

# Economic Impact of the Hiram M. Chittenden Locks

Lake Washington  
Ship Canal Users  
Group

Prepared for:  
**Port of Seattle**

# Reason for the Study

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- Ballard Locks is 100 years old and needs **up to \$60 million in new investment** to make major systems reliable and safe
- USACE (US Army Corps of Engineers) budget process prioritizes investment based on a formula for national economic benefit that tends to emphasize shipping tonnage.
- Ballard Locks transits approx. 1 million tons/yr of freight
- U.S. coastal shipping is approx. 1 billion tons/yr (not counting foreign shipments)
- There are approx. 200 other locks systems in the U.S.
- **Ballard Locks provides many benefits** for which the Corps' economic analysis traditionally has not fully accounted

# Methodology

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- Study Purpose
  - Describe and quantify, where possible, the full range of economic activity facilitated by or dependent on the Locks
- Study Tasks
  - Interviews with 55+ businesses, business associations, public agencies, tribes, USACE
  - Collection and analysis of secondary data (past studies, Locks usage and repair history, state and federal fisheries, Fish & Wildlife, Nat'l Marine Manufacturers Assn., WA Maritime Federation, City of Seattle, demographic, economic data)
  - Economic impact analysis
- Stakeholders contributed to proposal, scope of work, interview targets, study progress

# Analytical Approaches

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- **Value of business activity and employment** that has evolved over a century and today is directly dependent on Locks operations
- **Reduced costs/increased efficiency** businesses realize as a result of the Locks' unique location
- **Impact of brief closures** on dependent businesses and agencies
- **Impact of longer (3-month) closure** (would businesses relocate, downsize, fail?)

# Locks-Dependent Businesses

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- Businesses that generate revenue directly from operations inside Locks and depend on transits of materials or customers
  - E.g., Shipyards, yacht sales, moorage, construction materials
- Businesses headquartered inside the Locks, generating revenue primarily outside the locks
  - E.g., Marine products manufacturers, commercial fishing companies, passenger cruise companies
- Businesses with no permanent presence in the lakes or ship canal, but that benefit economically from services provided inside the Locks
  - E.g. Marine insurance, legal, and other professional services; marine salvage and other vessels not specifically addressed in the report



# Ballard Locks Budget and Funding

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- Routine Operations and Maintenance Budget
  - Between \$8.0 and \$8.4 million/yr from 2011 through 2017.
- Non-routine Repairs and Upgrades Expenditures
  - Avg of \$1.8 million/yr over the same period
  - Major projects remain unfunded



# Major (Non-Routine) Projects Needed

Major Project	Approximate Cost
Large Lock Emergency Closure System (partly complete)	\$4 million to \$8 million
Filling Culvert Valve and Machinery	\$5 million to \$12 million
Large Lock Gate Rehabilitation	\$6 million to \$10 million
Emergency Generator Connections	Less than \$1 million
Saltwater Drain Intake System and Diffuser Well	\$5 million to \$10 million
Small Lock Emergency Closure	\$1 million to \$5 million
Electrical System	\$5 million to \$7 million
Small Lock Machinery	\$3 million to \$5 million
Saltwater Barrier Replacement	\$1 million to \$2 million
<b>Total Needed</b>	<b>~ \$30 million to \$60 million</b>

# Value of the Ballard Locks

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- Economic Value
- Environmental and Public Infrastructure Value
- Tribal Obligations
- Public Safety





# Economic Value

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- Busiest in nation in vessel transits – 40,000/yr
- 12<sup>th</sup> busiest in commercial transits – 7,500/yr
- Supports \$1.2 billion in economic activity
- Tide-free, freshwater environment reduces maintenance costs and prolongs vessel life for 700 commercial and roughly 4,000 recreational vessels



# Economic Value (cont.)

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- Indirectly supports an estimated \$785 million in seafood exports
  - 2016: 271 vessels 40'+ made ~1,600 transits of Locks
    - 200+ homeported in Washington
  - ~40% of active North Pacific fishing vessels over 58' moored and/or serviced annually inside the Locks
  - Vessels that transited the locks earned over \$500 million in 2016
- One of Seattle's most popular visitor attractions
  - 1.25 million visitors annually
  - \$38 million in visitor-related economic activity



# Environmental and Public Infrastructure Value

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- Locks, spillway, and fish ladder safeguard \$125+ million in salmon habitat protection and restoration
- The only point of access and egress for salmon migrating in/out of the Lake Washington/Cedar/Sammamish watershed
- Controls water levels in Lake Washington and Lake Union to maintain SR 520, I-90, and 75 miles of shoreline in lakes and canal
- Access point for major infrastructure projects including 520 floating bridge and Ballard/Wallingford stormwater tunnel

