers (STCW). The STCW Basic Safety Training is required to obtain a mariner's license and STCW certification (required to work on the international route to Sydney, BC). Therefore, applicants to Merchant Mariner Credential must submit a medical evaluation form and undergo a series of fitness tests to ensure their ability to support ordinary and emergency

operations at sea. Most physical fitness requirements relate to strength (lifting and carrying heavy objects, for example) and agility (moving through restricted openings). Similarly, emergency response procedures require helping passengers should an evacuation happen, putting on a personal flotation device, and swimming in open water. Therefore, maritime academies require swimming exams before graduation.

However, most institutions do not offer swimming lessons despite significant racial disparities in swimming ability. 64% of African American children in a study completed by the USA Swimming Foundation possess poor swimming ability, compared to 40% of white children.[32] Similarly, 79% of children in families with household income below $50,000 have no to low swimming ability. Drowning death rates are also twice as high for American Indian or Alaska Native than for White people aged 29 or younger, and 1.5 as high for Black or African Americans. The reasons that communities of color have low rates of swimming proficiency are complex and stem from a history of discrimination, segregation, and income disparity, among other factors.

Learning how to swim can be a lengthy process that can discourage many and swimming lessons can be a financial burden for families. These obstacles de facto reduce the available labor pool in the maritime sector and restrict its diversity. Maritime academies partnering with WSF for training could help close swimming racial disparities and make the maritime sector more diverse by offering swimming classes in their program.

Increase core crewing beyond minimum USCG requirements

As mentioned earlier in this report, USCG revised minimum crewing requirements twice between 2012 and 2013. This move restricted the conditions in which a vessel can sail by increasing the required crew level for most ships. For example, the minimum number of Ordinary Sailors went from one to two from Jumbo Mark I class vessels (running the Bainbridge and Edmonds-Kingston). Similarly, Superclass vessels (running the Anacortes-San Juan and Bremerton routes) now require one licensed Mate (in addition to the previously required Mate and First-Class Pilot), an additional Ordinary Sailors, and an Assistant Engineer to allow sailing.

COI manning levels for the Jumbo Mk I Class (2000 pax):

Previous COI Manning	New COI Manning Level
1 Master & 1st Class Pilot	1 Master & 1st Class Pilot
1 Mate & 1st Class Pilot	1 Mate & 1st Class Pilot
1 Licensed Mate	1 Licensed Mate
4 Able Seamen	4 Able Seamen
1 Ordinary Seaman	*2 Ordinary Seamen*
1 Watchman	1 Watchman
1 Chief Engineer	1 Chief Engineer
1 Assistant Engineer	1 Assistant Engineer
1 Wiper	1 Oiler
1 Watchman	1 Wiper

COI manning levels for the Super Class (1868-2000 pax)*:

Previous COI Manning	New COI Manning Level
1 Master & 1st Class Pilot	1 Master & 1st Class Pilot
1 Mate & 1st Class Pilot	1 Mate & 1st Class Pilot
	1 Licensed Mate
4 Able Seamen	4 Able Seamen
1 Ordinary Seaman	*2 Ordinary Seamen*
1 Watchman	1 Watchman
1 Chief Engineer	1 Chief Engineer
	1 Assistant Engineer
1 Oiler	1 Oiler
1 Wiper	1 Wiper

Figure 22. USCG Change in WSF Crewing Requirements[33]

Despite this increase in the required crewing level, WSF's budgeted crewing level remained constant, preventing the agency from hiring additional crew members and reducing WSF's buffer, impacting its capacity to handle disruptions. Before these changes, the WSF workforce was large enough to manage absences and replace crew who could not come to work due to injury or illness or who encountered traffic delays on their way to work. For example, if WSF had two Ordinary Sailors scheduled in 2011, the ferry could still sail if one sailor could not work. Post-2013, both are required to be present for the vessel to sail, and the vessel cannot leave if one sailor is late or absent, and WSF cannot find a replacement before scheduled sailing. Increasing the WSF budget would allow the agency to hire additional Sailors and Assistant Engineers, ideally to the minimum levels presented in the Minimal Crewing section above.

7. Next Steps

In the coming year, Seattle Jobs Initiative, Segal, and Emsi Burning Glass will be undertaking the following:

- Fully develop an optimal staffing model that includes allocations for training, administrative duties, and a critical transportation infrastructure buffer.

