

PURPOSE

WSDOT Ferries Division's mandate is to provide safe and efficient ferry transportation at the lowest possible cost against an ever changing background of regulations, economics, security, and customer expectations. This requires that they periodically examine their assumptions, their processes, their finances, and even their traditions. At the request of the Governor and the Washington State Legislature, PVA has convened a Panel of ferry system managers from around the United States to provide a fresh look at how WSF plans, manages, and operates.

The goals of the Panel are to:

1. Review the studies that have been published and gather information on topics as needed.
2. Understand WSF's operation and look for efficiencies based on their experience and ferry system practices.
3. Examine the vessel crew practices and sailing schedules to identify opportunities for reducing operating expenses.

WSF's passenger safety record is excellent and is in the first rank of ferry operators around the world. Consequently the Panel did not focus on safety or crew attitudes regarding safety. Nor did the Panel closely examine the security aspects of WSF's operations. That area has been reviewed by the Department of Homeland Security and by the Washington State Patrol who has first responder duties for any security incident.

The Panel did examine and discuss a wide range of topics. The Panel did so in a candid manner as befits their role as peers and marine industry professionals. WSF's senior management has much to be proud of as described in the following report. There are also areas where the Panel has distinct observations and some clear recommendations.

PANEL MEMBERS

General

PVA is the membership association for passenger vessel operators in the United States representing over 560 firms, including approximately 92 ferry operators. In a letter dated March 8, 2010 (Appendix A), Governor Gregoire asked PVA to "conduct a management review of the Washington State Department of Transportation, Ferries Division." This review would bring a Panel of ferry system experts together that could examine subjects such as capital finance, organizational structure and operational efficiency. Specifically, the Governor asked the Panel to look at recent reviews by the Joint Legislative Audit and Review Committee, the Office of the State Auditor, and the Joint Transportation Committee as well as current operating procedures. Since PVA is actively engaged in shaping regulations, legislation, and policies that affect ferry operators in the United States, they were the logical organization to host the Panel. The findings of the Panel would provide a truly independent assessment of WSF.

Once the notion of the Panel was conceived, PVA consulted with some of its ferry members to identify strong candidates to serve as members of the Panel. The desire was to have a mix of East Coast and West Coast firms, as well as a mix of large and small operators to provide a range of perspectives. The size of the Panel was limited to five operator members, staffed by the PVA project manager and a marine industry facilitator, and assisted by WSF senior management. The outcome of the Panel meetings and discussions was to be a report that could be presented to the Office of the Governor, the Washington State Legislature, WSDOT management, as well as interested members of the public. For comparison purposes, some data from the Alaska Marine Highway System (AMHS) was also examined by the Panel.

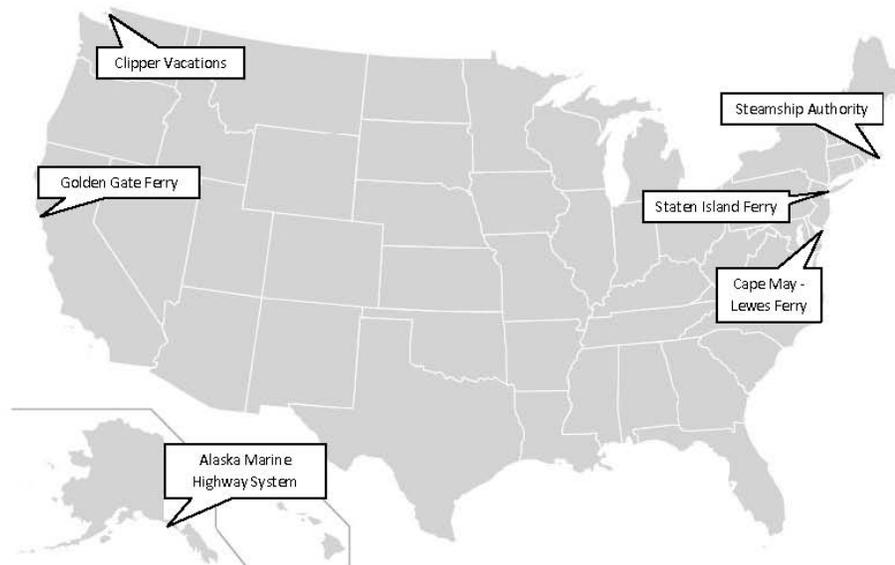


Figure 1 – Map showing PVA Expert Panel Member Locations, plus AMHS

Participants

Expert Review Panel

Clipper Navigation Inc. DBA Clipper Vacations

- Mr. Darrell Bryan, President and Chief Executive Officer, Panel Chair

Cape May – Lewes Ferry

- Capt. Heath Gehrke, Director of Ferry Operations

Golden Gate Ferry

- Mr. Jim Swindler, Deputy General Manager, Ferry Division

Staten Island Ferry

- Capt. James DeSimone, Deputy Commissioner & Chief Operating Officer

Woods Hole, Martha's Vineyard & Nantucket Steamship Authority

- Mr. Wayne Lamson, General Manager

Staff Support

Passenger Vessel Association

- Mr. John Groundwater, Executive Director
- Capt. Elizabeth Gedney, Director of Safety, Security & Risk Management

Elliott Bay Design Group

- Mr. John Waterhouse, PE, Facilitator
- Ms. Christina Villiott, CPSM, Report Coordinator

State Participants

Washington State Office of Financial Management

- Mr. Erik Hansen, Budget Assistant to the Governor

Washington State Ferries

- Mr. David Moseley, Assistant Secretary Washington State Department of Transportation
- Ms. Jean Baker, Deputy Chief of Administration & Finance
- Mr. Ray Deardorf, Planning Director

A brief description of each ferry system represented by the Panel members is given below. The members are a diverse mix of metropolitan based mass transit operations and vital transportation for more isolated communities. Additional data on the ferry systems is given in Appendix C.

Woods Hole, Martha's Vineyard & Nantucket Steamship Authority (SSA)

Created by the Massachusetts Legislature to provide transportation to the islands of Nantucket and Martha's Vineyard, SSA is the only ferry service for the islands that carries both passengers and vehicles, including commercial freight trucks. The Steamship Authority is an independent public authority governed by a five-member board with one representative each from the communities of Nantucket, Martha's Vineyard, Falmouth, Barnstable and New Bedford. Each island board member (2) has 35% of the members' combined vote and each of the mainland board members (3) has 10% of the members' combined vote.

The SSA has its principal office in Woods Hole, MA with ferry terminals in Woods Hole and Hyannis on Cape Cod, Vineyard Haven and Oak Bluffs on Martha's Vineyard, and a terminal on the island of Nantucket. SSA owns and operates year-round parking lots in Woods Hole and Hyannis, and operates additional seasonal off-site parking lots. SSA has a vessel maintenance facility, a receiving warehouse and it rents off-site property for its two reservation offices.

Clientele includes year-round island residents, a significant seasonal population and tourists. The popularity of the islands has been reflected in increasing traffic and demands for service. The SSA has a fleet of nine vessels. They have one high-speed passenger only ferry, five passenger-vehicle ferries and three roll-on/roll-off vessels which primarily carry trucks. They carry approximately 2,700,000 passengers, 450,000 automobiles and 133,000 trucks annually on three routes. SSA employs 650 people (peak season) with a workforce that is almost totally represented by unions, with eight bargaining units represented by four different unions.

SSA's budget is supported by operating revenues of around \$80 million and the system must achieve 100% farebox recovery. In order to achieve this level of farebox recovery, SSA charges fares that are significantly higher than most U.S. ferry operators, see Appendix C for comparison. Any operating deficits flow back to the five communities that govern SSA, so they are under tight fiscal constraints. Their board has wide discretion to set rates; these are adjusted annually to ensure sufficient income to meet the projected cost of service. The SSA has a nearly 100% on-time performance record, with service interruptions caused almost entirely by inclement weather.



Figures 2 & 3 – Photo of Terminal (Hyannis) & SSA Vessel M/V ISLAND HOME

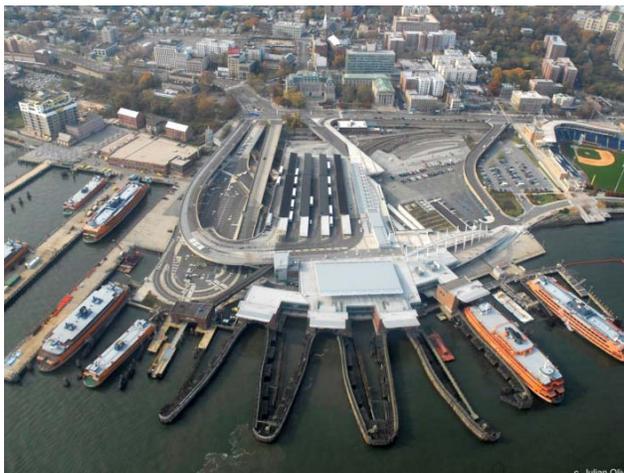
Staten Island Ferry (SIF)

Staten Island Ferry is a division of the New York City Department of Transportation, which provides passenger transportation between boroughs of Staten Island and Manhattan. Since Staten Island is also served by three bridges, commercial and passenger vehicle traffic is not carried by the ferry system.

A fleet of eight passenger ferries moves approximately 21 million passengers a year. The five mile, 22-minute voyage occurs 35,000 times a year and provides a majestic view of New York Harbor. Staten Island Ferry also operates a year-round ferry service between City Island and Hart Island in the Bronx in support of the NYC Medical Examiner, as well as a vessel maintenance facility at the St. George Terminal on Staten Island.

The Staten Island Ferry is a free, urban mass transit system with peak ridership occurring during the morning and evening commute periods. It also attracts a significant number of tourists during the summer months. A typical weekday schedule involves the use of five boats to transport approximately 70,000 passengers daily (109 daily trips). Terminals are cleaned around the clock and routine terminal maintenance is performed on the day shift. On weekends, three boats are used (75 trips each Saturday and 68 trips each Sunday). The ferry system has a workforce of approximately 620 employees, represented by some 20 bargaining units.

Staten Island Ferry's annual operating budget of around \$91M is funded by a combination of city, state and federal funds. SIF's on-time performance record (5-minute standard) is approximately 92%.



Figures 4 & 5 – Photo of SIF Terminal and SPIRIT OF AMERICA

Cape May – Lewes Ferry (CMLF)

The Delaware River and Bay Authority (DRBA) was created by the Legislatures of the States of Delaware and New Jersey and by Act of the U.S. Congress. The Authority manages the Delaware Memorial Bridge, Cape May – Lewes Ferry, Three Forts Ferry, two airports and as well as some commercial interests. The CMLF is governed by a board that represents Delaware and New Jersey, with six resident representatives from each state.

Currently, Cape May – Lewes Ferry owns five ferries of which two are for sale. This fleet carries approximately 300,000 vehicles and 800,000 passengers annually on a single route with an 80-minute crossing. The operation is highly seasonal with 80% of the traffic occurring in the summer months.

With declining ridership (since 1998 vehicle traffic is down 20% and passenger traffic is down 40%), Cape May – Lewes Ferry is interested in constructing some new ferries that would provide faster service and lower operating costs and thus, hopefully, attract more customers. Peak season fares for a one-way adult is \$10, car and driver is \$44 for this 80 minute, 16-mile crossing.

CMLF recovers 68% of their \$21 million annual budget from fares. The operating deficit is funded by bridge tolls from the DRBA. The CMLF ferry division currently has 122 permanent full time employees and employs another 100 full-time-equivalent seasonally. CMLF does not count a late departure if less than 10 minutes late and their 2010 on-time record is 98.2%.



Figures 6 & 7 – Photo of CMLF Terminal (Cape May) and Vessel

Golden Gate Ferry (GGF)

Golden Gate Ferry is a division of the Golden Gate Bridge District, which provides three core products: bridge, ferry and a variety of bus services. Each service has its own operation division. The California Legislature authorized that toll fares on the Golden Gate Bridge help develop a system as a means of managing traffic congestion and today help to subsidize the other transportation modes. They have a 19-member board with three district offices. Oversight is provided by representatives from six counties: San Francisco, Marin, Sonoma, Napa, Del Norte and Mendocino.

The ferry division offers service on two routes: Sausalito to San Francisco and Larkspur to San Francisco. GGF has its principal office in Larkspur, which is also the location of their maintenance facility. All traffic on the San Francisco side flows through the San Francisco Ferry Building, though GGF does provide seasonal service to AT&T Park for major league baseball.

Golden Gate Ferry has a fleet of seven vessels; four high-speed and three mono-hull, aluminum passenger-only ferries. Two of the vessels were recently purchased from Washington State. Their peak ridership occurs during the morning and evening commute periods. They transport over 2.1 million passengers annually with some 17,800 sailings.

The ferry system has just over 80 employees. Golden Gate recovers 42% of their \$22.9 million budget from fares. The operating deficit is funded by bridge tolls from the Golden Gate Bridge. Golden Gate Ferry reports 98% on-time performance for the last three years. A peak season fare for a one-way adult is \$8.25 for this 13-mile crossing.



Figures 8 & 9 – Photo of GGF Vessel & Terminal (Larkspur)

Clipper Navigation, Inc. (CN)

Clipper Navigation, Inc., part of Clipper Vacations, is a privately held company formed in 1986 to offer ferry service between Seattle and Victoria, BC. Due to its international route, the constraints of the Passenger Vessel Service Act of 1928 do not apply. This allows CN to operate vessels built outside of the United States. It does, however, require compliance with a variety of international regulations including the Safety of Life at Sea Convention and the Dynamically Supported Craft Code.

Clipper currently operates two high-speed catamarans used for passenger ferry service to Victoria, BC and one U.S. built catamaran used for Seattle - San Juan Island service on a seasonal basis. They have grown beyond their initial status as a transportation company and now offer a wide variety of tourism-focused products including tours, accommodation packages, and a variety of transportation options. They play a critical role in promoting tourism activities in the Seattle, Victoria, and Vancouver, BC metropolitan areas.

The client base for Clipper is tourism-oriented with 50% of their passengers coming from outside the Pacific Northwest region. Due to sharp swings in seasonal demand, their staff size fluctuates seasonally, but have a year-round staff of 115 employees. Their operating budget is \$5 million. Peak season fare for an adult is \$93 for a three-hour, 72-mile voyage.



Figures 10 & 11– Photo of CN Vessel & Terminal

DOCUMENTS REVIEWED

General

The Panel was asked to review eight reports prepared by the Cedar River Group at the request of the Washington State Transportation Committee (References 1 – 8). These documents are briefly described below. The Panel also reviewed the Performance Audit of WSF prepared by the State Auditor's Office (Reference 9). In addition to these reports, the Panel reviewed a variety of supporting documents including Collective Bargaining Agreements, Ferry Departure Schedules, Crew Schedules, Maintenance Schedules, etc. A complete list may be found in the Reference section of this report.

Ferry Finance Study, January 2007, 105 pages

This report analyzed the key assumptions that produced WSF's capital and operating programs: travel forecasts, designing for peak periods of traffic, what should be defined as preservation, and financial planning. The report recommended an overall policy change from prior legislative direction that WSF should take steps to manage demand first before implementing programs to accommodate growth.

System-wide Capital Projects Final Report, July 2008, 31 pages

This report analyzed WSF's system wide capital costs (those not assigned to a specific project) and made comments on a proposed cost allocation methodology.

Non-Labor, Non-Fuel, Operating Cost Final Report, July 2008, 32 pages

This report analyzed the 20 percent of WSF's operating costs that are not associated with labor and fuel. These costs include maintenance repairs, insurance, supplies for vessels and terminals, management, and rents, leases and utilities.

Capital Program Staffing and Administration, April 2008, 43 pages

This report reviewed WSF's staffing level on capital programs and made a series of short, medium and long-term recommendations.

Management and Support Operating Costs Final Report, July 2008, 44 pages

This report reviewed the management and support costs of WSF. Components of management and support costs were identified, recommendations made on the reasonableness of those costs, and options evaluated for what management and support costs should be included in calculating farebox recovery.

Long-Range Finances Final Report, May 2009, 94 pages

This report analyzed the first 16 years of WSF's draft Long-Range plan and made recommendations on service levels, vessel acquisition and timing, terminal improvements and cost savings.

Washington State Ferries Financing Study II, Vessel Preservation and Replacement, Final Report, January 2008, 81 pages

This report evaluated WSF's fleet age and condition and provided observations and recommendations on several topics including vessel retirement and rebuild dates, tying vessel capacity increases to ridership demand, alternatives to constructing new vessels, and prioritizing vessel replacement funding.

Auto-Passenger Vessel Sizing and Timing (2009-2030) Final Report, April 2009, 91 pages

This report analyzed the timing, sizes, and number of new vessels needed by WSF by the year 2030. The report recommended reducing the fleet size to 21 vessels by shortening the annual planned out-of-service time of vessels for maintenance, and implementing a system to press vessels that are in maintenance back into service on short notice.

Performance Audit of the Washington State Ferries, September 2007, 71 pages

This report was prepared by Ernst & Young under the direction of the State Auditor's Office. The audit was performed in accordance with Government Auditing Standards and was provided to the Legislature as required by Citizen Initiative I-900. The report presented 10 recommendations for improvements in internal processes with an estimated savings of approximately \$10 million per year.

PROCESS

General

Since work began on June 9th, the Panel has had five meetings. Three extensive conference calls were conducted, and two in-person meetings, with the Panelists traveling to Seattle. Panel members received the extensive reference material outlined in the previous section of this report. The Panel also requested key areas of concern for WSF during these meetings for discussion.

The first in-person meeting in Seattle provided initial impressions of the extensive background material and identified areas where additional information might be of use. On the second day of this meeting, the Panel rode from Seattle to Bainbridge in order to tour the maintenance facility at Eagle Harbor to get a first hand view of the operation and to meet some of WSF's key maintenance supervisors.

A second meeting of the Panel took place in Seattle on July 22 and 23. An initial rough draft of the Panel Report was presented for discussion. The Panel requested some final information to be presented in the final report.

In addition to a review and discussion of the documentation, the Panel reviewed policies and procedures of each of the systems represented by the Panel and WSF. For this review and subsequent discussion, the Panel members brought to bear their considerable knowledge, experience and judgment.

The final rough draft was presented to the Panel for review on August 9, 2010. Based upon their comments and the WSDOT Ferries Division, the report was finalized and presented to the Office of Financial Management on September 7, 2010.

MANAGEMENT PRACTICES

General

The American Heritage Dictionary defines management as: "The act, manner, or practice of managing, handling, or controlling something." Manage is defined as: "To direct or control the use of." Review by the Panel indicates that WSF exercises effective control of its operation. The leadership team directs a complex organization that is geographically dispersed with high standards of safety and efficiency. That said; WSDOT Ferries Division can, like any other large organization, always find ways to improve its management practices.