# Tribal Obligations

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- Locks are key to meeting federal responsibilities under treaties with Muckleshoot and Suquamish tribes.
- Muckleshoot fishing boats use the Locks annually (range of 20-80 vessels/year).
- Muckleshoot biologists work in partnership with USACE to monitor and manage fish runs.
  - Coho (21k/year)
  - Sockeye (115k/year)
  - Chinook (11k/year)



# Public Safety

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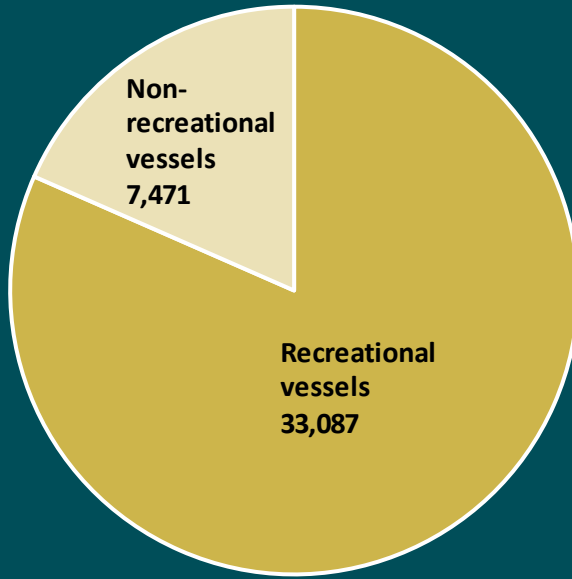
- Rapid access between lakes and Puget Sound saves money and increases effectiveness for Seattle Fire Department, Seattle Harbor Patrol, U.S. Coast Guard, and King County Sherriff
- A major Locks failure due to earthquake or flooding could jeopardize billions of dollars in public infrastructure and threaten human life
  - Full extent of safety impacts currently under study by USACE
  - Report anticipated in Fall 2017