- Based on insights from the above and additional analysis of payroll and human resources data as well as in-depth interviews with WSF staff and crew, develop strategies in collaboration with the Working Group to:
    - Attract qualified mates, captains, and engineers, including direct hire.
    - Address real and perceived disparities between positions in WSF and between WSF and the maritime industry.
    - Improve job attractiveness by changing scheduling and job advancement processes, including reassessing what positions WSF hires for and use of apprenticeships.
    - Further expand recruitment pools beyond those identified in the short-term strategies to meet specific needs and hiring goals.

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Appendix A: Methodology

WSF Background

Washington State Ferries Human Resources provided the project team with employee censuses containing unique identifiers, hire date, position at exported from their system on August 9, 2018, June 30, 2020, and September 9, 2021. A separate file was provided on November 5, 2021, with all employee separations by category from July 1, 2018 to November 4, 2021.

The project team drew on interviews and reflections during working group meetings and then searched the Lexis Nexis newspaper database for the key dates. The search was limited to Washington state for "Washington State Ferries" and identified news articles with relevant key events, cross-referenced with interviews and working group notes.

National and Regional Maritime Labor Market

The national and regional statistics for each occupation in the Washington state, Pacific Coast state, and the US were drawn from the Emsi Labor Market Analytics, 2021.[24] Additional data was pulled from the US Bureau of Labor Statistics[18] and Washington State Employment Security Department.[19]

Overtime Analysis

Washington State Ferries provided files for all overtime hours by day by employee from Fiscal Year 2013 through Fiscal Year 2021. They also provided updated files with all hours, both straight time and overtime by day by employee from Fiscal Year 2013 to Fiscal Year 2021. The project team categorized the type of overtime using the guides and discussions with the WSF budget and operations department.

Minimum Crewing Requirements

Files detailing the minimum crewing requirements for each vessel under different operating conditions were provided by the WSF operations department. Using Winter 2020 and Summer 2019 sailing schedules, we constructed a weekly sailing schedule showing the vessel class, route, deck shift hours, and vessel minimum crewing requirements. This data allows us to estimate the number of Captains, Mates, Sailors, Engineers, and Oilers needed for the boats to be allowed to sail. Additionally, using historical leave data, these numbers are adjusted for the probability of crew going on sick leave and vacation. However, more research is needed to account for other factors preventing work, such as staff going on training or attending meetings.

Cancellations

Cancellation data was compiled via the Washington State Department of Transportation's Gray Book.[5]

Appendix B: Unions and Collective Bargaining Agreements

Union	Bargaining Agreement	Occupations	Number Represented
Ferry Agents, Supervisors and Project Administrators Association (FASPAA)	Ferry Agents, Supervisors and Project Administrators Association (FASPAA)[34]	Terminal Supervisors	40
Inland Boatmen's Union of the Pacific (IBU)	Inland Boatmen's Union of the Pacific (IBU)[35]	Bosun	55
		Able Seaman	175
		Ordinary Seaman	245
		Quartermaster	57
		Info Agent	21
		Shore gang	17
		Terminal Attendant	161
		Ticket Seller/Taker	167
Marine Engineers Beneficial Association (MEBA)	Licensed Engineer Officers (MEBA L)[36]	Staff Chief	36
		Chief Engineer	74
		Assistant Engineer	118
	Unlicensed Engine Room Employees (MEBA UL)[37]	Oiler	185
		Wiper	1
	Port Engineers (MEBA PE)[38]	Port Engineer	6
Masters, Mates, and Pilots (MM&P)	Captains (MM&P Masters)[39]	Captain	58
		Staff Captain	16
	Watch Center Supervisors (MM&P WCS)[40]	Fleet Security Officer	3
		Watch Supervisor	7
		Workforce Development Lead	4
	Mates (MM&P Mates)[41]	Chief Mate	75
		Second Mate	28
Puget Sound Metal Trades Council (IBEW Local 46, IAMAW Local 79, SMWIA Local 66, IBT Locals 117 and 174, IBBISBFH Local 104, UAJAPPI Local 32)	Metal Trades Unions[42]	Boilermaker	12
		Electrician	17
		Machinist	15
		Pipefitter	14
		Sheetmetal	11
		Storekeeper	5
		Truckdriver	1
		General Foreperson	1
Office and Professional Employees	Office and Professional Employees	Accountant	8
		Accountant Assistant	7