The Panel has identified the following areas with opportunity for improvement:

- Governance
- Management Presence on Vessels
- Design and Management of Large Capital Projects
- Fleet Management
- Insurance
- Performance Measures

Governance

WSF has a high profile in Washington State with the Legislature, the Governor's office, the DOT, visitors to the state, and to the population base located around Puget Sound. WSF is managed by an Assistant Secretary of Transportation who reports to the Secretary of Transportation. WSF also receives recommendations and input from the Washington State Transportation Commission and the entire Legislature. Due to this high visibility, the Legislature rightly feels the need to question the direction of the system while trying to better understand the constraints and issues of this very complex organization and its complicated regulatory and operational requirements. This constant responding, educating and reacting are tremendously costly and this expenditure could be better utilized elsewhere.

In contrast, all of the Panel member ferry systems report to a Board of Directors or a governmental entity with management oversight. Yet, most have greater autonomy to make crucial business decisions—those having impacts on revenue and expense—than does WSF management. Three of the five ferry systems (CMLF, SSA and GGF) demonstrate the greatest degree of autonomy. Ferry management for each of these three organizations is given fairly broad latitude to make important decisions concerning operations, capital asset allocation and staffing. To establish an appropriate level of oversight, the governing bodies set clear performance standards and performance goals for ferry management. They then have scheduled audits and oversight to assess their performance against these standards. The Panel feels strongly that further review of WSF governance is necessary as it could deliver process improvements and budgetary savings.



As an independent authority within the Commonwealth of Massachusetts, SSA must comply with the authorizing statutes and state regulations for finances and employment but has considerable autonomy in establishing operational policies and practices. The SSA is governed by a five-member board and each of the island board members has 35% of the members' combined vote, and each of the mainland board members has 10% of the members' combined vote. The General Manager reports to the Board of Directors.



SIF is a division of the New York City Department of Transportation. SIF is managed by a Chief Operating Officer who reports to the New York City DOT Commissioner. Governance is provided by the Office of the Mayor and the 51-member City Council. The Borough presidents provide input, but do not have any direct control of the ferry system.



CMLF is one of several divisions of the Delaware River and Bay Authority (DRBA). DRBA's Board of Directors consists of 12 members, six of which are appointed by six communities in New Jersey and six of which are appointed by six communities in Delaware. The Board meets twice per month. The authority operates the Delaware Memorial twin suspension bridges, the Cape May-Lewes Ferry, the Three Forts Ferry Crossing and the Salem County Business Center, as well as several aviation facilities in both New Jersey and Delaware. CMLF's operation is subsidized by tolls on the bridges. The Director of Ferry Operations oversees the system and reports directly to the head of DRBA.



GGF is a division within the Golden Gate Bridge District and receive services from the Bridge District for financial and accounting support, human resources and some planning support. It is a special district of the State of California that operates and maintains the Golden Gate Bridge and provides certain public transit services between and within Marin, Sonoma, and San Francisco counties. The District is governed by a 19-person Board of Directors that is appointed by the elected representatives of its constituent counties. The Deputy General Manager reports to the GM of the Golden Gate Transportation District.


RECOMMENDATION

The Panel recommends that the State consider studying its ferry governance model to determine if opportunities exist for positive change.

The Panel feels that the current governance model for WSF is outside of the norm for public ferry operators and that WSF suffers from excessive oversight.

Management Presence on Vessels

Under U.S. Maritime Law, the vessel Master, also known as the Captain, is defined as the "Owner's special agent in trust." The Panel agrees with WSF's examination of the role of shipboard personnel, particularly the Master, as part of the management structure and their role in carrying out the goals and missions of the organization aboard the fleet. This examination by WSF includes examples such as: What leadership role does the Master play within the shipboard organization? How does the Master carry out organizational policy? How is the vessel Master a manager or supervisor? What performance measures could/should be applied in daily operations? The Panel believes that these types of questions are a positive indication that WSF is open to change and improvement.

Licensed officers have distinct operational duties, as defined by the USCG, such as assuring that the crew is trained and rested according to regulations. Other duties might include maintenance activities or planning, personnel review, mentoring and job coaching, development of operational policies or procedures, and review of time charges by their direct reports. Under the WSF Safety Management System, the Master's duties include "Supervise all vessel personnel," "Maintain discipline aboard the vessel; ensure that subordinates carry out orders issued by licensed deck officers," and "Assist Port Captain(s) in responding to customer service complaints for the vessel, and take remedial action when necessary." (Reference 10)



SSA empowers the Senior Captain and Senior Engineer to "own" the boat and supervise overhauls to provide continuity of knowledge. SSA acknowledges that vessel crews are not necessarily effective in customer interactions. SSA has been working on training their terminal managers, vessel pursers, and parking lot managers to try and develop a culture of service.



At SIF, the vessel's Master handles performance reviews for licensed deck officers and above-deck crew, and the Chief Marine Engineer handles such for licensed engine officers and below crews. Otherwise, their duties are strictly operational. SIF does provide training to the vessel crews on hospitality and working with special needs passengers.



GGF admits that over-reliance on shore-side staff has been a problem, so GGF is working to empower their Captains. This has resulted in more involvement of the Masters with crew discipline and promotion. They used to rely on shore-based managers to make decisions that can affect overtime costs. Now the employees have to validate decisions with Captains. Decisions are now better thought out with increased communication and elimination of most timecard issues.



At CN, Captains are directly involved in crew performance, training and promotion. Captains and Chief Engineers coordinate closely with the Port Engineer in all vessel maintenance issues.



Both CMLF & CN place a high priority on the quality of the customer experience due to the strong tourism basis for their operation. They expect the entire ship's crew to interact with customers in a friendly, welcoming manner. Any customer complaints are reviewed by the General Manager, who then works with the Master to remedy the problem if possible.



The Panel recommends that the vessel Master (Captain) should act as the management's representative for the vessel and all of its crew.

This is standard marine practice and is backed up by maritime law, USCG regulations, and WSF's own Safety Management System. (Addendum E of Reference 11) gives a clear list of duties for Staff Masters, but falls short of confirming their management role. The Panel recommends that WSF continue to work with its employees to ensure good management on the vessels.

Design and Management of Large Capital Projects

As a result of the study by the Cedar River Group, WSF has reduced the number of staff involved in engineering and design. The reliance on consultants has also been greatly reduced. The Panel believes that WSF should continue to assess these positions to assure that the department is appropriately staffed to maintain the core competencies within the team to manage projects and consultants hired by WSF.

WSF manages large capital projects for their terminals and vessels with a dedicated staff of in-house planners, engineers and designers. Of the 58 staff members in Terminal Engineering, 54.4 Full Time Equivalents (FTE) or 94% are charged to capital projects. In Terminal Engineering, there are staff who manage environmental planning and permitting as well as mitigation of the impacts of terminal projects. The vast majority of staff is assigned to numerous terminal projects, such as dolphin and wingwall replacement and preservation of existing docks, bridges, pavements, etc. Even when a large project is being handled by an outside firm, some of WSF Terminal Engineering staff may be handling portions of the project such as electrical or mechanical, depending upon their workload.

Of the 63 staff members in Vessel Maintenance, Preservation & Engineering (Vessel Engineering), 39 FTE or 62% are charged to capital projects. In Vessel Engineering, the majority of the staff is engaged in design and troubleshooting for the existing fleet, and inspection and construction management for vessels in the yard or dockside. Design for new construction of the Jumbo Mk II Class was handled by WSF staff. The 144-Auto ferry design and the 64-Auto ferry design were completed by outside consultants. The Vessel Engineering group's work is supplemented by consultants when there is a lack of staff in a particular engineering discipline or a lack of expertise.

Current capital projects include the renovation of Eagle Harbor, the construction of three 64-Auto ferries, and the shipyard design for the 144-Auto ferry class. The in-house staff is significantly larger than any other ferry operator on the Panel.

WSF has just completed a staffing report in 2010 that was accepted by the legislature. This report will be used to determine an appropriate level of staffing.



SIF has been engaged in new capital projects over the past 20 years for both terminals and vessels. The reactive nature of the city's planning, and the long lead times before projects are completed, makes any capital project in New York City a challenge. For example, in 1992, a fire at the White Hall terminal destroyed the building. A new terminal building was not completed until 2005. On the Staten Island end of the route, an economic stimulus program was initiated by the City of New York in the mid-1990s to refurbish the St. George terminal. Originally budgeted at \$60M, the program ended up costing more than

\$100M to complete. On the vessel side, SIF/NYDOT historically considers replacing ferries when they reach 30 years of age. In 1995 they began the process to replace the three vessels of the Kennedy Class, which had been built in the mid-1960s. Three new ferries were delivered between 2005 and 2006, approximately ten years after they started the new procurement project. SIF is aware of the challenges of working with the New York City bureaucracy and have devised a system that meets their fiduciary responsibilities while still delivering projects. SIF uses their Terminal Managers and Port Engineers to direct the activities of outside consultants. To control flow of paperwork and fiscal requirements, SIF also uses on-staff liaison engineers that work with the consultants' managers on project administration.



As an independent authority, SSA has greater freedom in how they manage projects but, still must comply with rules set by the Commonwealth of Massachusetts. SSA prepares a capital budget each year, which includes a rolling five year capital planning component. They develop a list of major projects annually and identify long lead issues such as funding, permitting, environmental studies and design efforts. The funding for capital projects comes from a variety of sources including their own bonding authority and Replacement Fund, the Federal Ferry Boat Discretionary Fund, and other Federal Grant programs. These federal agencies also bring regulations that increase the management effort required for capital projects. SSA has a facilities engineer that is responsible for managing all facilities projects. For vessel projects they rely upon two Port Engineers to control capital expenditures. The Facilities Engineer and the two Port Engineers report to a Director of Engineering and Maintenance.



CMLF operates with a five-year capital plan in conjunction with a long-range 13 to 15-year capital plan. During the '80s and '90s, CMLF had growing ridership and a direction that emphasized the vessels as a tourist attraction. They invested over \$20M each for two vessels to renovate them, adding bars, lounges and entertainment areas. However, improvements in highways on the Delaware side resulted in better driving conditions and demand has dropped. Summer passengers love the big refurbished boats, but they cannot operate in winter due to their greater sail area.

Now CMLF is trying to undo some of the growth in staff, facilities and vessels to get back to a viable operating model. With generous benefits at 50-60% of direct labor cost, labor is CMLF's largest expense category and they must find ways to reduce their workforce. With ridership down, CMLF believes they can reduce operating costs by a new capital investment in smaller vessels. They developed a Marine Master Plan which recommends three faster, cheaper vessels with less tonnage (under 1,600 tons). With the new vessels, they project 1/3 less crew cost with the same fuel consumption. Construction costs are estimated at \$50M each for 1,000 ton vessel (light ship). They are looking to sell two of their existing vessels to start the process. Long-range plans have not presented a clear picture for new vessels due to competing demands for capital from other parts of the organization.



GGF is planning a major alteration to all three of their terminals and has brought in architecture and engineering firms to develop the plans, specifications and estimates. On the vessel side, they rely upon an in-house Port Engineer to coordinate external consultants for the engineering and construction supervision.

From this information, it is clear that WSF is operating outside the industry norm and needs to examine the design and management of capital programs.

RECOMMENDATION

The Panel recommends WSF modify its capital projects design and management structure to be more in line with industry norm.

No other ferry operator has as large a staff of in-house engineers and designers. All Panel members use outside contractors to a larger extent than WSF. Each Panelist felt that outside design and engineering consultants who specialize in the design and construction of vessels and terminals provide better value. These contractors are supervised by in-house managers at the ferry systems. Other state ferry systems in Alaska, Texas and North Carolina are known to rely on outside specialists for both vessel and terminal capital projects.


RECOMMENDATION

The Panel recommends that WSF study their 5 to 10-year roster of capital projects and adjust the staff sizing over time to reduce the numbers of engineers and designers.

The goal of this recommendation is to reduce staff in such a manner that on-going projects are not disrupted. Most new projects would be contracted out and WSF would transition their staff organization from executing the projects themselves to supervising contractors.

Fleet Management

The Panel looked at following aspects of Fleet Management: vessel replacement, fleet size and vessel procurement.

Vessel Replacement Cycle

The replacement cycle for a ferry vessel in the U.S. is determined by the following factors:

- Lack of capital to match higher domestic construction cost
- Limited market for used vessels
- The level of maintenance which might cost-effectively extend the life
- Technological obsolescence as regulations change or equipment spares becomes scarce
- Commercial obsolescence

WSF's current 20-vessel fleet has a wide range of ages as shown by the chart below (Figure 12). The average fleet age is greater than any of the other Panel members and is the second highest of ferry operators studied in Reference 12. By relying on vessels with an age greater than 60 years, WSF has suffered service interruptions (withdrawal of the Steel-Electric Ferries from service), maintenance challenges (DC propulsion motors on the Super Class) and increased regulatory scrutiny (WSF hull inspection program). In the late 1990s, WSF established a policy of 60 years as the end-of-life for vessels. Main propulsion engines are considered to have a practical life of 30 years. Interior refurbishments typically occur between 10 to 12 years of age. This policy is similar to that adopted by Alaska Marine Highway System where their long-term management plan is based on a 65-year life with a mid-life repowering and major "hotel" refurbishments every 16 years for their larger vessels and every 21 years for the smaller vessels (Reference 13). It should be noted that national legislation in Greece has mandated the withdrawal of service for ships over 30 years old effective 2008 (Act 2932/2001). This is due to spectacular accidents, age of vessel and low level of maintenance. A sample of 497 ferries in Europe conducted in 2001 showed an average age of 21 years with the oldest ferry at 58 years.

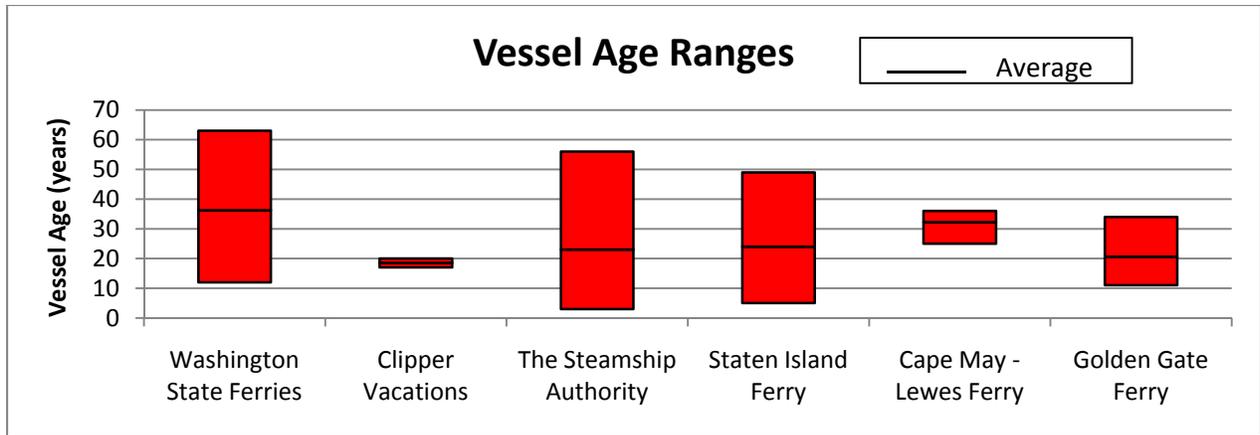


Figure 12 – Age Distribution of Expert Panel Members' Vessels

As the Figure below shows, the U.S. Department of Transportation's Bureau of Transportation Statistics has data on the domestic ferry fleet through the year 2005. That data set consists of some 690 vessels including the vessels of the WSF fleet. There is age data on 653 of those vessels which shows that the oldest vessel is 100 years of age, but the arithmetic mean age is 28.3 years and three-quarters of the vessels are 40 years of age or less. WSF's fleet has an average age of 36.3 years, significantly higher than the national mean.

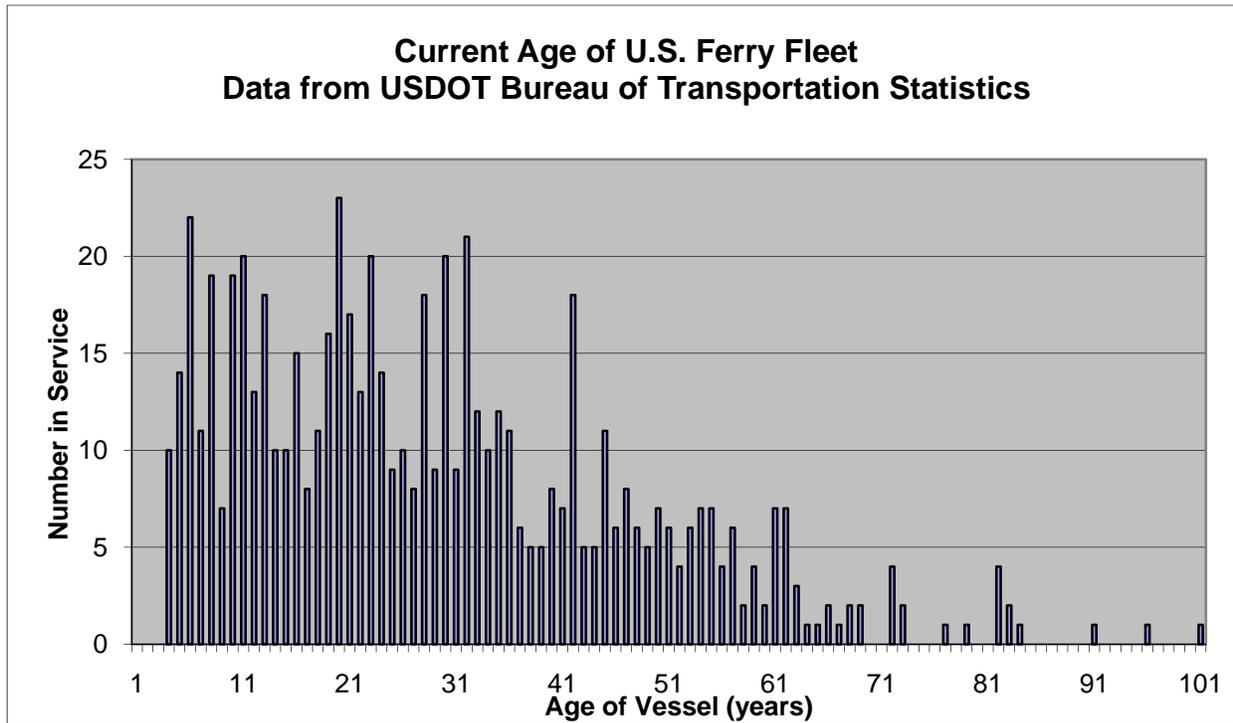


Figure 13 – Age Distribution of U.S. Ferry Vessels



Staten Island Ferries has historically begun the process of replacing vessels when they reach 30 years of age. A recent example, the replacement program for the Kennedy Class of ferries (built in 1965) began in 1996 with the selection process for an engineering firm. In 1998, a preliminary design investigation was completed that recommended the construction of new vessels. In 2000, SIF solicited bids for new construction with the result that the first vessel of a three vessel, \$120 million contract, M/V GUY V. MOLINARI, was delivered in 2004. It should be noted that the M/V JOHN F. KENNEDY was retained as a back-up ferry and training vessel. This procurement points up the challenges of capital cost and schedule considerations for new ferry construction.