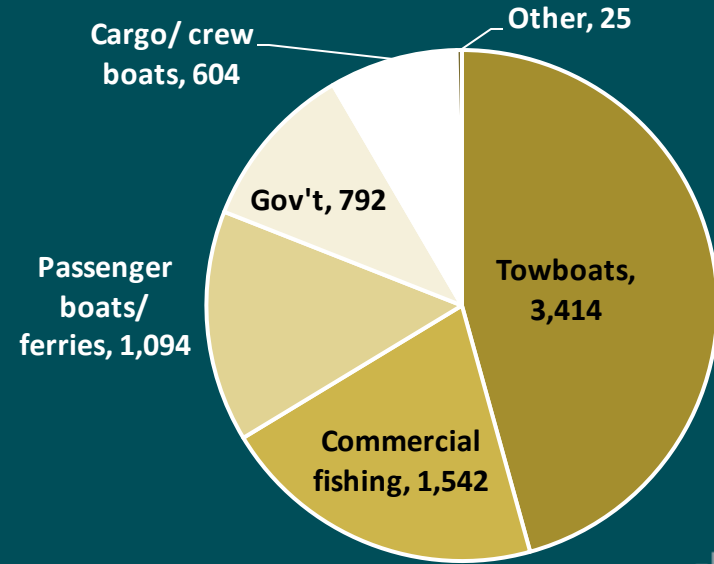


# Locks Traffic

Recreational vs. Non-Recreational Vessels, 2015



Non-Recreational Vessels by Type, 2015

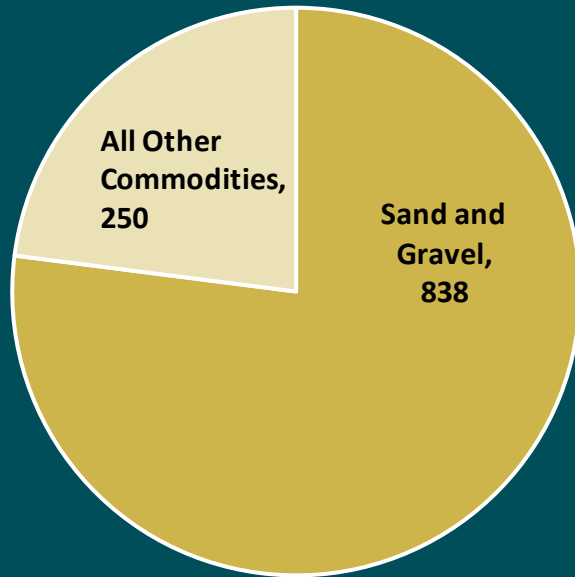


Source: USACE

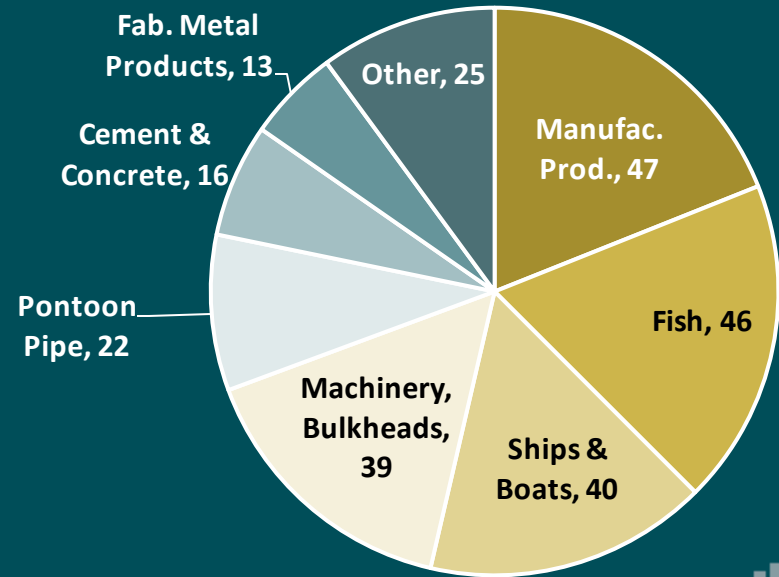
Total Vessel Transits: 40,558

# Locks Shipments

Sand and Gravel vs. All Other Commodities, KT, 2015



Commodities other than Sand and Gravel, KT, 2015



Source: USACE

Total Tonnage: 1,088 KT



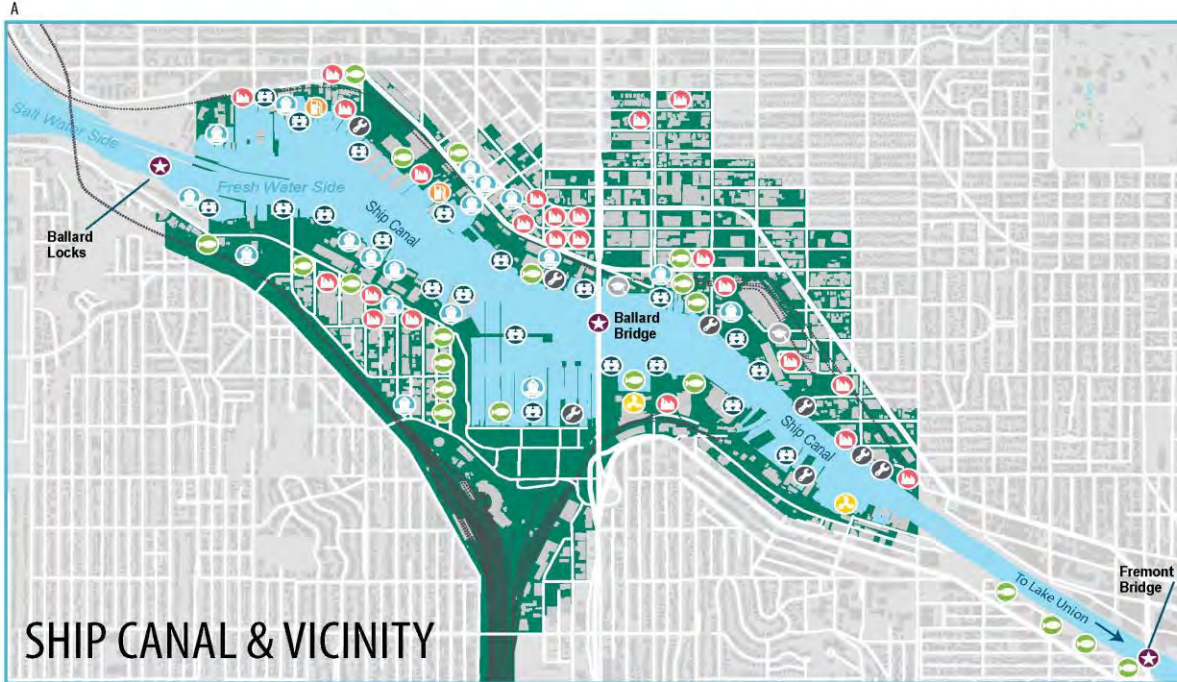
# Major Types of Locks Beneficiaries











- Marine services and manufacturing
- Washington and Alaska fishing fleets
- Marine transport companies
- Passenger cruise companies
- Yacht sales and marinas
- Scientific research vessels
- Recreational visitors
- Property owners
- Recreational boaters
- General public



# BUSINESSES DEPENDENT ON THE BALLARD LOCKS

The Ballard Locks generate nearly \$1.2 billion in annual economic benefit. Areas impacted by the locks include the Lake Washington Ship Canal and adjacent properties, Lake Union, Lake Washington, Lake Sammamish and rivers and streams flowing into the lakes. The locks also have an economic nexus with the Lower Duwamish Waterway. Locations of maritime industrial activities and vital infrastructure are shown below and at right.