Union	Bargaining Agreement	Occupations	Number Represented
International Union Local 8 (AFL-CIO) (OPEUI 8)	International Union Local No. 8 (OPEIU 8)[43]	Bid Administrator	2
		Buyer	6
		Contract Coordinator	5
		Dispatch Coordinator	4
		Dispatcher	5
		Inventory Agent	1
		Mail Clerk	1
		Maintenance Materials Coordinator	1
		Program Assistant	5
		Purchasing Agent	1
		Safety Systems Specialist	1
		Secretary	2
Pacific Northwest Regional Council of Carpenters	Pacific Northwest Regional Council of Carpenters[44]	Insulation	4
		Shipwright	17
Service Employees International Union Local 6 (SEIU 6)	Service Employees International Union Local 6 (SEIU 6)[45]	Janitor	6
Professional and Technical Employees Local 17	Professional and Technical Employees Local 17 (PROTEC17)[46,]	Transportation Engineer	26
		Transportation Planning Specialist	2
		Transportation Technician	6
Washington Federation of State Employees (WFSE)	Washington Federation of State Employees[47,] **Error! Bookmark not d efined.**	Communications Consultant	4
		Fiscal Analyst	3
		Forms & Records Analyst	1
		Library & Archival Professional	2
		Management Analyst	2
		Program Specialist	2
		Safety Officer	3
		Telecommunications Specialist	1
		Technical Training Consultant	1
		Transport Systems Technician	2

Appendix C: Interview & Focus Group Lists

Interviews

Last Name	First Name	Role
Churchwell	Brian	IT Assistant Director
Cirkovich	Stephanie	Director of Community Services & Planning
Crawford	Jane	Training & Credentialing Manager
Dabney	Marcus	WSF IT Applications Manager
Distefano	Anthony	IBU Representative
Garman	Ann	Transportation Planning Specialist 5
Hanbey	Matt	Operating Program Manager
Lathan	Dale	Director of Safety Systems
Mast	Terri	IBU
McIntosh	Nicole	Chief of Staff
Mooney	Jay	Port Captain
Morrison	Rachel	Sr. Bid Administrator
Phillips	Eben	Deputy Director of Vessel Engineering & Maintenance
Rustabello	Patty	Assistant Secretary of Washington State Ferries
Schweyen	Bill	Senior Port Engineer/Captain
Servais	Austin	Crew Resource Manager
Singer	Rick	Direction of Finance & Administration
Sowers	David	Director of Terminal Engineering
Twohig	Dan	MM&P United Inland Regional Representative
Von Rudden	Matt	Director of Vessel Engineering & Maintenance System Electrification Program Administrator
Williamson	Alec	Project Management Engineer
Winge	Eric	MEBA

Focus Groups

Unit	Route	Watch/Captain
Deck Crew and Engine Room	Seattle-Bainbridge	B Watch: Jorge Pinzon A Watch: Randy Kesteren C Watch: Scott Schrader E Watch: Erich Ackermann
Deck Crew and Engine Room	Seattle-Bremerton	F Watch: Steven Standaert D Watch: Eric Hairston
Deck Crew and Engine Room	San Juan Islands	H Watch: Glen Hogarth G Watch: David Lawton C Watch: Brandon Moser
Dispatch	N/A	N/A

Appendix D: Job Descriptions

Unit	Position	Description	Minimum Qualifications
Licensed Deck	Captain	Exercises full command of a vessel of any gross tons, manager of and responsible for entire vessel operations. Has authority over all persons on board. Also serves as licensed pilot.	• TWIC • USCG license as Master of Motor Vessels of any gross tons • Endorsement as First Class pilot for all routes operated • Radar observer endorsement • FCC marine radio operator permit • STCW certification • Electronic Chart Display & Information System (ECDIS) certified.
	First Mate/Pilot	Serves as Chief Officer, second in command of vessel of any gross-tons. Directs other officers and all members of the deck crew on all matters pertaining to the safe operation and deck maintenance of the vessel. Stands as watch officer in charge on bridge during normal operations.	• TWIC • USCG license as Mate of Motor Vessels of any gross tons • Endorsement as First Class Pilot on all routes, on vessels of any gross tons • Radar observer endorsement • FCC marine operator permit • STCW certification. • Electronic Chart Display & Information System (ECDIS) certified.
	Second Mate	Deck officer next in rank below First Mate of a vessel of any gross tons. Directs other officers and all members of the deck crew on all matters pertaining to the safe operation and deck maintenance of the vessel.	• TWIC • USCG license as Mate of Motor Vessels of any gross tons • Endorsement as First Class • Pilot on all routes, on vessels of any gross tons • Radar observer endorsement • FCC marine radio operator permit • STCW certification. • Electronic Chart Display and Information System (ECDIS) certified