SSA typically operates their vessels for up to 60 years with the use of major mid-life refurbishments. For example the ferry EAGLE, built in 1987, is now due for a major overhaul with the engineering work currently underway. It should be noted that SSA applies a 30-year depreciation schedule to their vessels.



The Panel recommends that WSF continues its policy of operating vessels for 60 years.

This recommendation is predicated on adequate funding for a mid-life renovation of the main machinery and periodic maintenance for coatings and interiors.



The Panel strongly recommends that a dedicated capital funding source for new vessel construction be identified and implemented.

The construction of new ferries requires a large sum of capital. It also takes a significant period of time from the start of a new construction program to delivery of the vessels. A dedicated capital funding source would allow WSF's management team to plan with the confidence of knowing the funds will be available when needed.

Fleet Size

WSF is currently operating with a 20-vessel fleet and they are leasing a ferry from Pierce County, which gives them 21 vessels to meet their service obligations. Three new 64-Auto ferries are under construction. The first of these vessels, the CHETZEMOKA will replace the leased vessel. The second new vessel (SALISH) will restore two-vessel service on the Port Townsend route during the peak season. The third new vessel (KENNEWICK) will be used to replace the 63-year old RHODODENDRON. The State will then dispose of the RHODODENDRON. The HIYU will continue to be used as a stand-by vessel, although it is too slow and small to effectively replace any of the fleet. The current age of the EVERGREEN STATE (56 years) suggests that construction of a replacement vessel should begin soon.

To have only one reserve vessel for 20 operating, in-service vessels is a significantly lower percentage capacity than any of the other systems. With only one reserve vessel, any problem with a vessel puts the system right on the edge of meeting service demands. In fact, given the disparate sizes of vessels (64 auto up to 202 autos); vessel problems can ripple through the fleet as vessels are moved around to provide the best possible level of service. It should also be noted that Cedar River Group's Vessel and Sizing Study recommended a 21-vessel fleet, and their later Long-Range Finances Final Report Financing Study II concurred with WSF's LRP for a 22-vessel fleet.

WSF provides vital transportation service year-round within demanding regulatory requirements. WSF's trip reliability record of 99.6% is outstanding, but with 147,833 departures in a year, that still means that 591 trips may be missed. The Gray Notebook (Reference 14) reports that 24% of trip cancellations are due to vessel issues, which means that 141 sailings would be affected. In the Long-Range Plan (Reference 15), the system will need to have 19 vessels in service during the summer season.



SSA operates a fleet of nine vessels on three routes. They have one high-speed passenger only ferry, five passenger-vehicle ferries, and three roll-on/roll-off vessels for freight only. One of their vessels is not suitable for the longer, more exposed run to Nantucket. During peak summer operation, one of the roll-on/roll-off freight boats is on standby. Their ratio of vessels in service to reserve vessels is thus 8 to 1.



SIF operates a fleet of eight vessels serving the route from Staten Island to Manhattan. Six of the vessels are large (3,500 to 6,000 passenger capacity) and two are small (1,300 passenger capacity). During their peak commuter runs, SIF has four large vessels in service, with one large vessel in maintenance and one large vessel on stand-by. SIF does not consider their small ferries as practical

stand-by vessels for the commuter runs. Their ratio of vessels in service to reserve vessels is thus 4 to 1.



GGF operates seven passenger-only ferries on two routes. This includes two recently purchased WSF vessels, the SNOHOMISH (NAPA) and CHINOOK (GOLDEN GATE). The NAPA started service in May 2009 and the GOLDEN GATE will begin service November 2010. When the GOLDEN GATE goes into service, their ratio of vessels in service to reserve vessels is thus 6 to 1.



CMLF operates a fleet of five vessels on one route. In the summer, they have four vessels in service with one vessel on stand-by. Two of their vessels are currently up for sale and another one is likely to be advertised for sale this year. Their current ratio of vessels in service to reserve vessels is 4 to 1 and may decrease to 3 to 0, at which point they plan to construct new vessels.

RECOMMENDATION

The Panel recommends that WSF plan around a fleet of 22 vessels.

The geographic spread of the routes, the diversity of vessel sizes, and the high service expectations all point to a need for a minimum of two reserve vessels. With a 22-vessel fleet, one vessel in the fleet will likely be out of service for a major overhaul and one vessel may be temporarily out of service for inspections or routine maintenance, leaving one vessel on stand-by. The minimal service demands on the stand-by vessel suggest that this should be a vessel nearing the end of life. The size of new vessels should be based on the level of service metric discussed below such that even though the number of vessels will remain fixed, the total vehicle capacity will change in response to the demand for service.

Vessel Procurement Methods

If WSF has a fleet of 22 vessels with a life span of 60 years, it suggests that an average replacement rate of one vessel every 2.7 years is required. Since vessels are more economical to build in groups, a more reasonable replacement plan would be to construct four vessels every 10.9 years. This represents a major demand for capital. There must be a procurement process that accounts for the fact that the time from start of a procurement process to delivery

of the last vessel can easily take six years as shown in the Table that follows. This schedule is based on a traditional procurement method of Design-Bid-Build as described below. During the Preliminary Design Investigation phase, issues such as the procurement method, adoption of an existing design, construction oversight, budget and schedule would be reviewed. The Figure 14 schedule assumes that the shipyard can deliver the vessels on three month intervals, which is a challenge for some second tier shipyards in the U.S.

Additionally, the Cedar River Group's Vessel and Timing Report (Reference 7, p. 12), commissioned by the Joint Transportation Commission, recommends that the Legislature consider opening vessel construction to national competition by determining the appropriate balance between WSF's new vessel construction costs, the potential for federal funding, and the policy goals of the state. No other ferry operator in the U.S. has a requirement for construction locally. BC Ferries has abandoned their previous practice of constructing all their vessels locally. Of the five new ferries constructed for BC, four were built in Germany and one was built in BC. While WSF could consider a foreign built vessel for the international route, any foreign built vessel would be restricted from domestic use due to U.S. cabotage restrictions (Passenger Vessel Services Act of 1886).

One of the arguments for building the vessels in Washington State is the need to maintain an industrial base that can support the ferries fleet. The Panel believes that this argument fails to reflect the fact that new vessel construction is very different from vessel maintenance and repair. Based on their collective experience in purchasing and operating vessels, the Panel believes that WSF is paying a high price for requiring in-state construction.

The Table that follows lists several recent ferry projects, their cost, and the proportion of funding that was provided from federal sources. For the 144-Auto ferry project, WSF was able to procure the propulsion systems using Federal funds because the package could be bid nationwide and was, in fact, awarded to a California firm. However, splitting the procurement into different packages is inefficient and, as owner-furnished equipment, creates a potential area of dispute between WSF and the builder of the vessels.

Table 1 – Federal Funding on Recent Ferry Projects

Operator and Project	Total Project Cost	Federal Funding	Comment
SSA – 80 Car M/V ISLAND HOME	\$33,175,000	\$0. Funded by issuance of SSA bonds	WSF bid for one 64-Auto ferry was \$65.5M not including the WSF- purchased propulsion machinery
Pierce County – M/V STEILACOOM II	\$11,176,000 for shipyard bid	\$0	WSF shipyard bid for 54- Car ferry was \$26M
State of Texas, Department of Transportation, Port Aransas Ferry	\$14.5M for shipyard bid for two vessels	\$7.2M	28-Car, 150-passenger ferries, similar in size to Guemes or Whatcom Co. Ferries
State of North Carolina, Department of Transportation, Ocracoke Island	\$13,000,000 for one vessel	unknown	Similar in size to STEILACOOM II
GGF – Passenger only ferry MENDOCINO	\$10,000,000	80% from Federal Transit Administration	No comment
SIF – Molinari Class	\$120,000,000 for 3 vessels	80% from Federal Transit Administration	Similar in size to Issaquah Class

The below Figure demonstrates the long lead time required for procuring a class of ferries, in this example four vessels. Of the nominal 6 to 7 year schedule, over half the time is required to plan, design, and contract before the shipyard can actually start work. It should be noted that the 144-Auto Class Ferry design process started in 2003 when the vessel size was initially 130-Auto capacity, and construction has yet to start.

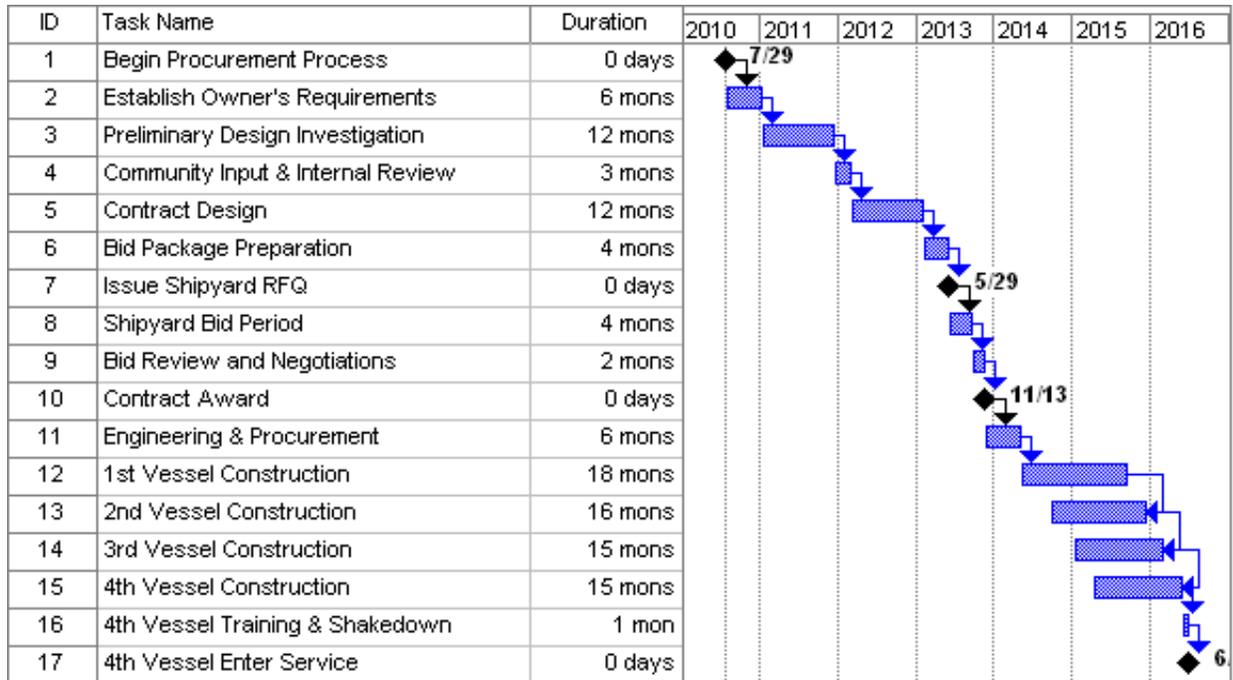


Figure 14 – Pro Forma Procurement Schedule for New Ferry Construction



For their latest new build, SSA used the traditional contracting model known as a Design-Bid-Build approach where the owner contracts with separate entities as needed during each phase of the design/construction process. SSA retained a naval architecture firm, Elliott Bay Design Group, to develop a contract design.

Following the contract design, SSA tendered a nationwide request for proposals and awarded the project to VT Halter in Mississippi. The shipyard further developed the vessel detail design before starting construction.

The resulting vessel M/V ISLAND HOME was delivered in March 2007, 43 months from when the design process started. It should be noted that the completion of the vessel was delayed due to the devastation caused by Hurricane Katrina, which flooded the building yard. This is the same process used by SIF for the procurement of the three vessels of the Molinari Class and by Pierce County for the construction of the STEILACOOM II.



GGF used the Design-Build process for the construction of their high-speed catamarans. In this process the design and construction aspects are contracted with a single entity. This approach is used to minimize the project risk for an owner and to reduce the delivery schedule by overlapping the design phase and construction phase of a project. GGF developed a set of performance specifications for the vessel, which was combined with contract terms to create the bid package. This was bid nationwide with Dakota Creek Industries, as the successful shipyard teaming with an experienced Australian firm, Advanced Multi-Hull Design, as the naval architect. The M/V DEL NORTE was delivered in 1998. It should be noted that WSF is currently developing the new 144-Auto Class of ferries with this process. BC Ferries also used this process when contracting with Flensburger Shipyard in Germany for their new Super C Class vessels.



For their last vessel construction project, SIF used the Design-Build contracting approach. SIF was able to secure 80% Federal Transit Administration (FTA) funding for construction of three Molinari Class vessels. The contract package was bid nationwide and the successful shipyard was located in Wisconsin. The Molinari Class has diesel electric propulsion and is approximately the same size as the Issaquah Class.



The Alaska Marine Highway System is using an innovative contracting approach for its new Alaska Class vessels. This process is called the Contract Manager / General Contractor (CM/GC) Approach, and it is being promoted by the FHWA and has been used successfully by public owners and general contractors for land-based projects for many years. For new vessel acquisition, this process brings a shipyard into the contract design process, allowing the owner, naval architect and shipyard to engage as a team. Because the shipyard has been brought in during the contract design process, the team is able to make design decisions related to efficient vessel construction, as well as ensuring that the basic owner requirements for the vessel are met. Alaska is expected to issue a nationwide request for proposal for the shipyard this year.


RECOMMENDATION
The Panel recommends that WSDOT bid the construction of their vessels nationwide.

No other ferry operator in the U.S. has a requirement for (in-state) construction locally. The Panel believes that Washington State would benefit from greater competition and from the access to federal funds that national bidding would allow.

The Panel has no specific recommendation on the preferred bid process since each process has its pros and cons. However, the type of process selected may impact the size of in-house staff required to supervise the procurement. WSF needs to consider their procurement approach and the types of resources required. For example, if Federal money is part of the funding, WSF may be subject to federal requirements such as documenting the U.S. steel content.

Insurance

WSF carries extensive insurance to cover its vessels, terminals, and staff. Their basic coverage is as follows:

- *Hull & Machinery*: \$ 874,500,000 for the entire fleet, including \$12,500,000 for the chartered M/V STEILACOOM II; subject to a \$1,000,000 deductible per accident or occurrence.
- *Protection & Indemnity (P&I)*: \$25,000,000 base plus \$225,000,000 of excess P&I coverage (\$250,000,000 total). The P&I coverage is included with Hull & Machinery coverage and subject to a single \$1,000,000 deductible per accident or occurrence.
- *Pollution*: \$25,000,000 base plus \$225,000,000 Excess Pollution coverage (\$250,000,000 total). Pollution coverage is also included with the Hull & Machinery and P&I coverage. Similarly, it is also subject to a \$1,000,000 self-insured retention.
- *Medical*: There is no separate medical coverage for marine employees. The P&I coverage applies to both public and WSF employee claims, subject to the specified deductible.

The P&I coverage comes into play when WSF has an accident claim filed against them by another party believing WSF is at fault. The most active part of this coverage is when passengers are injured or their vehicles are damaged. To manage such claims takes an active loss-prevention program. The USCG uses a reporting requirement: "if the person requires professional medical treatment (treatment beyond first aid)". Currently WSF records both actual and "potential" injuries, i.e. anything that could potentially result in a claim (all slips, trips, and falls). WSF's policy and practice is to document all reported injuries, regardless if they meet the threshold for reporting established by the USCG. Therefore, only a very small percentage of 100+ passenger injuries reported annually rise to the level established by the USCG. WSDOT's risk management division handles all passenger claims.

Employee injuries are handled initially by WSF's Safety Division. If they become a Jones Act claim, the management shifts to WSDOT headquarters. WSF has seen a wide range of employee injury claims across their vessels as shown in the below table, at a total cost to the system of approximately \$3.4 million annually. At the direction of the Washington State Legislature, WSF has initiated an Injury Reduction Plan (Reference 16).

Table 2 – WSF Employee Injury Costs

Type of OSHA-Recordable Injury	% of Total Cost
Overexertion	33%
Falls	29%
Repetitive motion	9%
All other	9%
Climbing, crawling, reaching	6%
Inattention to surroundings	6%
Struck by or against object or vehicle	6%
Body reaction and exertion	2%

It is worth noting that over 60% of the total cost of injuries comes from overexertion and falls. Training programs for the crew members and maintenance staff are one component in reducing the frequency of such injuries. Another component is a post-accident investigation and analysis to determine whether additional training, extra safety equipment, or changes in procedures would prevent similar accidents. WSF's management team has demonstrated their understanding that safety should be a critical part of the culture of any marine transportation operation.

In February 2010, the Office of Financial Management produced, as directed by a provision of the 2009-2011 state budget, a business plan for insuring WSF. That business plan analyzed risk and various options for insurance, including participating in the Self Insurance Liability Program (SILP), and recommended purchasing marine insurance through outside markets.

A comparison of the Panel members and their insurance coverage follows:

Table 3 – Comparison of Insurance Coverage

Insurance	Washington State Ferries	The Steamship Authority	Staten Island Ferry	Cape May - Lewes Ferry	Golden Gate Ferry
Hull Protection	\$874,500,000 - entire fleet Incl. \$12,500,000 for charter M.V. Steilacoom II \$1,000,000 deductible per accident/occurrence	\$83,800,000 - entire fleet	Self-Insured City of NY	\$100,000,000 - entire fleet \$1,000,000 deductible per vessel	\$54,600,000 - entire fleet \$10,000 deductible per vessel
P & I	\$25,000,000 base + \$225,000,000 Excess P&I coverage (\$250,000,000 total) Hull & Machinery & P&I coverage combined & subject to single \$1,000,000 deductible per accident/occurrence	\$2,000,000 primary plus \$148,000,000 excess bumbershoot (\$150,000,000 total)	Self-Insured City of NY	\$5,500,000,000 legal liability limit \$300,000,000 passengers & seamen for any one claim Deductible of \$20,000 for cargo claims and \$10,000 for any one accident	\$1,000,000 legal liability limit per accident of occurrence \$350,000 annual aggregate Deductible of \$10,000 for any one accident
Pollution Coverage	\$25,000,000 base + \$225,000,000 Excess Pollution coverage (\$250,000,000 total) Pollution coverage provided with the Hull & Machinery & P&I coverage \$1,000,000 self-insured	\$5,000,000 primary + \$145,000,000 excess bumbershoot (\$150,000,000 total)	Self-Insured City of NY	\$1,000,000,000 base - No deductible	\$5,000,000 any one vessel, any one incident
Medical	No separate medical coverage - See P&I coverage which covers public and WSF employee claims, subject to the specified deductible	Self-insured (with stop-loss protection), third party and union welfare plans	City of NY Benefits Fund	No separate medical coverage - See P&I coverage which covers public and CMLF employee claims, subject to the specified deductible	No separate medical coverage - See P&I coverage which covers public and GGF employee claims, subject to the specified deductible

In looking at the five systems, the Panel noted that the coverage carried by WSF is much higher than the other systems, even after adjusting for the fleet size and terminal number.



Clipper Navigation has a stringent accident reporting program that would complement WSF's Injury Reduction Plan. Accident report forms, statements collected from every crew member on shift together with statements from passengers as appropriate, photos of the accident location, are gathered for any reported accident/injury. This provides material for the investigation and maintains an excellent record that is useful for claims and litigation that may conclude years after the accident or injury occurred.



Since Staten Island Ferry operates on a "rivers" route designation, they are not required to have all of their vessel staff hold Merchant Mariner Credentials (MMCs). SIF believes that the higher physical fitness requirements of MMC holders may be beneficial in reducing work related injuries and are discussing changing their COI requirements with the USCG.

All public ferry systems struggle with reducing crew injuries and loss time claims. The Steamship Authority, WSF and Clipper vessels travel on routes that, by regulation, require the unlicensed vessel employees to obtain a Merchant Mariner Credential, issued by the USCG. This obligates all applicants to meet a physical standard set in U.S. regulations. SIF and GGF are beginning to use this same physical for all vessel employees, regardless of whether they have a credential. They are hoping this will help reduce crew injuries and loss time claims.

RECOMMENDATION

The Panel recommends that current marine insurance policies for vessels, terminals and other ferry facilities be examined further to determine whether they have the proper types and levels of coverage.

In reviewing the variation of coverage levels among public ferry operators, the Panel was struck by some differences. For example, WSF has hull coverage of \$874M for the entire fleet. The Panel questions whether there could be a catastrophic event, perhaps short of a major earthquake, that could imperil many vessels. The WSF insured vessel values, compared to other ferry operators, appears high. Market value has decreased over the past few years and if the vessels have not been surveyed recently, the Panel recommends that surveys be done. If insured values are determined to be high, reducing them to current market levels would result in immediate premium reduction.

RECOMMENDATION

The Panel recommends that WSF continue to develop a strong loss-prevention program for passenger and crew accidents.

The Injury Reduction Plan and the hiring of a dedicated, independent investigator are good initiatives. Clipper Navigation has an excellent process for documenting all injury claims that might be a model for WSF to build upon.

Performance Measures

WSF currently tracks several performance measures including on-time departures, farebox recovery, and vehicle deck load factor by route by month. A recent study of ferry system performance measures (Reference 12) suggested some other metrics that might be considered in addition to those tracked as part of the overall WSDOT performance report (Reference 14). As part of improving the customer experience and to fulfill their mandate to efficiently use public funds, WSF wants metrics that are clear and useful to inform management decisions.

Farebox recovery has been a guiding metric for WSF for many years. The basic notion is to evaluate what portion of the operating cost is covered by fare revenue. Based on a sample of 14 publicly-owned ferry systems around the world (Reference 12), WSF's recovery of 65.4% (FY 2009) is above the average of 48.8%, but falls short of the 78% assumption identified in the

Long-Range Plan (Reference 15). Compared to other mass transit operations such as King County Metro, with a farebox recovery of 24.6%, WSF has far above average performance.

For the 2009 Long-Range Plan update, WSF revised its Level of Service (LOS) standard methods and standards. The prior array of level of service standards (dating back to the mid-1990s) were based on how long a driver had to wait during the afternoon peak period of 3 p.m. to 7 p.m. in the commuter (generally westbound) direction during an average weekday in the average month of May. This was measured as to whether a driver would have to wait through one vessel or two. Most routes had an LOS standard of a one-boat wait, the exceptions being Mukilteo-Clinton and Seattle-Bainbridge, which had a two-boat wait as the standard. Exceeding the standard meant that the route needed additional vehicle capacity. In the San Juan Islands it was determined that since the time between sailings was so long, a "boat wait" measurement system didn't make sense; the measurement would instead be based on the percentage of overall sailings that were at capacity during sample months such as August and March.

Meeting peak demand through sample months of January, May and August were identified to reflect the low, average and peak travel levels. The LOS method works in a two step process. When a route experiences a quarter to a third of all sailings as being full, that would then trigger the first step, implementation of transportation demand strategies such as reservations for vehicles, demand pricing and transit enhancements. Once a route experiences two-thirds to three-quarters of its sailings full, that triggers a second step, which is the addition of vehicle capacity.

In response to legislative guidance to manage demand rather than build to demand, WSF is working to use its assets more efficiently. A reservation system is under development as a tool to manage assets on most routes. Other management tools are also being considered.



SSA has a strong financial reporting system. This includes tracking cash flow vs. budget, cost center reporting at each terminal, passenger and vehicle traffic, and competition reports of passenger-only operators going to Nantucket. This data is used to create a monthly business summary. They look at revenue and expense allocation by route to ensure one route is not subsidizing others.

In addition to the financial reports, SSA monitors fuel consumption and reservations (wait time, number and type of reservations, origin - whether web-based or telephone). The General Manager also receives monthly activity reports from each department showing their major accomplishments, current activities and their status, and future issues that might be 30 to 60 days out. They conduct annual evaluations of all non-union employees. SSA does not use objective service standards other than their ability to operate without a deficit.



Staten Island Ferry uses several metrics to assess their performance. The first is passenger counts going to and from Staten Island and Manhattan. This is handled through a system called Countwise, which uses cameras in the ceiling of the terminal to track people moving in and out. Another important metric is on-time performance, which means departure from the terminal within five minutes of the scheduled time. If they fail to meet schedule, the vessel Master is responsible for noting the cause such as harbor traffic, weather, passenger unloading/loading, etc. They also track complaints by trip, so they can evaluate customer satisfaction and the performance of their crews.

On a quarterly basis, SIF uses an event tracking system to record lost work time injuries, Jones Act claims and mechanical breakdowns. Overtime and operating budgets are monitored on a monthly basis.



Cape May-Lewes Ferry has a reporting system similar to SSA, however, their on-time departures are based on a 10-minute delay standard and anything over that triggers a report on cause. Additionally, every Monday they print out customer complaints and respond within 24 hours. The General Manager himself commonly follows up on any complaints about CMLF employees.

Items tracked include traffic and revenue against prior year to see if there are any trends; number of vehicles that turnaround at the toll booth as a measure of capacity and customer tolerance for waiting and regional tourism statistics such as length of room stay, parking meter revenue, and regional water consumption. They look at weather conditions to assess its impact on their performance and correlation of ferry demand against local bridges such as the Chesapeake Bay Bridge, with a future goal of coordinating with the bridge authority to offer discounts for through-travelers. They note a 4% goal for abandoned calls in their call center and phone call bookings have decreased and over 55% of their bookings are now handled online. They also track customer survey data on levels of service.



Golden Gate Ferry tracks similar data with passenger counts, number of missed trips and their causes, mechanical failures, etc. Since they charge fares, they also look at monthly revenue by source (walk-up passengers, commuter fares, regional transit card, or special discounted fares). The Bay Area Metropolitan Transit Commission (MTC) requires a 40% farebox recovery, so proper tracking is important if they are going to apply for MTC grants. Like SIF, GGF is part of a larger organization, so proper allocation of overhead expenses to achieve clear financial metrics can be challenging.



Clipper uses the following metrics for managing their business: on time performance; safety; profitability; daily revenue reports on hotel and tour bookings, transportation fares and on-board sales and overtime and paid time off. CN pays particular attention to on-board service reports and accident reports. Their philosophy is "When in doubt - log it." Accident reports are prepared immediately following the incident and they record weather conditions, witness statements, crew statements, photos, and the wheelhouse log.

RECOMMENDATION

The Panel recommends that WSF establish additional key metrics in following areas: Level of Service, Cost Efficiency and Safety.

Level of Service would include on-time departures, vehicle deck utilization, trip reliability and customer satisfaction. Cost Efficiency would include farebox recovery, operating cost per passenger mile by route, ratio of direct operating costs to indirect operating costs and overtime and paid time off. Safety metrics would include passenger and crew injuries.

WSF is currently tracking on-time performance, customer satisfaction and trip reliability. WSF should also assure that they use these metrics as part of a systematic quality improvement process. Proper metrics can be invaluable in determining whether changes to a system are having the desired effect.

VESSEL AND TERMINAL MAINTENANCE

General

WSF has a fast pace of maintenance and inspection activities for vessels and terminals. Each is discussed in detail in the following sections.

The Panel has identified the following areas with opportunity for improvement:

- Vessel Maintenance Practices
- Terminal Maintenance Practices
- Eagle Harbor Maintenance Facility Approach

Vessel Maintenance Practices

WSF plans for three levels of maintenance:

- Preventative – this is mainly handled by the ship's crew as part of the 24 hours per day, 7 days per week staffing of the engine room. An example of preventative maintenance is changing oil filters.
- Intermediate – these items are tracked on a monthly basis and are typically handled by either the ship's crew or a night crew. An example of intermediate maintenance is to tear down a pump to replace a leaking gasket during the 6 hour tie-up at night.
- Preservation – these items are those that are larger in scale and are typically handled by a commercial shipyard. An example of preservation maintenance is painting the underwater hull while the vessel is dry-docked.

With a projected fleet of 22 vessels, WSF must coordinate USCG quarterly inspections approximately every four days. There are additional USCG requirements for dry-docking each vessel two times every five years. On top of the regulatory inspections, WSF must plan around the service levels on the routes. For example, no two of the largest vessels can be out of service simultaneously. The Panel is aware that WSF is currently completing an update to the Life Cycle Cost Model. Once updated, the vessel maintenance plan will be completed by December 2010. Other maintenance activities such as engine overhauls, electronics upgrades, painting, repairs, security improvements and interior refurbishments all contribute to a very complex schedule. Appendix D shows the WSF Fleet Maintenance Schedule for July 2010 to June 2011 as an example of this complexity.

It should be noted that WSF deck crews are assigned to a specific route, while engine room crews are assigned to a vessel. The engine room crew works 12 hour shifts for 7 days and then have one week of rest before returning. Therefore, four complete engine room crews are required for each vessel. One of the four Chief Engineers is designated as the Staff Chief with extra duties for coordinating vessel maintenance.

Much of the vessel maintenance work is planned by the Staff Chief for each vessel with some input from the Staff Captain. The Staff Chiefs work with either one of the two Port Engineers to coordinate the work with Eagle Harbor and to suit the operating schedule. One Port Engineer is

responsible for the large vessels in the fleet and one handles the smaller vessels. Each maintenance item is assigned a 1 to 3 priority level.

If the work involves preservation maintenance, and hence a commercial shipyard, the staff engineer works with the Port Engineer and WSF's Engineering Department, with WSF Contract Division, to develop a package of plans, specifications and bid package that can be advertised for competitive bid. This requires four to six months of advance planning. There are four yards in the Puget Sound area that can perform repair work and topside maintenance. Since Eagle Harbor does not have the capability of lifting the vessels out of the water, all external maintenance of the hull below the main deck is contracted out.

WSF's current practice is to competitively bid each dry-docking procurement. When WSF must dock 22 vessels twice every five-year period per USCG requirements, this would lead to an average of one dry-docking every 1.36 months. Even though many items in a dry-docking scope of work are identical, this clearly is quite a challenge to process. WSF is thus looking for ideas on how to improve the process.

One item that complicates vessel maintenance planning is the lack of dry dock capacity in the Puget Sound area. There is one facility, Todd Shipyards that can handle the five largest vessels. Its dry docks are technically owned by the Navy, which means federal government vessels have priority. A relatively new dry dock in Bellingham, WA that can handle the Super Class and all smaller ferries does not yet meet bonding requirements. Other shipyards that can dock the smaller vessels include Dakota Creek Industries, Lake Union Drydock and Foss Shipyard. One further complication to the dry dock scheduling is that during the winter months, when WSF has the lowest demand and hence up to three vessels available for maintenance, is also the period when the fishing industry and barge industry also need dry-docking services.



SSA approaches maintenance primarily from a budgetary process. They solicit requests from each department annually. Maintenance items are tracked in their maintenance management system MAXIMO. They schedule eight weeks/year/vessel plus two weeks for dry-docking, if required for the annual overhaul. Emergency repairs come from the normal budget. This budget is for planning purposes and is not capped at a fixed amount. Much of SSA's maintenance work is performed by their in-house maintenance team and by ship's personnel. The maintenance team consists of 26 staff that performs welding, machining and plumbing tasks. Their repair facility does not have a dry dock, so they must travel to shipyards in Connecticut or New York for haul outs. They use a competitive bid process for shipyard and outside contractors per the requirements of the Commonwealth of Massachusetts. All contracts greater than \$10,000 must be bid out, unless it's a sole-source procurement or an emergency. They find that productivity is better with an

outside work force. Mid-September to mid-May is SSA's repair season. During the off-peak season, some of their crew members get laid off and some shift to supporting maintenance activities.



Staten Island Ferry has successfully undertaken a five-year contract with Colonna Shipyard in Norfolk, Virginia for servicing their six large passenger ferries. SIF chose a multi-year contract in response to the challenging bureaucracy of New York City. SIF is now in the process of awarding a multi-year contract to Derecktor Shipyards for their two smaller passenger ferries.



Golden Gate Ferry has tried packaging a group of vessels for one contract, such as all three of the 165-foot Spaulding Class. They have also tried a one or two-year term contract. There is only one shipyard in the San Francisco Bay area that bids on their routine maintenance projects. For major refurbishments, GGF has encouraged bidding from shipyards in Washington and Oregon as well as California. One measure they have taken to attract shipyards is to reduce their surety requirements from 100% performance bond to a 50% performance bond. They also offer incentives on delivery costs to suit Federal Transit Administration guidelines.



Clipper had a long term (16 years) standard contract at MARCO shipyard, which has since gone out of business due to the general downturn in the U.S. shipbuilding market. CN now uses a local yard Pacific Fishermen, where they have an agreement for priority service. There is no formal term contract with the yard, but as a private operator CN can develop a relationship with a shipyard that is based on mutual benefit.



Cape May-Lewes Ferry has a good record of competitively bidding each shipyard period, and replacing intermediate dry-dockings with UWILD as approved by the local OCMI. With each vessel in the five-vessel fleet due twice in five years, they easily save close to \$5M over this period, plus they reduce the docking process from over 30 days to approximately one-week for each UWILD.

RECOMMENDATION

The Panel recommends that WSF run a test project to contract dry-docking for one vessel class such as the Issaquah Class.

WSF should develop a contract for dry-docking all of the vessels of a class over a five year period. The contract would define standard work items applying to all of the vessels in the class and alternate bid items, such as removal and inspection of tail shafts, which might apply to only some of the vessels in the class. This contract would be of sufficient size to generate serious competition among Puget Sound shipyards and might entice some of the British Columbia shipyards to participate in the bidding. WSF has good data on recent dry-docking costs for these vessels and should set up an evaluation system to compare the costs and quality of bundling dry-docking projects. SIF has provided a copy of their shipyard contract as a possible model for WSF to consider.

RECOMMENDATION

The Panel recommends that WSF not adopt the Cedar River Group suggestion that WSF require, as part of their shipyard contracts, that a vessel in intermediate maintenance at a commercial shipyard be available within 24 hours in order to provide back-up service.

The Panel believes that this is impractical. Many dry-docking operations, such as steel replacement or tail shaft removal, and dockside operations, such as exterior blasting or propulsion engine overhauls, cannot be subject to such requirements. This requirement likely causes the shipyard to carry a cost in their bid to respond to such a request should it arise and this added expense is then passed to WSF.

RECOMMENDATION

The Panel strongly recommends that adequate funding and sufficient schedule be guaranteed to support a 60-year life for their vessels.

This is especially true for areas where short term gains (a quick paint job) can lead to long term problems (steel corrosion and increased life-cycle costs). The life-cycle model that is being developed for the vessels, and WSF's structural inspection program, should provide the data to guide WSF management, the Governor and the Legislature to provide the necessary funding levels.

Terminal Maintenance Practices

WSF's terminal maintenance scheduling is almost as complex as the vessel scheduling. An extract from the May 2010 Gray Notebook (Reference 14) gives a brief overview on WSF terminals:

"WSDOT operates 20 ferry terminals and a repair facility, comprised of 755 separate components. The Washington State Bridge Inventory System and the Office of Financial Management Facilities Inventory System is used to evaluate the condition of all ferry terminals and repair facility components. All critical components of super-and sub-structures are included in the evaluation, such as landing aids (wingwalls and dolphins), vehicle transfer span systems, overhead loading systems, trestles, bulkheads, pavements, buildings and passenger-only facilities."

Significant effort was made in the 1990s and early 2000s to upgrade the terminals. There is one terminal (Mukilteo) that WSF is evaluating to determine whether it can be relocated to improve service and safety. The Colman Dock Preservation Project, while coordinated with the Alaskan Way Viaduct Replacement, is not dependent on its resolution. The Colman Dock work includes replacement of wooden trestle with concrete, replacement of terminal building, replacement of Slip #3 and renovation of Slip #2. A major renovation of the central building at the Eagle Harbor Maintenance Facility was just completed, including mechanical upgrades and seismic improvements. As of January 2010, 85% of terminal systems were reported in good or fair condition, 15% were in poor or substandard condition.

The PVA Panel believes that WSF is doing a good job of prioritizing terminal maintenance projects and looking for efficiencies in planning and staff resources.

RECOMMENDATION

The Panel recommends that WSF continue to emphasize vessel construction, not terminal construction as a priority. However, terminal maintenance and preservation must be supported appropriately to maximize the life of all current facilities.

Just as the Panel has recognized for the vessels, terminals need to be given sufficient funds to maximize the life expectancy of the facility. The Panel believes that it's good fiscal policy to improve cost-estimating procedures and suggests that WSF explore the benefits of having an independent third party provide a cost estimate to help calibrate WSF's own internal estimating. The success of this third party estimating that recently reduced project costs by \$106M over the next 16 years. Given the location of WSF's terminals in a seismically active region, and the importance of WSF as a vital transportation link, the Panel recommends that WSF continue to provide funds for seismic improvements.

Eagle Harbor Maintenance Facility (EHMF) Approach

Vessels

All annual USCG inspections and most intermediate vessel maintenance take place at the Eagle Harbor Maintenance Facility. This includes all overhauls of the General Electric (GE) and Electro-Motive Diesel (EMD) engines in the fleet, numbering some 12 and 46 units, respectively. Eagle Harbor personnel are very skilled in engine overhauls. On the Issaquah Class with its geared diesel engines driving Controllable Pitch propellers, WSF is seeing 50,000 hours between overhauls. For the EMD engines, they are able to go approximately 45,000 hours between overhauls. During an overhaul, one shift at Eagle Harbor can work 10 hours per day with an average of five days per engine overhaul.

Table 4 - Engine Overhaul Comparison

Operator	Engine Type	Hours Between Major Overhauls	Comments
WSF	General Electric	50,000	Issaquah Class
	Electro-Motive Diesel	45,000	Primarily used in Diesel-Electric systems
SIF	Electro-Motive Diesel	16,000	Calendar based
SSA	Electro-Motive Diesel	30,000 to 36,000	Inspection based
CMLF	Fairbanks - Morse	10,000	Based on Engine Hours

As seen by the table above, the EHMF staff has been able to successfully extend the time between overhauls, thus reducing cost, while maintaining a very high level of trip reliability. The other ferry systems that operate EMD or GE engines might benefit from some of WSF's best practices.