Unit	Position	Description	Minimum Qualifications
Unlicensed Deck	Able Sailor (Able Sailor/Bos'n)	Highest rated unlicensed deck employee. May act as Bos'n or Quartermaster.	• TWIC • USCG certificate as Able Bodied Seaman - Limited. • STCW certification
	Ordinary Sailor	During a shift maintains passenger cabin area, assists passengers with vessel egress, assists with vehicle loading, stands a gangplank watch, assists in line handling, stands as lookout, acts as watch, fills a position on vessel muster list.	• TWIC • USCG certificate as Ordinary Seaman - Limited • STCW certification
Engine	Staff Chief Engineer	Supervises and ensures the efficient operation and maintenance of all propulsion and electrical systems of the vessel. Supervises and coordinates the activities of all engine room employees assigned to the vessel. Establishes vessel procedures for all engine room operations and maintenance	• TWIC • USCG license as Chief Engineer Limited Near Coastal of Motor Vessels • STCW certification
	Chief Engineer	Under general direction of vessel's Staff Chief Engineer, is in full charge of Engine Department. Ensures that the vessel's mechanical and electrical machinery is properly maintained and serviced. Assigns licensed and unlicensed engine room employees to duty stations. Maintains strict discipline of engine room crew.	• TWIC • USCG license as Chief Engineer Limited Near Coastal of Motor Vessels of the necessary horsepower rating to cover the assigned vessel horsepower. • STCW certification
	Assistant Engineer	Responsible for running, operation and maintenance of propulsion and electrical systems aboard the	• TWIC • USCG license as First, Second, or Third Assistant Engineer of Motor Vessels or • Assistant Engineer - Limited of Motor vessels (Inspected), of

Unit	Position	Description	Minimum Qualifications
		vessel. General maintenance duties may extend throughout entire vessel. Routinely inspects and maintains all equipment; reports malfunction and makes adjustments or repairs as directed by Chief Engineer's instructions.	the necessary horsepower rating to cover the vessel's assigned horsepower
	Oiler	Serves as the highest rated of the unlicensed members of the engine department. Under supervision of the licensed engineering officer(s) on watch, performs inspection, maintenance and repair duties throughout the vessel.	• TWIC • USCG certificate as qualified member of the engine department in the rating of oiler
	Wiper (not currently hired by WSF)	Serves as the entry level of the unlicensed engine department crew. Under supervision of the licensed engineering officer(s) assists in and learns inspection, maintenance and repair duties throughout the engine department of the vessel.	• TWIC • USCG certificate as Wiper
Terminal	Ticket Taker	Collects tickets and visually verifies that proper ticket has been sold; assists with traffic control and Terminal equipment operation and janitorial and/or light maintenance duties.	• TWIC • High school diploma or equivalent
	Terminal Attendant/Watch	Assists in janitorial and light maintenance duties, traffic control, terminal equipment operation and/or serves as watch during vessel tie-up.	• TWIC • High school diploma or equivalent
	Information Agent	Maintain direct communication with users in person and on the telephone	• High school diploma or equivalent • Call center and computer experience
	Web Information Agent	Maintains Washington State Ferries website information	• Three years of customer service experience

Unit	Position	Description	Minimum Qualifications
		and provides customer service related to service issues, customer issues and customer operational concerns	• Basic HTML code knowledge • Ability to write • Excellent written and oral communication skills • Knowledge of WSF system
	Shore Gang Worker	Performs skilled refit and preventative maintenance work on vessels and docks.	• USCG certificate as Ordinary Seaman - Limited • MMC • TWIC
	Terminal Supervisor	Serves as field supervisor for terminal operations	• TWIC
Administration	Port Captain	Management representative and responsible for enforcement of USCG regulations and organizational policies for all deck personnel	• TWIC • College degree • 5-10 years of experience in management of passenger vessel operations
	Port Engineer	Responsible for management of vessel maintenance and day to day engine department operations for assigned vessels, including facilities and personnel	• TWIC • USCG Chief Engineers License • 4 years of sailing experience • 3 years in charge of an engine room