Eagle Harbor has six in-water slips and two drive-on slips. WSF could have a shipyard or a subcontractor conduct intermediate maintenance activities, but a typical Northwest shipyard has a fully burdened labor rate of \$65 to \$70 per hour. This is significantly higher than Eagle Harbor's reported rate of \$54/hr. The Eagle Harbor rate is a marginal rate, i.e. the cost of adding additional staff assuming that the facility, equipment, and overhead costs would exist regardless. This is not an apples-to-apples comparison. There is a fiscal limit of \$120,000 for projects that can be handled by EHMF directly.

The staff engineers and Port Engineer meet with the EHMF planning staff and shop foremen some 30 to 45 days before the vessel comes out of service for maintenance. During this meeting, the group determines what work they can definitely accomplish within the schedule constraints. Following a shipyard interval, WSF typically schedules a brief period at EHMF to allow for USCG inspections and minor maintenance that was not completed in the yard. Recently, WSF has been sending EHMF crews to work on projects on a "not-to-interfere" basis

while a vessel is in a shipyard. This intent of this practice is to reduce time out of service for a vessel. The Panel has some concerns that this may not be the most efficient approach since the EHMF crews have to be coordinated with the shipyard crews. Also, while Eagle Harbor staff may have a lower hourly cost, the shipyard may have efficiencies in organizing the work, such as scheduling mobile cranes or erecting scaffolding.

Terminals

The staff at EHMF also performs a significant portion of the maintenance for WSF's 20 terminals. Those assigned to terminal work are away from the facility 70-80% of the time. Since much of the terminal exterior work is dependent upon weather, a portion of the EHMF staff that worked on vessels during the winter months is trained to shift to terminal work during the summer months. EHMF provides a response service to WSF that operates 24/7/365. This level of service is critical to WSF's ability to minimize downtime and to meet customer expectations. One constraint is that EHMF has limits on the amount of nighttime activity that can occur due to nearby residences who protest noise, bright lights and vehicle traffic.

In a typical year, approximately 45% of the EHMF budget goes towards terminal projects and 55% goes towards vessel projects. WSF maintains a warehouse facility in Seattle so all parts and supplies have to be trucked to the worksites by WSF personnel. Working at remote sites can result in overtime charges due to travel time, though WSF tries to coordinate schedules to minimize overtime.

WSF's dedicated maintenance facility at Eagle Harbor has a workforce of 102 people, including 3 salaried managers. This workforce is effective in supporting planned and unplanned maintenance of the terminals and vessels, as evidenced by the high level of service reliability and on-time performance data. However, the facility is restricted for a number of reasons to operate with a single shift from 7 a.m. to 3 p.m., while the vessels and terminals operate and have maintenance needs, starting as early as 4 a.m. and ending the work day as late as 2 a.m. As stated in the audit report: "With few exceptions work conducted outside the normal daytime work hours established in the Collective Bargaining Agreements is worked as overtime."

Only two of the Panel members have their own facility, as outlined below.



CMLF has a dedicated maintenance facility on the Cape May side with lay berths, but no dry dock. Since their demand is sharply seasonal, they run only one boat in winter which allows plenty of time for maintenance on the other vessels. Their maintenance crew consists of ten mechanics/welders, five painters (supplemented in summer). They are beginning to cross-utilize their mechanics as onboard crew. CMLF used to have their crews perform all maintenance but this produced less flexibility in scheduling and was more expensive. Any repairs beyond in-house maintenance, CMLF puts out for competitive bid. Their

maintenance staff is very capable, but they are a decreasing resource. They must bid each dry-docking and have never tried a multi-year contract. Ironically, their dry-docking costs have recently been reduced, because the SIF five-year contract with one yard has freed up a local source for CMLF. Over the past few years they have also seen more competition from shipyards.



Staten Island Ferry conducted a Benchmarking Study of their maintenance facility (Reference 17). This study identified that their work mix was 75% reactive and 25% planned. Operating a maintenance department in this manner is inefficient with a typical worker productivity (wrench time) of 25% to 30%. By adding 25 people to the staff and better planning of work, SIF has been able to reduce the overtime portion of their maintenance from approximately 40% of total labor costs to less than 10% of total labor costs. Overall labor costs have also been reduced.

RECOMMENDATION

The Panel recommends that WSF explore different approaches to in-house maintenance.

Some ideas suggested by the Panel are given below. The Panel recognizes that implementing these ideas may not be practical given labor agreements and current staffing levels.

- WSF should study having regularly scheduled second and possibly third shifts.
- There should be a core group of trades on each shift. Having additional shifts would better match the schedules of the vessels at times when work can be completed. The need for calling out staff and incurring overtime charges would be reduced. SSA has a night engineer and maintenance staff that work on the vessels during their overnight tie-up. GGF has three shifts working seven days per week.
- A riding crew on the vessels at night in addition to the ship's crew could perform some work while the vessel is underway or out of service. This is common practice on ocean-going ships and might reduce the average annual time the vessels are laid up for maintenance.
- A second maintenance facility on the Eastside of Puget Sound that can be operated with second or third shifts to better align with the 24/7/365 nature of the ferry operations. This might

be able to be based out of the WSF warehouse so no new facility is required.

- Currently, employees are dispatched straight from home for non-emergency work, avoiding the need for the employee to report to any facility prior to traveling to the vessel or facility that needs repair. This practice should be continued, and expanded as necessary.

**RECOMMENDATION**

The Panel recommends additional Eagle Harbor Maintenance Facility supervisory staff that is part of management and not part of the labor force.

A comparable commercial shipyard would have five to seven, salaried managers for budgeting, work supervision, quality assurance and planning. Currently, EHMf projects are governed by the available schedule and not by any objective budgeting process. Decisions on whether to subcontract work or to perform the work in-house are made by shop foremen or craft leadmen. These "make or buy" decisions should be made by the management team with both budget authority and objective performance standards guiding their decisions. By adding management staff, as recommended by the State Auditor's Office Performance Audit (Reference 9), WSF should be able to improve business practices at Eagle Harbor and better control indirect charges.

FINANCE

General

The Motor Vehicle Excise Tax was significantly reduced by a voter initiative in 1999 and the decision affirmed by the Legislature in 2000. Since then, WSF has been subsidized by motor fuel tax which had been intended for highway maintenance and construction. In addition, fares went up substantially and service was cut. Since WSF does not have a dedicated capital fund, they rely on the Legislature to budget funds at every session. The 2008/2009 Legislature approved measures to refocus the long-range plan for capital programs, with a shift from funding terminal projects to funding vessel preservation and new construction. The mission for terminals has shifted to maintaining and preserving the existing facilities with a few specific exceptions.

The Panel has identified the following areas with opportunity for improvement:

- Budgeting
- Vessel Replacement Fund
- Tariff Setting Policy
- Fuel Management

Budgeting

WSF's fiscal year runs from July 1 to June 30. WSF has an annual operating cost of approximately \$219M (FY 2011). For the FY 2009-2011 biennium budgeted farebox recovery is 70.6%, which includes non-fare operating income. In FY 2009, the most recent year that statistics are available, farebox recovery was 65.4%. WSF receives non-fare revenue from food service operations, vending machines, and the sale of advertising space in the terminals and on-board the vessels. On the operating cost side, in FY 2011, approximately 79.8% will go towards the vessel and terminal operations, 14.6% towards the terminal and vessel maintenance preservation, and 5.6% is for management and support services. Compared to other ferry operations, WSF is relatively efficient in terms of cost per passenger, as shown in the table that follows. It should be noted that WSF sees a wide range of farebox recovery on the different routes and at different times of the year.

Table 5 – Cost Effectiveness Metrics

Operator	Farebox Recovery	Fare/Passenger Mile	Cost per Passenger
Washington State Ferries	65%	\$0.53	\$9.92
The Steamship Authority	100%	\$0.88	\$27.09
Staten Island Ferries*	0%	\$0	\$4.62
Cape May – Lewes Ferry	68.0%	\$0.71	\$10.77
Golden Gate Ferry*	45%	\$0.83	\$11.77
Clipper Navigation*	100+%	\$1.17	N/A
Alaska Marine Highway	26.4%	\$0.54	\$404.57

*denotes Passenger-Only Service

One fact that WSF must face, as must all ferry operators, is that costs in the marine industry are increasing faster than general inflation. The cost of regulatory compliance increases each year as new inspection standards, security requirements and pollution prevention measures are required by the Federal government. The figure that follows shows the union wage increases that have been added to WSF's budget. The percentages in this figure are composites for each labor group, i.e., wage rate increases varied by job class. Currently, WSF uses incremental budgeting but under the new management, is moving toward more detailed budgeting for the 2011-2013 biennium. This new detailed budget will include:

- Deck labor by route and engine labor by vessel
- Labor for vessel moves, training and sea trials
- Fuel needs per the service schedule
- Terminal operations labor by terminal
- Insurance
- Terminal maintenance contracts
- Eagle Harbor labor and contracts, administrative staffing
- Credit card fees, printing costs and leases

ILLUSTRATION OF WSF UNION WAGE INCREASES AND WA STATE EMPLOYEE WAGE INCREASES

ISSUE: WSF is heavily unionized, with 90% of employees represented by marine unions and a unique set of laws for collective bargaining. As such, WSF ferry employees have received wage increases in excess of general state employees. WSF employees have received wage increases that are 1% higher than state employees over the past 10 years.

Year	IBU	MM&P	Metl Trades	MEBA	State Classified Employees	Notes
1999	3.0%	3.0%	3.0%	3.55%	3.0%	COLA
2000	3.0%	3.0%	3.0%	3.0%	3.0%	COLA
2001	3.7%	3.7%	3.7%	3.7%	3.7%	COLA
2002	0%	0%	0%	0%	0%	
2003	0%	0%	3%	0%	0%	
2004	1.7%	0%	0%	0%	0%	
2005	3.2%	3.2%	3.2%	5.2%	3.2%	COLA
2006	4.0%	11.6%	2.8%	5.5%	1.6%	COLA
2007	5.2%	5.7%	7.2%	6.2%	3.2%	COLA
2008	2.0%	2.0%	2.0%	2.0%	2.0%	COLA
10 YR AVG	2.6%	3.2%	2.8%	2.9%	2.0%	10 YR AVG

Figure 15 – WSF Union Wage Changes vs. Other State Employees

The nationwide costs of vessel construction are also forging ahead of general inflation as seen in the Figure below. This will add uncertainty to the capital budget estimates, especially those beyond a five to ten-year planning horizon.

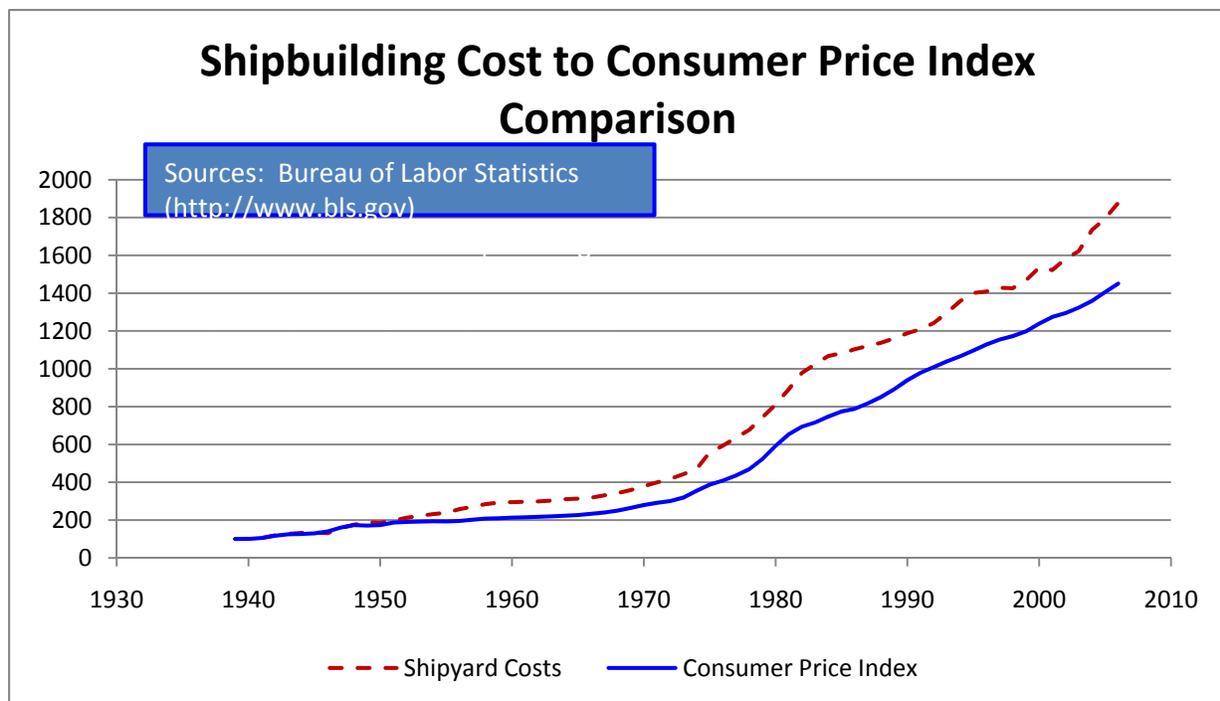


Figure 16 – Graph of Shipbuilding Costs vs. CPI



SSA uses zero-based budgeting for most line items, representing over 90% of their total annual operating budget. For example, they use zero-based budgeting for payroll, pension and medical plan contributions, payroll and unemployment taxes, insurance, depreciation, vessel fuel oil, direct vessel and terminal maintenance expenses. For any remaining miscellaneous budget line items, they use the actual monthly amounts for the most recent 12-month period, adjust for any unusual and one-time expenses that they do not expect to be incurred during the next fiscal year, and then adjust for projected cost-of-living increases.



As a private operator that has to justify all expenditures, Clipper uses zero-based budgeting. This forces them to focus on how customer needs change and allows them to balance promotional fares against operating expenses. This also engages CN with their suppliers to mutually look for ways to reduce costs and increase revenues.



CMLF prepares both operating and capital budgets annually. Each of their department managers contributes to the development of a preliminary capital budget based on the expected preservation and improvement projects. The DRBA Chief Operating Officer presents the capital budget to the Projects Committee and the Board of Commissioners for their review and adoption. The approval of the capital budget does not, in itself, authorize any specific project. Specific approval by the Projects Committee and the Board of Commissioners is required before any major capital project may commence.

RECOMMENDATION

The Panel recommends that WSF continue to transition to a zero-based budget.

The Panel believes that a zero-based budget forces more thought into the budgeting process compared to an incremental budget. The Legislature has imposed a number of budget provisos on WSF to develop justification for expenditures. This forces WSF to always be in a reactive mode as they develop responses to information. At this stage, a zero-based budget might provide a clear means of showing fiscal discipline. As long as WSF is

working within the budget, there should be less need for outside management.

Vessel Replacement Fund

WSF has neither a capital reserve fund, nor a dedicated capital fund source/reserve account. A shortage of capital funds led to the decision in the 1980s to invest substantial funds to refurbish the Steel-Electric ferries, which were already approaching 50 years of age. During the intervening years between 1987 and 2000, WSF had a dedicated capital stream with the Motor Vehicle Excise Tax (MVET) which provided WSF with a stable source of capital funding. During this time three Jumbo Mark II vessels were constructed, passenger-only service expanded to Vashon Island with four new vessels placed in service, fares were very stable and actually dropped relative to inflation and the Evergreen and Super Class vessels received their mid-life renovations, with the exception of the HYAK. Then in 2005, when serious structural deterioration was found in one of the four vessels, the loss of dedicated tax revenue meant there were no funds to start construction on replacement vessels.

The Legislature has been looking at sources for long-term funding of WSF (Reference 8). By having a predictable source of capital funds, WSF can plan more efficiently and avoid a series of crises due to running worn-out ferries.



The Steamship Authority has both a capital reserve fund and a bond redemption fund. These funds are replenished by excess cash from their operations. SSA's bonds have an AA rating and have an authorization limit of \$75M. There is \$60M in bonds currently issued. SSA has successfully used their bond limit as an argument for federal funds.



Similar to WSF, which relies on the State for capital funding, SIF relies upon capital funding from New York City. This has the effect of forcing SIF to compete with other divisions of the Department of Transportation.

Staten Island Ferry has received funding from the Ferry Boat Discretionary Awards program of the Federal Highway Administration. In 2004, New York City received \$2M, in 2006 they received \$3M, and in 2009 they received \$1M, most of which has gone to city-owned private ferry infrastructure.



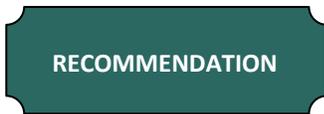
Golden Gate Ferry relies on funding from the bonding capability of the Golden Gate Bridge District and outside sources such as the Federal Transit Administration and MTC for vessel replacement, refurbishment or vessel acquisition funds. They have used this access to funds for their recent purchase of the two WSF passenger-only ferries, the CHINOOK and the SNOHOMISH.



Clipper does not currently have a capital construction fund. They are currently investigating the benefits of establishing a capital construction fund that allows them to set aside pre-tax dollars.



Since 2008, the DRBA has been cash-funding its capital program. Going forward, funding for various major capital projects, to include new CMLF vessel construction, would be financed with revenue bonds based on tolls at the Delaware Memorial Bridge. DRBA currently has \$300M in revenue and refunding bonds outstanding. They have \$122M in investments and maturities.



The Panel recommends that the Washington State Legislature establish a vessel replacement fund.

Ferry boats are expensive assets. Like any asset they are subject to wear and tear and must eventually be replaced. There are cost savings if ferries are purchased in lots rather than singly. This means that a large sum of capital is required periodically. It is far easier to put aside funds annually into a reserve account rather than trying to compete for money every 10 to 15 years.

Tariff Setting Policy

WSF fares are seasonal, route-based, with a wide mix of fare categories. This makes a complex situation for setting fare policy. The fares are set by the Washington State Transportation Commission. Corrected for inflation, WSF fares are slightly lower for car and driver and even lower for passenger-only, compared to today to what they were in the early 1950s, as seen in the Figure that follows. This illustrates that current fares are similar to what they have been for most of WSF's history. The exception was during the shaded MVET years through the 1990s when there was a policy to cover less of the operating costs with fare revenue.