Appendix E: Career Progression for Deck and Engine

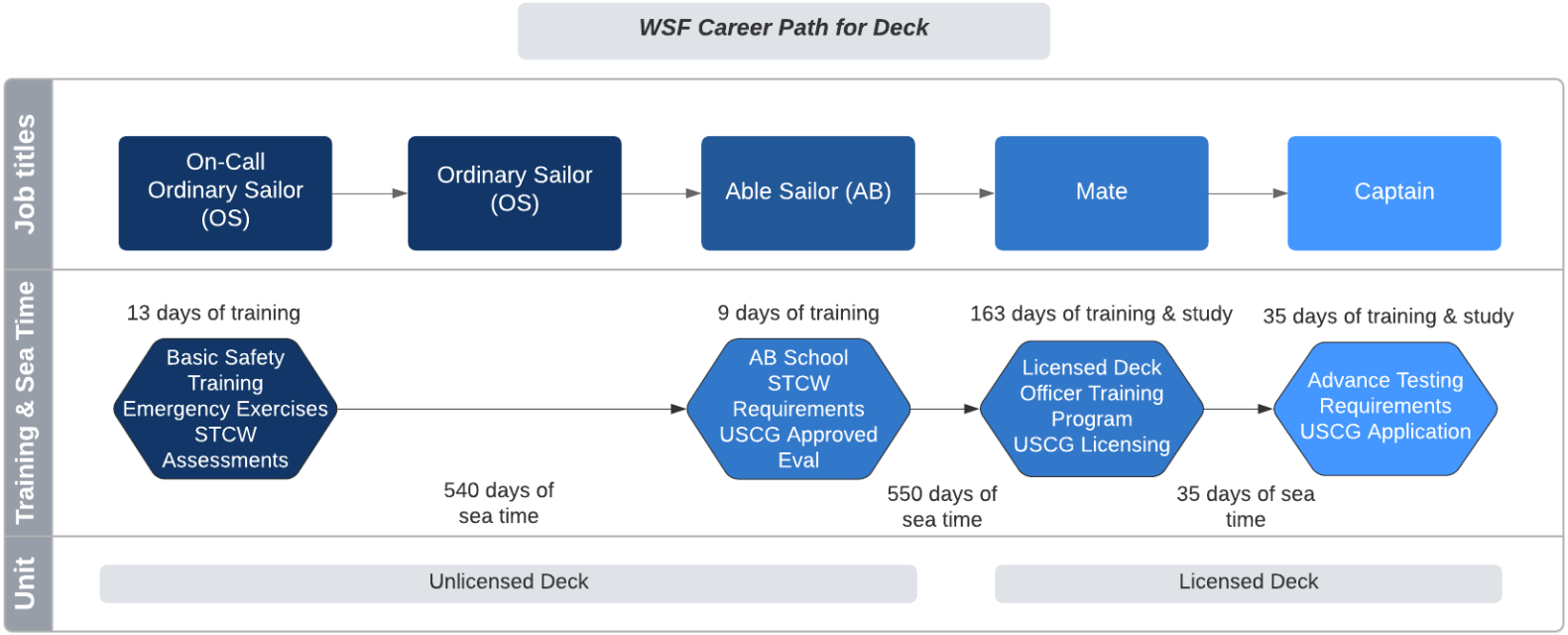

Figure 23. WSF Career Path for Deck

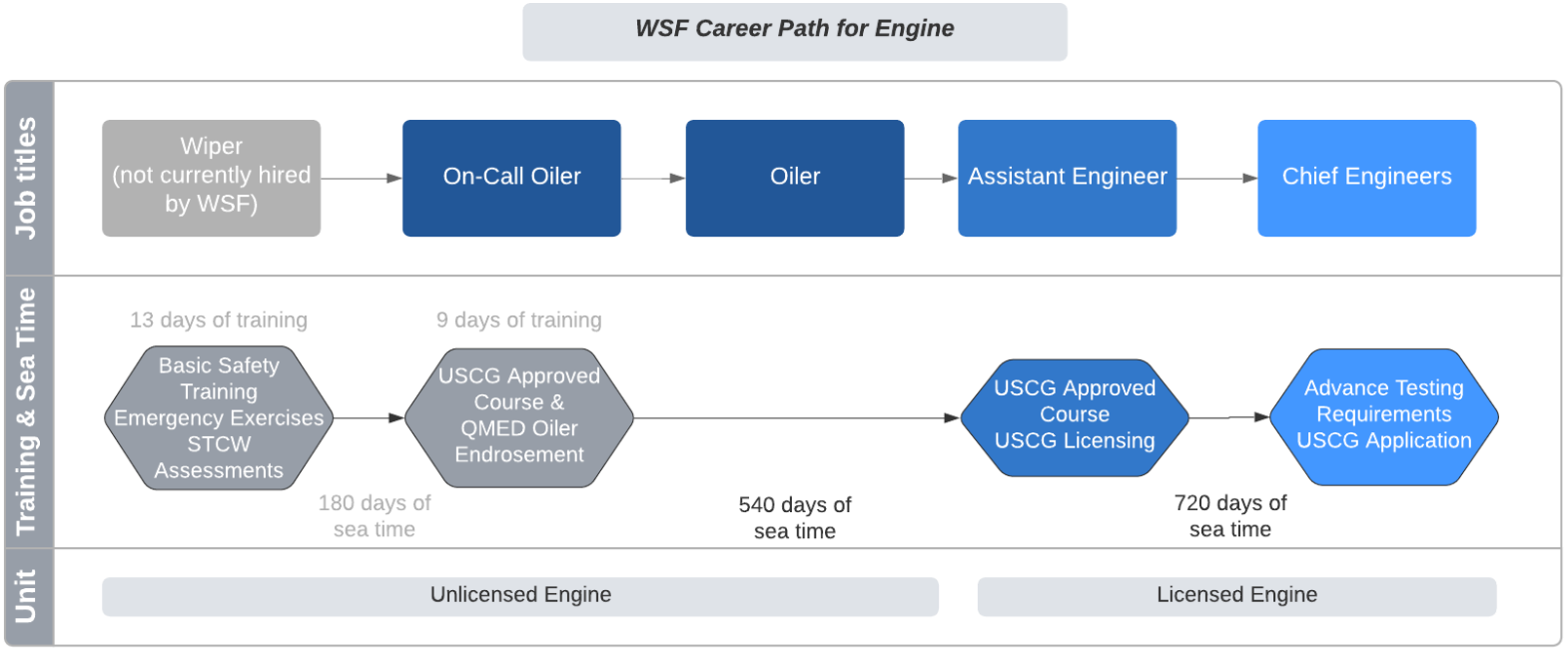

Figure 24. WSF Career Path for Engine

Appendix F: USCG Mandated Crewing Requirements for WSF Vessels

Class	Vessel	Walk-On Cap	Cars	Condition	Passenger Limit	Master	Chief Mate	Second Mate	Able-bodied Sailors	Ordinary Sailors	Chief Engineer	Assist. Engineer	Oiler	Wiper	Emer Evac Per.	Total	+Additional
Jumbo Mark II	Puyallup, Tacoma, Wenatchee	450	202	Standard	1791	1	1	1	4	4	1	1	1	1	-	15	6
Jumbo	Spokane, Walla Walla	450	188	Standard	1793	1	1	1	4	3	1	1	1	1	-	14	5
Super	Kaleetan, Yakima	300	144	Standard	1195	1	1	1	4	3	1	1	1	1	-	14	3
	Kaleetan, Yakima	300	144	Prom. Deck closed, 450 passengers	450	1	1	1	4	2	1	1	1	1	-	13	3
	Kaleetan, Yakima	300	144	October 1 to June 15 San Juans, Prom. Deck closed, Galley open, 450 passengers	450	1	1	0	4	3	1	1	1	1	-	13	3