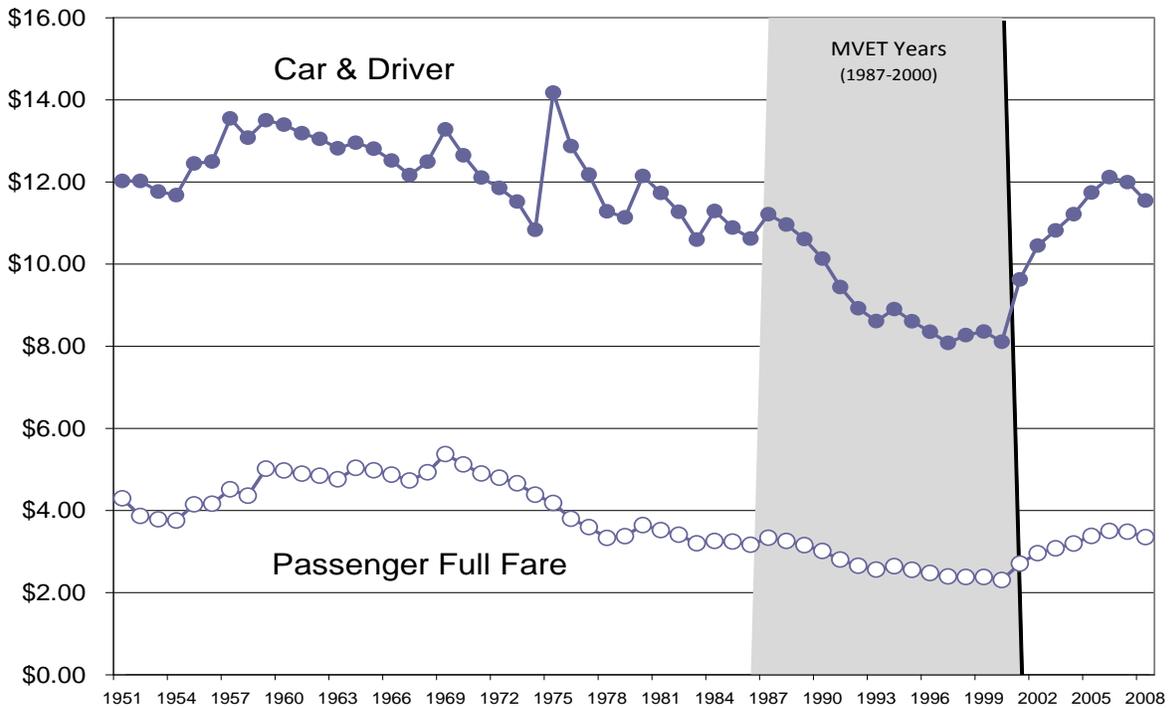


Figure 17 – WSF Fares Indexed to Inflation 1951 – 2008 WSF Ferry Fares Indexed to Inflation



The Steamship Authority's operating costs are 100% funded by their farebox. Any operating deficits flow back to the five communities that govern SSA, so they are under tight fiscal constraints. Their board has wide discretion to set rates which are adjusted annually and have distinct changes between seasons with winter rates at 60% to 65% of the summer rates. SSA ridership decreases by 2/3 in winter. The summer peak is due to tourists and part-time residents. Winter riders are mainly year round island residents who get a discount round trip/year round excursion rate. To qualify for the discount, the vehicle must be registered to an island address and the driver of the vehicle must have an island address.



Staten Island Ferry charged riders until 1997 when fares were removed. Any decision to charge a tariff again would have to be approved by the Mayor's office, City Council, and through a change in city law.



In recent years, CMLF has increased prices on an annual basis. As a division of the DRBA, the DRBA Board of Directors has to approve fare increases, but there is no other rate setting authority. CMLF is under pressure to reduce the amount of subsidy they receive from the bridge tolls.



GGF is partially funded by the toll revenue from the Golden Gate Bridge. Farebox recovery is 40%. Fares are same year round and only differ by the route. The Metropolitan Transit Commission requires that GGF recover at least 40% from the farebox. Over the past 5 years, fares have increased by 5% per annum. Rate setting is one function of the Golden Gate Bridge District Board of Directors, and policy is examined once every 5 years.



As a privately-operated ferry with only one regulated route, Clipper is free to set fares on the international routes to respond to market conditions. They apply yield management techniques to their fares to optimize revenue as practiced by airline and cruise industries. On domestic routes, CN is required to put all cost information together so that the expense side is no greater than 93% of revenue thus limiting CN to a 7% return on ferry operation. Costs are further offset by ancillary sales in order to continue to operate this route. The company has to submit the tariff and schedule each year to the WUTC for approval.

RECOMMENDATION

The Panel recommends that WSF institute a policy of automatic fare increases tied to the start of the fiscal calendar and that WSF have authority to set fares.

If WSF's fares rise predictably, then the region can plan and adapt accordingly. A review of WSF fares indicate that they have often had to "catch up" with large fare increases that would be avoidable with this recommendation. If WSF is expected to meet specific financial goals, such as a farebox recovery rate, they must have the authority to adjust their fare structures. As noted below, fares can be an effective demand management tool and need to respond dynamically to effectively serve WSF's customer base.

Fuel

WSF purchases approximately 17.2 million gallons (FY2010) of diesel fuel annually. This fuel is procured through a competitively bid contract. Recent prices for petroleum have shown great variability as seen in Figure 18 below from the U.S. Energy Information Administration. Note the range of forecasted prices which are affected by global economic demand, efficiencies in extracting new sources of oil, energy consumption measures, and taxation policies. The Figure predicts that prices are more likely to rise in the future rather than fall. Since fuel represents 18.4% of WSF's operating expenses, some means of managing fuel prices can provide cost benefits or at least predictability in budgeting.

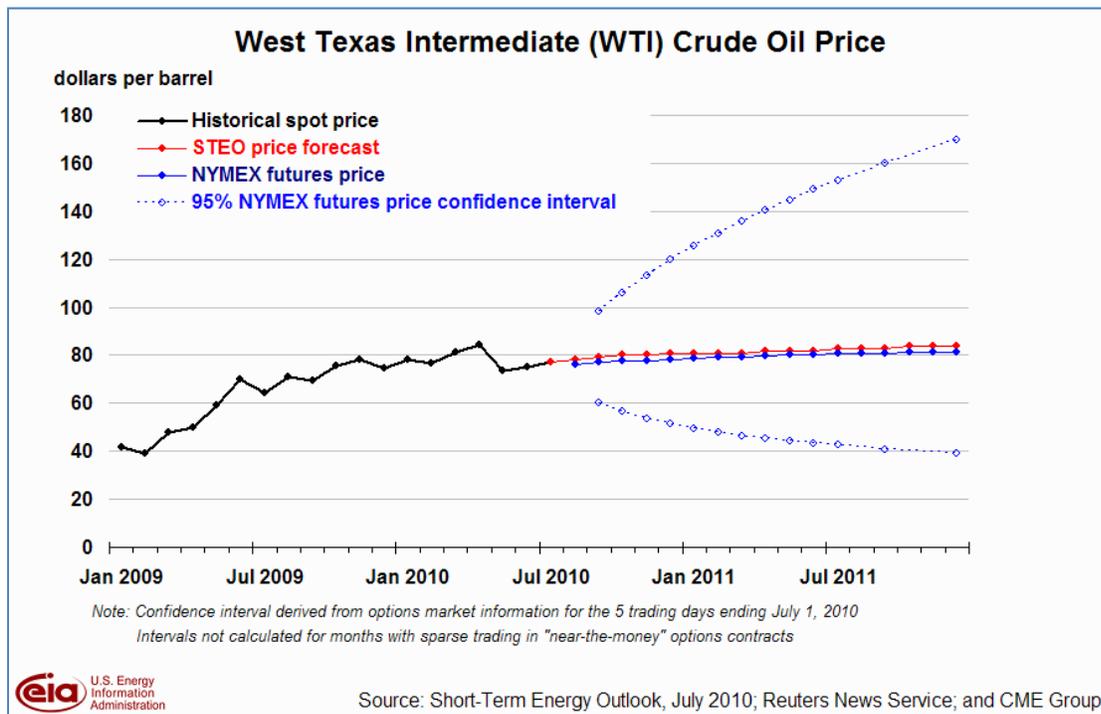


Figure 18 – Forecast Range for Crude Oil Prices

In order to deal with raising fuel costs, many operators have turned to fuel surcharges or other fuel management tools to control budgets. It should be noted that, when adjusted for inflation, the "real price" for diesel in 2010 is only about 7% more than the real price of diesel in the early 1980s, as seen in Figure 19 that follows. WSF's budgeting is struggling with the fact that diesel prices were relatively low from the mid-'80s through the early-'00s.

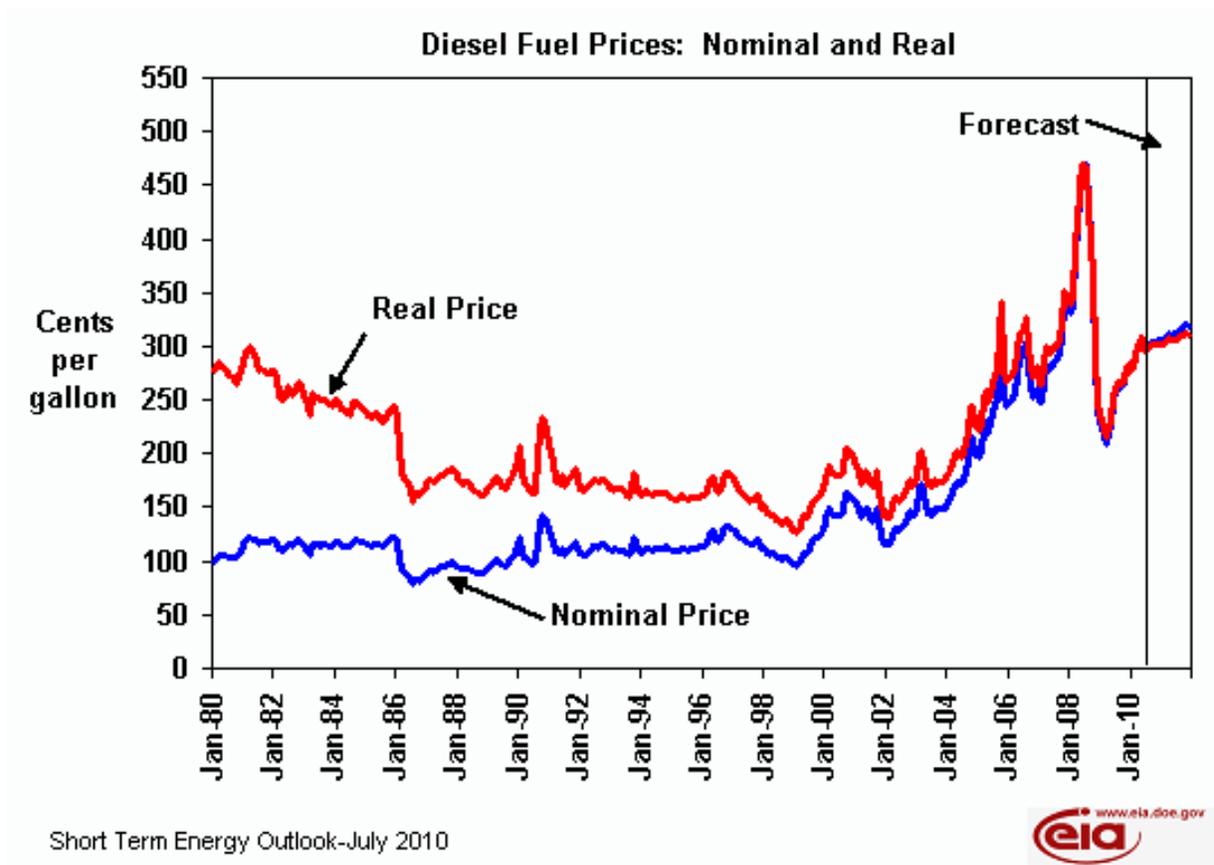


Figure 19 – Inflation Impact (Real Price) of U.S. Diesel Fuel



Clipper has looked at two strategies to deal with volatile fuel prices. The first is a fuel surcharge of \$5.00/passenger/one-way, which is 5.8% of the one-way rack rate of \$85 per adult passenger. This surcharge covers 45% of their total fuel costs and CN reports very few complaints about the surcharge. The second approach is price hedging. During the run up of fuel pricing in 2008, CN also began to investigate ways to manage their expense risk. Working through the Bank of America in early 2009, they were able to establish a break point of \$2.25/gallon, with full effects taking place in 2010. This allows them to plan with some confidence that there is a ceiling on that major expense item.



Staten Island Ferry does not buy fuel directly. The City of New York has a department that purchases all of the fuel for the city. SIF provides specifications as to fuel quality and quantity. Since they do not charge passenger fares, there is no means of applying a fuel surcharge to manage changes in operating costs.



Similar to SIF, Golden Gate Ferry is provided fuel from the Golden Gate Bridge District who purchases it for their bus operations and maintenance team. The ferries do not impose a fuel surcharge.



CMLF has adopted a fuel surcharge policy whereby \$1.00 is charged per vehicle for every \$0.25 over the 8-year trend in fuel price. This trigger has not been met yet so no fuel surcharge has been levied on passengers. They also have the ability to buy contracts in 35,000 gallon increments when they believe fuel price is favorable, thus locking in a good rate.



The SSA maintains a fuel oil hedging program through the purchase of call options over a rolling 12-18 month period. The program is designed to allow the SSA to benefit from prices that fall below the cap while offering some protection that pricing will not exceed the cap price. The SSA does not impose a fuel surcharge.



It should be noted that BC Ferries has been applying fuel surcharges to their fares. When BC Ferries and BC government officials met to reassess the terms of their contract in 2008, the policy tying increases in fares to general inflation was changed. In August of 2008, fuel surcharges (almost 18% on one route) were imposed on most routes. Three months later, the surcharges were cut in half and by mid-December the rates were eliminated entirely. In less than five months time, the surcharges raised CDN\$39.4M. With the recent decreases in fuel prices, riders on some routes are receiving 5% fuel rebates.

RECOMMENDATION**The Panel recommends that WSF continue to take steps to implement a fuel surcharge program.**

The Panel recognizes that a fuel surcharge is not supported by the majority of passengers as evidenced by a recent survey (Reference 18), but it is one fiscal tool to deal with fluctuating fuel costs. Passengers have shown a preference for it to be applied across all fares and to have it capped at some level, regardless of actual fuel prices (ibid). The Legislature has given permission to issue a fuel surcharge by July 1, 2011.

RECOMMENDATION**The Panel recommends that WSF investigate the pros and cons of a fuel price management program similar to that used by Clipper Navigation.**

One factor to be considered in the investigation of a price management system is Washington State's policy on use of biofuels. Such fuels are more expensive than "regular" distillate fuels and may not qualify for a fuel management program.

RECOMMENDATION**The Panel recommends that WSF continue to seek new technologies that are more energy efficient and to refine operating procedures.**

New technologies such as variable speed electric motors for constantly running pumps and fans can be very cost-effective to install. New underwater coating systems can significantly reduce skin friction and prevent marine growth. Operational practices such as periodic propeller polishing helps to maintain peak efficiency of critical propulsion components.

SCHEDULING

General

Scheduling is a complex challenge for WSF. Factors that enter into both the sailing and crew scheduling include:

- Number of vessels
- Number of routes
- Service hours by day of week and by season
- Shift changes for deck and engine room crews
- USCG regulations on crew rest
- Collective bargaining agreements
- Planned time off (vacations, leaves of absence)
- Unplanned time off (sick leave, jury duty, personal time)
- Training requirements
- Connections to other modes of transit
- Fueling of vessels
- Pumping sewage
- Transportation of hazardous cargoes
- Vessel maintenance

Like any public transportation agency, WSF has a mandate to provide an acceptable level of service at a reasonable cost. Service levels and cost are often in conflict. The ideal ferry is one with frequent departures that operates 24 hours a day, year-round, like a bridge. However, because WSF's costs are largely fixed, it is very expensive to operate a late night/early morning route or if the ferry is serving a less traveled route, carrying a very small number of vehicles and passengers. What may be an acceptable level of service to one community (those with road alternatives) may not be acceptable to another community (an island with no other transportation links). These are policy questions that must be decided.

When adjusting a schedule, WSF takes options for different sailing schedules to the public for review and comment. Options are developed typically utilizing the involvement of local Ferry Advisory Committees, then posted on WSF's website (and sometimes a local jurisdiction's or Advisory Committee's website), local newspapers and handed out in printed form. WSF will also conduct some interviews onboard the ferries to gain customer feedback and insights into how individual travel plans might be impacted. They have found this to be a very useful way of gathering information to help shape the schedule as evidenced by the recent major changes to the Edmonds - Kingston schedule and the Anacortes - San Juan Islands schedule. The vital nature of the transportation service is reflected in the care taken by WSF to work with affected groups.



SSA operates 16 to 17 hours a day with service from 6 a.m. to 10 p.m. (Woods Hole to Vineyard Haven) and 7:30 a.m. to 11:30 p.m. (Hyannis to Nantucket). Schedules are set by their Board of Directors who represents the communities served by the ferries. However, with their mandate to operate with 100% farebox recovery, they have 100% utilization of the vehicle deck in the summer months to offset the lower utilization during the winter months. Expanding hours of service is constrained by the need to add another crew shift, which would be a significant increase in operating costs that would not be offset by any additional revenue.



SIF's schedule is set by the Office of the Mayor and the City Council and is oriented around urban commute patterns. During rush hour, SIF has departures every 15 minutes from 7 a.m. to 9 a.m. (Staten Island to Manhattan) and from 5 p.m. to 7 p.m. (Manhattan to Staten Island). They have excellent on-time performance during the winter, but are challenged in the summertime to turn the vessels around in 10 minutes due to the large tourist groups.



CMLF changes their schedule every year. Their schedule is complex, but they often adjust the timing of departures and number of vessels to suit demand during their peak traffic which occurs mid-day. They will stagger boats in and out to meet mid-day peak and they do not always publish all departures. They feel it is easier to pull a sailing or add a sailing when not published. However, consistency has proven to be very important for repeat customers.



GGF has their first ferry run from Larkspur to San Francisco at 5:50 a.m. and their last run from San Francisco to Larkspur at 9:35 p.m. The Golden Gate Bridge District does provide bus service between the terminals on two earlier morning departures. The run is 30 minutes with a scheduled at dock time of only five minutes during the peak commuter demand. There is a mid-day break of 90 minutes between sailings.



As a private operator with large seasonal changes in ridership, Clipper places a high priority on scheduling and operational flexibility. CN has not significantly changed their departure schedule in 20 years. They do adjust their vessel schedule in the San Juan Islands to match the vessel departure with sunset, which is appreciated by their passengers who are primarily tourists and always looking for a good photograph.

Clipper juggles operations to keep their core crew busy year-round and staff up with seasonal employees as necessary. Experienced crew members are hard to find, and CN has to compete with the higher crew member wages paid by WSF. One of their strategies is to put the vessel's crew on maintenance activities during the winter period when they typically have two of their three boats in lay-up. This is facilitated by a cooperative agreement with a local Northwest shipyard that knows their vessels and crew capabilities.