	Kaleetan, Yakima	300	144	October 1 to June 15 San Juans, Prom. Deck closed, 450 passengers	450	1	1	1	4	2	1	1	1	1	-	13	3
	Kaleetan, Yakima	300	144	or	450	1	1	0	4	3	1	1	1	1	-	13	3
	Kaleetan, Yakima	300	144	Prom. Deck closed, 300 passengers	300	1	1	1	4	1	1	1	1	1	-	12	3
	Kaleetan, Yakima	300	144	October 1 to June 15 San Juans, Prom. Deck closed, Galley open, 300 passengers	300	1	1	1	4	2	1	1	1	1	-	13	3
	Kaleetan, Yakima	300	144	or	300	1	1	0	4	3	1	1	1	1	-	13	3
	Kaleetan, Yakima	300	144	October 1 to June 15 San Juans, Prom. Deck closed, 300 passengers	300	1	1	1	4	1	1	1	1	1	-	12	3
	Kaleetan, Yakima	300	144	or	300	1	1	0	4	2	1	1	1	1	-	12	3
Olympic	Chimacum, Samish, Suquamish, Tokitae	300	144	Standard	1500	1	1	-	5	4	1	1	1	1	-	15	5
	Chimacum, Samish, Suquamish, Tokitae	300	144	Standard at Bremerton	1500	1	1	1	5	3	1	1	1	1	-	15	5
	Chimacum, Samish, Suquamish, Tokitae	300	144	Sun deck closed at Bremerton	768	1	1	1	4	3	1	1	1	1	-	14	5