The Panel identified the following areas for potential improvement:

- Service Schedule Development
- Crew Work Schedule Development
- Scheduling of Vessel Maintenance

Service Schedule Development

Every six to seven years, WSF does a large scale origin and destination survey of its riders. In these surveys they obtain information on how many riders use transit. This is an important consideration in the development of schedules; if a route has a lot of foot passengers that connect to transit, WSF might take extra steps to ensure that a schedule is developed to coordinate with other transit connections. The origin and destination surveys are especially useful when WSF has to close a terminal for repair or maintenance work. In those events, WSF coordinates with local transit agencies to make sure adequate alternative service is in place to meet the trip patterns of WSF customers.

Customer surveys regarding schedule options were also conducted with the restructuring of the Seattle - Bainbridge schedule in 2002, and the Fautleroy-Vashon-Southworth and Seattle-Bremerton schedules in 2003. Recently, WSF adjusted the sailing schedule on the Edmonds-Kingston route with the goal of improving on-time performance, saving fuel and providing better transit connections. WSF removed some non-peak sailings from the schedule, which a number of customers perceived as a reduction in service, but on-time performance has improved significantly. For summer schedule performance through mid August 2009, 52% of trips were within five minutes of sailing time, which is up to 76% for 2010; in 2009, 68% of trips

were within ten minutes of sailing time. In 2010, 89% of trips were within 10 minutes of sailing time.

WSF's schedules have had late evening/night service (up to midnight or beyond) for several decades on most routes, the exceptions being Port Townsend-Coupeville, San Juan Islands, and Point Defiance-Tahlequah. A review of schedules published in the 1950s reveals a range of evening coverage similar to what it is today. This long standing level of service has developed from a multi-generational constituency and expectation of late night accessibility. Swing shift and night shift workers make their voices heard when WSF has made proposals to alter or eliminate late evening/night service. Even though the numbers of riders on these sailings is low, it becomes an accessibility issue.

WSF has added more early morning sailings to reflect customer demand. As businesses in the Puget Sound area have shifted to flex-time in order to deal with highway congestion, WSF has met the need for a similar shift in their morning service.

Matching schedule to cost is a challenge that WSF is continually evaluating. In every budget cycle, reducing the hours of service is examined as one way of reducing operating costs. Thus far, WSF's extended hours of service have been kept largely intact.

RECOMMENDATION

The Panel recommends that WSF continue to evaluate the demand for extended hours of service and apply demand management tools as appropriate.

WE have reviewed WSF's scheduling procedures and believe that they follow best practices in the ferry industry. Some demand management tools that WSF should consider include lowering prices to stimulate demand for such services or perhaps increase prices on the late night runs to improve the cost recovery.

As noted in Reference 18, 45% of the survey respondents take the ferry because it is faster, versus 25% of the respondents who choose to drive around because it's less expensive.

Crew Work Schedule Development

At WSF, deck staff for the vessels is assigned to a particular route, not to a specific vessel. This decreases the disruption to the employees when vessels must be moved about the system to respond when vessels are out of service. The COIs for all the ferries represented limit the work day to 12 hours. WSF has recently had to amend their procedures to eliminate the touring watches that previously had been negotiated with the unions, because the crew members were working more than 12 hours in a 24 hour period, in spite of the rest periods that were built into the schedule. WSF has had to go to a more traditional work schedule since these touring watches were eliminated, and shifts are limited to eight, nine or ten hours. There is a

comparison of WSF deck staffing levels to other ferry operators in the discussion of labor that follows.

There is no consistent formula amongst the Panel for scheduling the deck staff. While all agreed that the Masters would preferably be assigned to one vessel, operational changes necessitate the flexibility to have all crew able to take the available vessel.

Scheduling of Vessel Maintenance

The Cedar River Group recommended that WSF reduce its average out-of-service time for a vessel from seven weeks annually to six weeks annually (Reference 3). They offer some ideas on ways to achieve this reduction, from consolidating work by Eagle Harbor staff with work at a shipyard, to extending topside painting intervals to ten years. WSF is currently running a trial project on the PUYALLUP to shift out-of-service intervals to once every two years.



Most of the Panel Members schedule two to three weeks for their annual inspection periods. When a dry-docking is required for tail shaft inspection and underwater examination (twice every five years per USCG requirements), SSA's vessels will typically be out of service for three to six weeks. SSA will typically take their vessels to either New London, CT or to Bridgeport, CT for haul out, which requires a day sailing either way. For major work, SSA bids the project nationwide and the vessels may be out of service for four to six months depending upon the shipyard and scope of work.



SIF has to allow for additional time for their haul outs since the ferries have to be prepared for ocean tows between New York and Colonna Shipyard in Norfolk, VA. For major work, SIF will allow six to nine months depending on the scope of the effort.



Black Ball Transport, a private ferry service operating between Port Angeles, WA and Victoria, BC, which operates the 50-year old COHO, allows two weeks during the winter for annual maintenance and USCG inspections. However, during the winter months their schedule is reduced to two round trips per day, for approximately eight hours of operation, leaving time for extra maintenance efforts.

This experience matches WSF's practice as shown in Table 6 of Reference 3, and in WSF's current vessel scheduling for the 2009 – 2011 Biennium (Reference 20).

RECOMMENDATION

The Panel recommends that WSF continue to seek ways to reduce out-of-service time through increased maintenance while the vessel is underway and through the strategies identified in Reference 7.

However, we believe that reducing the average out-of-service time from seven weeks to six weeks is not practical, given the average age of the fleet.

LABOR

General

WSF has approximately 1,800 employees, divided as shown below. The staff works together every day to safely transport thousands of passengers across Washington State waters.

Table 6 - Cost Data from Reference 1 for 1996 through 2006

Division	# of Employees	% of Employees	% of Total Cost
Terminals	371	20%	17%
Vessels – Deck	739	40%	67% (combined Deck & Engine)
Vessels – Engine	365	20%	
Eagle Harbor	102	6%	13%
Headquarters	264	14%	4%
Total	1841	100%	

There are 11 bargaining units and all but 100 of the 1,841 employees are represented by unions. The unions that represent the vessel officers are the same unions that represent the officers of the other Panel members that have contracts with unions. The Masters, Mates and Pilots (MMP) and the Marine Engineers Beneficial Association (MEBA) are nationwide organizations that represent not just ferry workers but mariners throughout the inland and ocean segments of the maritime industry. MEBA also represents the unlicensed engineering staff. The unlicensed deck employees and the terminal employees are represented by the Inland Boatman's Union which also represents the employees of Golden Gate Ferry. The contracts that are currently in effect are generally consistent with other contracts represented by the Panel.

Currently WSF is operating in a very strong labor environment. Most employees in Washington State government have an employee grievance board called the Public Employees Relations Commission (PERC). WSF's marine bargaining unit employees have a different grievance board called the Marine Employees Commission (MEC). The Washington State government is looking at ways to bring the ferry labor contracts more in line with other state government contracts.

Labor costs constitute 62% of WSF's annual operating expenses. The ferry system is required to use binding arbitration for collective bargaining. Recent changes by the 2010 Legislature modified the arbitration rules. The first is that the Arbitrator must consider WSF's ability to pay for increases in compensation or benefits. The second is that the Arbitrator may "split the difference" or select an alternative position from those presented by the two sides. Previously WSF was constrained to Pendulum Arbitration, also known as Baseball Arbitration. The third

tool is that once the arbitration is complete, the Washington State Office of Financial Management must certify that the funding changes are viable.



SSA has a total of 650 employees represented by four unions including the United Auto Workers for their licensed deck officers, MEBA for their licensed engineers and unlicensed vessel employees, SEIU for their reservation clerks and the Teamsters for many of their maintenance, terminal, parking lot and security personnel. They generally crew their vessels in accordance with the minimum manning on the COI. On the ISLAND HOME, which is certificated for Lakes, Bays & Sounds routes and up to 1,200 passengers, the total crew complement is nine persons. (Note: WSF's CHETZEMOKA crewing per the COI is 10) They have been able to negotiate out Wipers from their union agreement.



SIF operates in a strong union environment. They have 620 employees represented by approximately 20 different bargaining units. All negotiations are handled by the Mayor's Office of Labor Relations, so SIF has little input on pay structure. Their marine crews work basic AM and PM day shifts (from approximately 4 a.m. to 2 p.m. and from 2 p.m. to 10 p.m.) No crew member is scheduled for more than 12 hours, but can work up to 14 hours in a 24-hour period. Nighttime operations are handled by a smaller crew on staggered shifts. Overtime is double pay and typically represents 8% of all labor hours. The Director of Operations manages and monitors overtime charges.

SIF has also installed palm scanning time clocks at various locations and will be trialing onboard a vessel in the near future to improve control of when staff report on or off duty. SIF can contract work out, but only if it does not take work away from maintenance facility staff. Any reduction in staff must be in accordance with the City Charter and Collective Bargaining Agreements.

SIF operating crews perform minimal maintenance while the vessels are underway. All primary maintenance and repair activities are handled by the ferry maintenance facility staff or by the shipyard during the biennial dry-docking.



GGF has a total staff of 105 of which 42 are officers and crew of the vessels. The vessel operating staff is represented by four collective bargaining agreements and the terminal staff by two collective bargaining agreements. Vessel maintenance is handled by a staff of ten.



CMLF has a total of 160 permanent employees, most of which are represented by three unions, including the MEBA for their marine crew members and vessel mechanics; the International Union of Operating Engineers (IUOE), Local 542 for their terminal maintenance employees, food and retail employees, vessel painters and cleaners; and the Fraternal Order of Police for police officers. This permanent work force is augmented with as many as 400 seasonal/casual employees who each work no more than 1,000 hours per year, and whose efforts are brought to bear primarily during the busy summer season. All seasonal/casual employees are non-union.

The CMLF generally crews their vessels with one above the minimum required manning as stated on the vessel's COI. If there are crew call outs or required yard work, the vessels may then drop down to minimum requirements with no impact to operations. All vessels are certificated for Lakes, Bays & Sounds routes and carry 800 to 1,000 passengers and approximately 100 passenger cars. Required crew complement is generally nine persons, but summer operations on the larger vessels require 17 crew members (ten marine crew plus seven food service staff). Crew schedules are varied and based on the seasonal demand, but in general, ramp up from three crews in winter to seven crews in summer. Crew shifts vary from 8 to 12 hours per day, with some crews scheduled to work six days a week in the peak of the summer season.

Deck Staffing Levels – Operations

During their deliberations, the Panel discussed crew size and the variation of crew numbers required per the USCG Certificate of Inspection issued to each vessel. As shown in the Figure that follows, which represents various ferry operators across the U.S., similar vessels carry quite different numbers of unlicensed deck crew for the same or similar passenger capacity.

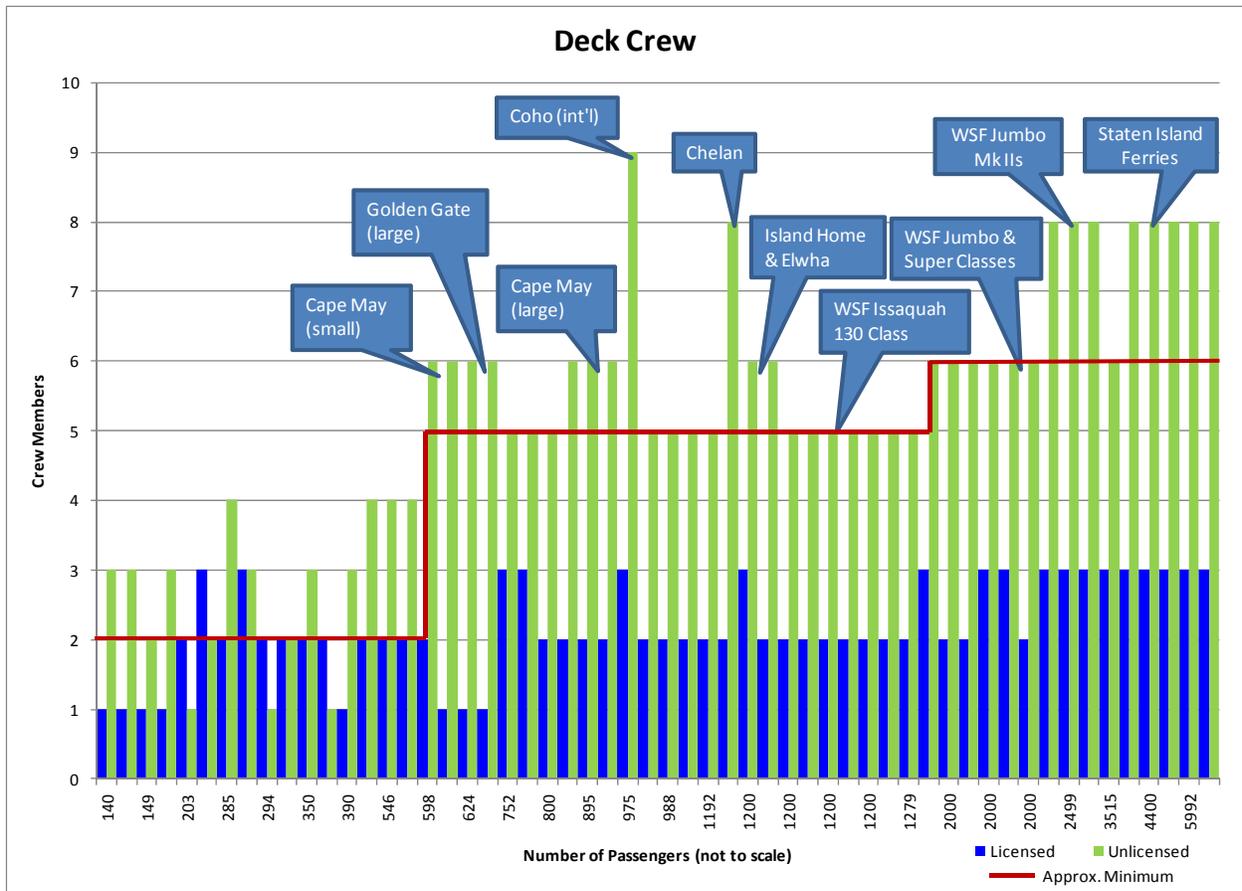


Figure 20– Comparative Deck Crew Staffing on U.S. Ferries Based on COI Data

This suggests that there may be opportunities to reduce crew numbers without compromising safety. One way to reduce labor costs would be to shift to two different crewing schedules, depending upon whether the vessel is operating with a full passenger load during the summer months or a reduced passenger load during the off-peak seasons or sailings that have low passenger loads (mid day or late night). The USCG Marine Safety Manual (Reference 19) states: "For vessels that carry varying numbers of passengers the Officer in Charge of Marine Inspection (OCMI) should provide a sliding scale of the total number of deckhands required indicating the number of passengers carried." This strategy is used by SSA for their vessels with the result that two fewer deckhands are required during the winter.

WSF operates some of their vessels in accordance with the minimum manning as specified on the Certificate of Inspections (COI) issued by the USCG (Jumbo Mk II Class, SEALTH, and RHODODENDRON). Their other vessels have additional crew members, or crew members of a higher classification than specified in the COI, as required by the CBA. For example, on the Evergreen State Class, the COI calls for a Chief Engineer, an Oiler, and a Wiper, while the CBA states that an additional Oiler be carried in lieu of the Wiper. Clipper Navigation stated that they recently have reduced extra crew that previously had been carried on board to provide additional customer service. Both Staten Island and WSF carry additional personnel per the CBA. WSF estimates that the cost of these additional crew exceed \$4.5 million annually

Another strategy used by SIF is to close off a passenger deck during night sailings. The USCG manning scale for passenger vessels of less than 100 tons requires one deck hand per deck, plus additional deck hands depending on the number of passengers. This logic of crew size might be successfully negotiated with the local OCMI for a reduced crew size on certain sailings.

RECOMMENDATION

The Panel recommends that WSF study ways to right-size crew levels when there are fewer passengers onboard.

This study would be conducted with the full participation by the local USCG OCMI and employee representative bargaining units.

RECOMMENDATION

The Panel recommends that WSF evaluate current staffing on the vessels versus the safe manning required by the COI.

RECOMMENDATION

The Panel recommends that short of the Master being assigned to a specific vessel, not to the route, WSF should identify alternate methods of building a sense of ownership by crew.

As the Master, the Captain's role is to take ownership of the vessel and WSF should encourage this. In doing so, the Panel believes that this would provide a level of consistency that could improve coordination between the deck crew and the engine room crew, as well as help maintain a focus on the overall needs of the vessel as regards to maintenance, operation and preservation.

Engine Room Staffing Levels - Operations

Under the ILO Marine Labor Convention 2006, a mariner may not exceed 14 hours of work in any 24 hour period or 72 hours in any seven day period. This convention has not yet been adopted by the United States but it is the same language as in the Seafarers' Hours of Work and the Manning of Ships Convention, 1996. The USCG language for crew members on tankers or towing vessels is 15 hours in a 24 hour period or 36 hours in a 72 hour period (Reference 21). In the Marine Safety Manual (Reference 19, Pg 20-10), the USCG recommends a maximum 12 hour watch in a 24 hour period. The USCG has done extensive research on work hours and fatigue and some of that material may be useful for WSF to develop effective, safe schedules for the crew.

WSF crews the engine rooms 24 hours per day and the engineers have a completely different schedule than the other crew on the vessel. This requires four crews of engine room staff standing 12 hour shifts with seven days on duty and seven days off duty. On arrival at the end of the first shift, the engine staff exchanges information about the shift just completed and the

status of the vessel with the relieving crew reporting onboard. The relieved crew generally then depart the vessel, although they may occasionally sleep onboard during their off-watch. The rationale for staffing the engine room 24 hours per day is to allow for onboard maintenance work, especially for those vessels which are in operation for 22 hours per day.



SSA has a waiver from the USCG allowing them to have a shift of up to 18 hours in 24 hours as long as they do not exceed the limit of 36 hours in a 72 hour period. Typically their crews are onboard for 10 hours, but are not standing watch full time. SSA used to crew their engine rooms 24 hours per day but are now operating up to 18 hours per day (both watches combined). They also have a night engineer who rotates among the boats when they are not operating to perform maintenance and inspection duties.



At the conclusion of the operating day, Clipper engine room staff is met by shore-based maintenance personnel. The operating engineer provides work lists to be completed overnight. The operating engineer at the start of the day receives a report on the activity completed overnight.



Staten Island Ferry has a similar system to Clipper with a staff of maintenance personnel based shore-side at the St. George (Staten Island) facility. SIF engine room crews perform no maintenance while the vessels are underway. All maintenance is handled by the staff at the St. George maintenance facility.



Similar to Clipper, Golden Gate Ferry has a nighttime maintenance team. This is typical of high-speed, passenger-only ferry operations where the engine room is unmanned. The engine rooms are small and maintenance underway is impractical.



CMLF operating crews perform minimal maintenance while the vessels are underway. All primary maintenance and repair activities are handled by shore-side vessel maintenance staff on standby vessels or during off hours, or by a shipyard during scheduled dry-dock periods.

For a comparison of WSF engine room staffing levels to other ferry operators see below. The data for this figure also comes from the vessel COI. Actual engine room crew levels may be greater depending upon collective bargaining agreements or operational policies.

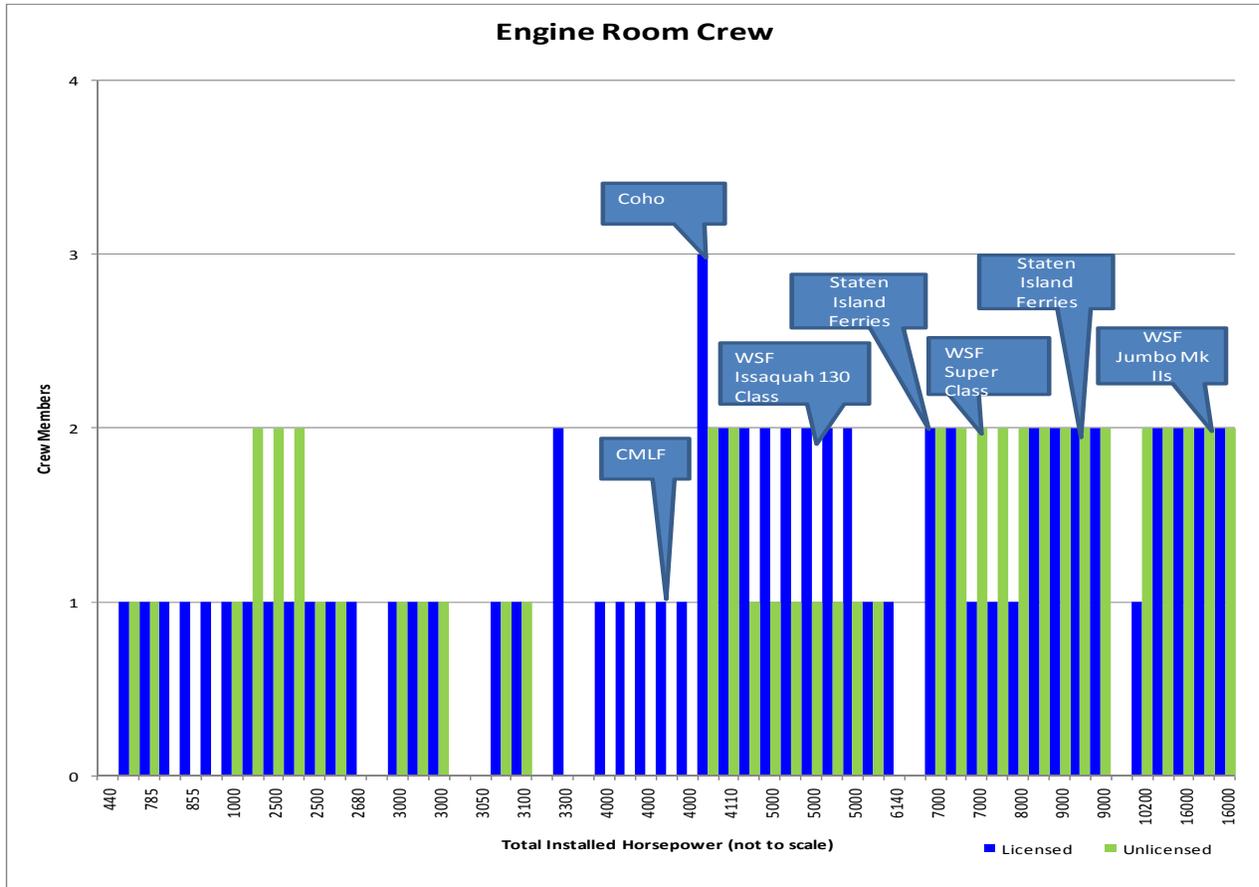


Figure 21 – Comparative Engine Room Crew Staffing on U.S. Ferries

RECOMMENDATION

The Panel recommends a pilot program where only the Chief Engineer's position is staffed 24 hours per day.

WSF's practice of having the engine room staffed around the clock is not the industry standard. The Panel members are aware of the maintenance challenges and safety concerns due to watch changes. Other engine room personnel can be assigned work schedules that mirror the deck crew schedules. We understand this would require a change to the collective bargaining agreement.

Engine Room Staffing Levels – Dry Dock and Maintenance and Repair

WSF's standard practice during vessel maintenance and out-of-service periods for the vessels is to have the full engine crew on the vessel. The crew typically shifts to working an eight hour shift five days a week. WSF's current practice is to send one full engine room crew to accompany the vessel when it goes into a shipyard for maintenance or preservation work. This practice has led to sometimes significant overtime expenses.



SIF engine room crews are primarily operating personnel and are not assigned to a specific vessel. In a given year they are likely to work on all the vessels. To oversee work done at a shipyard, SIF uses both a combination of consultants and their own staff. They have been using an Owner's Representative plus a Port Engineer during the actual shipyard interval. They will send additional staff to the yard for trials as necessary.



GGF has one staff member that manages shipyard projects, but they are not on site full time. They also use consultants for their Owner's Representative on larger projects. None of their engine room crews go with a vessel to a shipyard.



CMLF is similar to GGF except that they periodically send engine room staff for training purposes.



The Panel recommends that WSF study the types of work performed by vessel crews while the vessel is in a shipyard and then determine the cost/benefit of this practice.

The Panel agreed that it is the industry standard to send only one senior engineer to a shipyard to observe and monitor. No other ferry operator sends the full engine crew.

CUSTOMER INTERACTIONS

General

WSF is very proactive in communicating with their customer groups. They use several methods of gathering comments and providing information. The primary method is the Ferry Advisory Committees. Each route has councils to represent both sides of the crossing. Appointment to the council is by county authorities. The council meets frequently on schedule and operating issues. Some routes are more active than others.

As the new head of WSF, the Assistant Secretary of Transportation has been engaged in a series of community meetings during development of the Long-Range Plan. This included four meetings on each of the 10 routes in 2008 and three rounds of community meetings in 2009. For 2010, the Assistant Secretary held one round of meetings in the spring before the start of the legislative session. Another round is planned for November. Fare and service issues have produced heavy attendance. Additionally, an email report, sent every Friday, reaches some 5,000 recipients.

The Washington State Transportation Commission (WSTC) is another avenue by which people can connect with the ferry system. WSTC has fare setting authority and is involved in state transportation planning. WSF must propose any fare increases, such as the fuel surcharge discussed previously, to WSTC. WSTC gathers public opinion to inform their deliberations on fares. WSTC has a 4,000 member group to elicit online survey data. This is a new customer feedback mechanism and they hope to grow the group to approximately 10,000 to 15,000 ferry users. WSF's Customer Information Staff, which is part of the Communications Department, handles all client communication (schedule, branding, etc.). This includes a Ferry Alert Process where updates are sent via email or text messages to subscribers, providing a level of real-time information management which has been well received by users.



New York City has developed a so-called "3-1-1 system" whereby customers can call a 311 operator to leave a message about a city service. This is then forwarded to the appropriate agency via email. SIF has been receiving 30 reports per month of which ten may be considered legitimate issues. These mainly involve restrooms, cleanliness or service. SIF responds to these issues with a phone call to explain what action the ferry system has taken. SIF also has an online survey which they tabulate monthly. The data is tracked by their passenger service office. SIF also used three mail-in surveys in 2009 with generally positive responses. They see great value in social media sites such as Facebook and Twitter to inform customers of changes such as a modified schedule. This has reduced the number of customer complaints when there are service interruptions.



In CMLF's experience, customer interaction is the single most important thing to achieve. As part of a larger public authority, CMLF needs customers to confirm their relevance to the Legislatures on both sides of the Delaware Bay. They use a variety of methods to gain customer feedback including comment cards, which are reviewed by Captains and management on a daily basis and Secret Shoppers who are instructed to look for such things as name tags, issuing receipts and interaction with customers. Onboard electronic surveys using tablet devices automatically download to a database, allowing process of up to 1,000 surveys in a one-week period. Their website also has an online survey that has produced 4,300 complete surveys over a two-year period. They use Social Media tools such as Facebook and Twitter, which generates immediate dialogue with the customer. In 2005, a Formal Market Study helped define their customer base and motivation for using the ferry, looked at pricing strategies and ways to increase revenue.



Four years ago, GGF started a public outreach program at the San Francisco terminal on the first Tuesday of every month. Senior staff from the ferry are available in an open house format around commute time (duration of 2-2 ½ hr) and will stay longer if necessary. They record and follow up on each issue. This approach has provided excellent feedback on their operation, much of it (98%) positive. The relaxed setting helps to promote legitimate questions and ideas from customers. To stimulate the dialogue, GGF now produces a quarterly newsletter to facilitate the information flow to customers.

WSF has really stepped forward using new ideas to communicate to their customers. Outreach is more important than ever, helping keep customers informed about changes in schedule, fares and the system itself. Customer satisfaction has increased through these efforts, both with regular customers as well as new customers that are better informed prior to their trip.

The Panel discussed the changing ideal of customer satisfaction. For each of the systems, the Panel believes that a good on-time departure record is still vitally important, but that today's customer wants more from their experience of riding the ferry. Efforts to increase ridership are important to each Panelist's system, and also important to WSF.

The Panel examined the broad topic of customer interaction. They reviewed survey results, rode on the Seattle to Bainbridge run to observe the customers, and looked at loading and unloading procedures. The Panel has identified the following areas with opportunity for improvement:

- Loading and Unloading of Vehicles and Passengers
- Implement a Reservation System for Demand Management
- Establishing a Customer Service Standard

Loading and Unloading of Vehicles and Passengers

WSF is seeking ways to expedite loading operations for several reasons. First is efficiency; to provide schedule slack so they can slow vessels on routes and save fuel. Second, to assure the success of the reservation system, timely departures are essential. Two of their routes (Mukilteo-Clinton and Fauntleroy-Vashon) are constrained by moving passengers on and off as there is no separate passenger overhead loading. All other routes are constrained by the flow of vehicles. Currently, bicycle loading/unloading is a challenge since they are first off the vessel and can impede the unloading of cars. This creates a safety issue, which is more important than the delay, with the anxious drivers that have waited to unload now following the bikes down the road. As for vehicles, WSF is questioning whether they should unload the center lanes of the vessel (tunnels) first and then unload side lanes, which is more efficient. Current practice is to unload roughly in the order vehicles are loaded.

The other ferry operators who handle vehicles (SSA and CMLF) felt that WSF does an excellent job in quickly unloading and loading their vessels. The Panel discussed various methods that are used to assure that the vessel is ready at departure time, and last minute arrivals at the terminals are frequent causes of a late departure. This causes a negative perception for the customer that did arrive on time and that expects an on-time departure. It also creates a need to make up the delay by the crew, increasing fuel consumption of the vessel. On the routes where passenger loading is the constraint, some type of count-down timer might be effective as a means of encouraging passengers to load in a timely manner. SIF is disciplined at closing the terminal doors a few minutes in advance of the vessel departure.

RECOMMENDATION

The Panel recommends that WSF should consider a set cut-off time for loading all vessels.

The Panel believes that departure times should be strictly adhered to for vessel loading. If the vessel is to leave on time, embarking must cease with sufficient time for the crew to secure the deck and get underway. Allowing stragglers to delay the departure is harmful to the system for a number of reasons. WSF should establish a cut off boarding at the published sailing time, and then adjust the schedule to account for the time (five minutes possibly) to assure that the crew operates the vessel as efficiently

as possible. The countdown timer used by SIF should be considered.

RECOMMENDATION

The Panel recommends that vehicles be unloaded ahead of bikes.

Safety is of the paramount importance with efficiency second. The Panel recommends that a trial project be undertaken to change the loading/unloading sequence with bicycles being loaded last and unloaded last. This allows better separation of vehicles and bicycles and gives the Mate more control over the space allocated to bikes. Bikes are also slower than cars and can slow the disembarkation of those they are in front of. By holding back bikes, it also avoids the need for bicyclists to move through the car deck with their bikes in order to get to the front of the vessel. By off loading after the vehicles, bikes will not be sharing the road at the same time as the disembarking vehicles, allowing for a margin of safety.

RECOMMENDATION

The Panel recommends that the "tunnel" be unloaded before the gallery decks and side decks are unloaded.

The vessel should be off loaded in the most efficient method possible to ensure that all vehicles are on their way quickly. Stopping and starting flows of vehicles can be confusing to drivers and thus dangerous for the deck crew. Data should be collected with the system "as is" and with the altered sequence to identify and change in time at the dock. Should there be complaints from customers; WSF should emphasize that reducing the time at dock allows the vessels to operate at slower speeds during the crossing with the benefits of reduced fuel costs and lower impact on the environment.

Implement a Reservation System for Demand Management

The reservation system that is being implemented by WSF will help the system accomplish three goals: 1) to benefit customers by being easy to use and offering an adequate degree of predictability, spontaneity, and flexibility for all customers, 2) to benefit ferry communities by reducing the negative impacts of queuing outside terminals, and 3) to benefit WSF by helping the agency manage vehicle demand and improve asset utilization.

A key philosophy of the Long-Range Plan (Reference 8) is to manage demand without an increase in capital assets, specifically vessels. After three 64-Auto vessels have been

constructed, the 16-year financial plan calls for the construction of two, 144-Auto ferries. Four additional 144-Auto ferries would be constructed after FY 2025 and that level is then maintained until 2030. It should be noted that the Cedar River Group recommended the construction of four 64-Auto ferries and only one 144-Auto ferry within the 16-year financial plan.

WSF will need to find ways to manage demand with a reservation system for seven to ten routes. Currently there are three routes where some form of reservation system is in place: Port Townsend-Keystone, commercial traffic to San Juan Island communities, and Anacortes-Sidney. The limitation to having a reservation system covering all routes is that some terminals lack sufficient holding areas to suit a reservation system. Those terminals are Clinton-Mukilteo, Southworth-Vashon-Fauntleroy and Point Defiance-Tahlequah. A reservation system would provide a number of benefits to the system, such as enabling the ferry system to shift some demand to the shoulder periods. The Panel also believes that a reservation system in the San Juan Islands might also attract new customers and win back customers that have not traveled there due to concerns of not being able to get on a boat at the times they want to travel. Stories of multi-boat waits in the San Juan Islands during peak seasons have been a disadvantage to WSF's ability to build ridership on this route.



The Steamship Authority is highly dependent upon their reservation system for managing peak demand. SSA is sold out on 50% of their summer runs. They have a head start system for residents that allow booking spaces at the beginning of each year for some of the critical summer weekends. They also have some preferred reservations that open up seven days prior to sailing to accommodate emergent demand. They hold back some spots for locals and have a registry to confirm residence. There is also a standby line for residents to give them priority if a reservation is unfilled.



Clipper uses web bookings as a core part of their business, which goes beyond selling vessel rides to include tours, hotel bookings and vacation packages. More than 55% of their sales are generated online. Approximately 50% of their total revenue comes from non-marine sources, so they take customer comments very seriously. They will be implementing a new reservation system this fall, which will run in parallel with the existing system until January 2011. Their current system is too labor-intensive for the wide variety of travel options that CN offers.



The CMLF has had a reservation system in place since 1997. Reservations were initially managed through the toll/reservations system called AFOS, manufactured by ANITE. The newer version of this system, which they now use, is CarRes. The system manages and matches tariffs to available capacity, seasonality, and restrictions in use based on time of day, day of week, and trip (i.e. return trip vs. one way). The system is used to sell foot passenger tickets and to manage tariffs for this segment as well as vehicles.

RECOMMENDATION

The Panel recommends that WSF continues to implement a reservation system for appropriate routes.

SSA, CMLF and CN have seen great benefit from their reservation systems including demand management, improved fare revenue, and the opportunity to provide a more expansive travel service with associated non-fare revenue. Due to the high summer time demand, SSA has developed a comprehensive set of policies and procedures to suit both year-round residents and seasonal visitors. WSF should review this material and evaluate its suitability for the WSF reservation system. WSF has completed a Pre design Study for the reservation system (Reference 22) and the Panel endorses moving ahead.

Establishing a Customer Service Standard

There was a general agreement among the Panel that the traveling public has higher expectations now than just getting to their destination on time. Creating an "experience" for a customer and making a personal connection with a customer are important standards for each of the systems, since each discussed a need to continue to promote their product and increase ridership.

WSF is examining the role of shipboard personnel in response to the customer service audit. They are looking at the question of how the vessel staff should interact more with the passengers.

WSDOT management believes that their employees need to be strong ambassadors for the system. This belief is echoed by the Panel members. WSF has great stories to tell about the ways their staff has helped people with stalled cars, rescued disabled boaters, dealt with medical emergencies, and offered directions to tourists. In any customer service business, good customer relations are essential to the success of an organization. As evidenced by polling and their performance numbers measured against other ferry operators (discussed below) WSF does well at providing basic transportation service. However, simply delivering

customers on time at a fair value is no longer enough. WSF is conducting a customer service audit and is committed to implementing the audit recommendations.

RECOMMENDATION

The Panel recommends that WSF evaluate their policies, mission statement and training to assure that the commitment to customer service is communicated to personnel and customers.

The Panel recommends that WSF develop an improvement program to ensure that all staff members who interact with the public are performing at high standards, as well as a recognition program when that standard is met.

WSF needs to assure that the culture of the system emphasizes customer satisfaction. WSF has a committed group of employees that provide excellent service to the public and often receives accolades from the public. WSF should communicate to their staff that customer interaction and satisfaction are metrics that are important to the customer and, therefore, to WSF. WSF should then develop some metrics for customer service such as "time on hold" for telephone inquiries, number of passenger compliments and complaints. WSF might consider effective hospitality models developed by local companies, such as Clipper Navigation or Holland America Lines, for application to training and corporate culture. Such changes may require changes to the Collective Bargaining Agreements to ensure that all parties are clear on their role in providing a solid customer experience.

CONCLUSION

The Panel believes that WSF is well-managed, with policies and procedures that generally match industry best practices. We note that WSF has made progress on many of the recommendations presented in the studies and audits of the Ferry Division over the past four years. These efforts have included reducing the overall costs of WSF. WSF decreased their staff in capital and operating budgets and reorganized administrative, operational and engineering functions within the system. They shifted the WSF capital program to vessel procurement and maintenance from terminal expansion. WSF also revised its overtime policy to improve assignment of discretionary overtime and instituted flexible crew work rules utilizing crew endurance management principles. They have made significant efforts to improve communication with ferry communities and focused on fuel conservation. The Panel was also highly appreciative of the professionalism and openness of WSF management throughout this project.

Like any large, complex operation there is always room for improvement. The Panel offers some recommendations that will continue the alignment of WSF with best industry practice. We encourage the Ferries Division to continue to reach out to peers, such as other ferry operators, and to industry resources such as the Passenger Vessel Association. The entire industry will benefit from learning about some of WSF's best practices, as well as sharing their own.

A complete list of the PVA Expert Panel recommendations can be found in Appendix F.

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