Class	Vessel	Walk-On Cap	Cars	Condition	Passenger Limit	Master	Chief Mate	Second Mate	Able-bodied Sailors	Ordinary Sailors	Chief Engineer	Assist. Engineer	Oiler	Wiper	Emer Evac Per.	Total	+Additional
	Chimacum, Samish, Suquamish, Tokitae	300	144	Sun deck closed elsewhere	768	1	1	-	4	3	1	1	1	1	-	13	5
Issaquah	Cathlamet, Issaquah, Kitsap, Kittitas	300	124	Standard	1196	1	1	-	4	3	1	1	1	-	-	12	4
	Cathlamet, Issaquah, Kitsap, Kittitas	300	124	At Point Defiance, Vashon- and Mukilteo, 300 Passengers	300	1	1	-	4	2	1	1	1	-	-	11	4
	Chelan	300	124	Standard on International	1195	1	1	-	4	3	1	1	1	-	1	13	4
	Chelan	300	124	Standard on Domestic	1196	1	1	-	4	3	1	1	1	-	0	12	4
	Chelan	300	124	Domestic at Point Defiance, Vashon- and Mukilteo, 300 Passengers	300	1	1	-	4	2	1	1	1	-	0	11	4
	Sealth	300	90	Standard	1196	1	1	-	4	2	1	1	1		-	11	4
	Sealth	300	90	At Point Defiance, Vashon- and Mukilteo, 300 Passengers	300	1	1	-	4	1	1	1	1	-	-	10	4
Evergreen	Tillikum	150	87	Standard	596	1	1	-	4	2	1		1	1	-	11	4
	Tillikum	150	87	At Point Defiance, Vashon- and Mukilteo, 300 Passengers	300	1	1	-	4	1	1	-	1	1	-	10	4
Kwa-di Tabil	Chetzemoka, Kennewick, Salish	188	64	Standard	748	1	1	-	4	3	1	-	1	1	-	12	0
	Chetzemoka, Kennewick, Salish	188	64	384 passengers	384	1	1	-	4	1	1	-	1	1	-	10	0

Appendix G: Working Group

Last Name	First Name	Affiliation
Catterson	Dave	Washington State Legislature
Cirkovich	Stephanie	Washington State Ferries
Crawford	Jane	Washington State Ferries
Forty	Jenna	OFM
Griffith	Reema	Transportation Commission
Halbert	Aaron	Transportation Commission
Macintosh	Nicole	Washington State Ferries
Mast	Terri	IBU
Masterson	Danny	Senate Transportation Committee
Neal	Paul	Washington State Legislature
Nevey	Steve	Washington State Ferries
Redfield	Beth	House Transportation Committee
Servais	Austin (Ozzy)	Washington State Ferries
Thompson	Harry	IBEW 46
Twohig	Dan	MM&P
Vezina	John	Washington State Ferries
Winge	Eric	MEBA
Quam	Dana	House Republican Caucus
McCarty	Hannah	Senate Democratic Caucus
Othan	Loren	House Democratic Caucus
Presley	Martin	Senate Republican Caucus

Appendix H: Project Team

Seattle Jobs Initiative	Segal	Emsi-Burning Glass
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