-  Boat/Ship Services & Supply
-  Maritime Industrial
-  Maritime Education
-  Ocean Transport
-  Shipyards
-  Commercial Fishing Related Industries
-  Key Infrastructure
-  Maritime Fuel Supply
-  Moorage
-  Ballard-Interbay Northend Manufacturing Industrial Center Rail

## LOCKS ECONOMIC IMPACT AREA



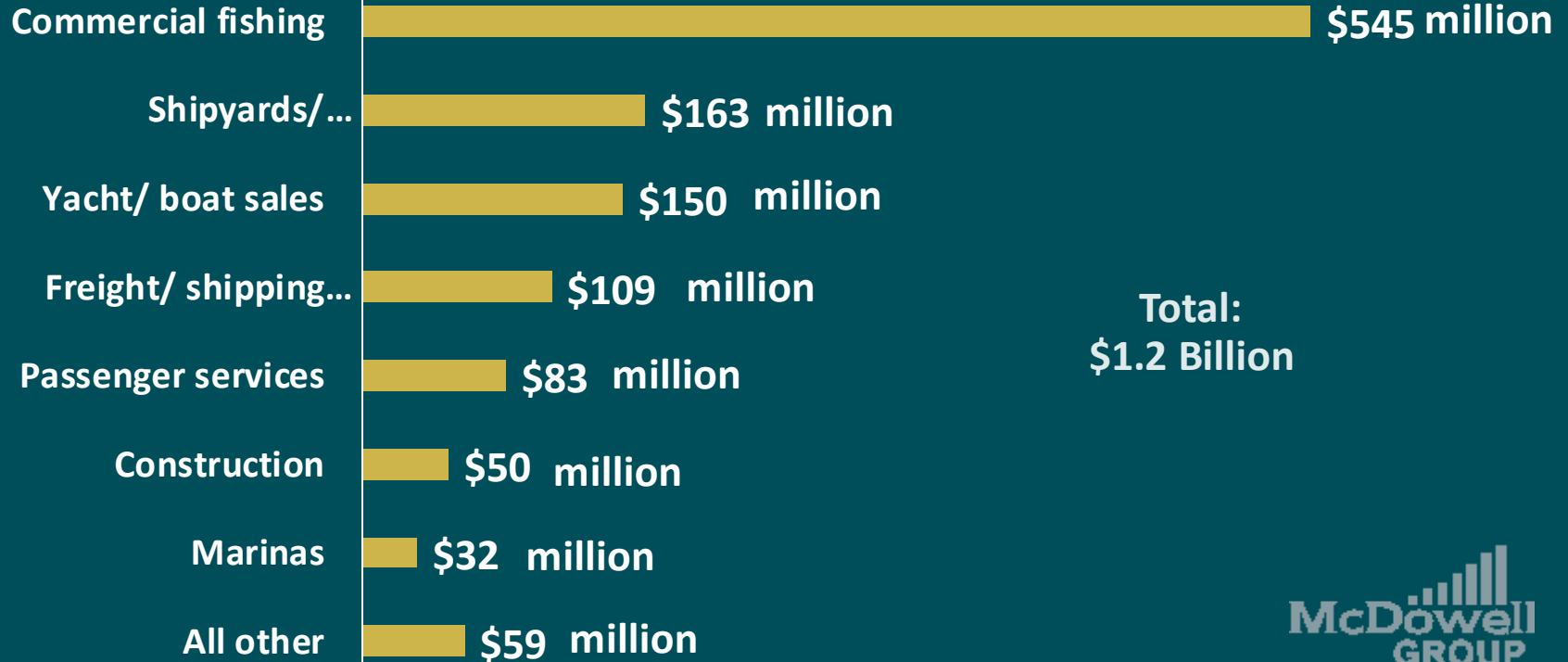
# Economic Impact Analysis

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- Locks serve as critical infrastructure that historically has:
  - Spurred business development that may otherwise not have occurred
  - Provided for more efficient (lower-cost) operations for businesses that rely on that infrastructure.
- Today a complex web of economic activity depends on safe, efficient, and reliable Locks operations.
- Fully measuring all of the Locks direct and indirect economic linkages would be exceedingly complex.
- By focusing on key users and uses, we can make informed estimates of the scale of economic activity supported by the Locks.



# Gross Revenues of Locks-Dependent Businesses



# Summary of Business Impacts

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	Impacts
Total annual gross revenues connected to the Locks	\$1.2 billion
Direct locks-dependent annual payroll	\$120 million
Direct locks-dependent jobs	3,000
Locks-dependent annual federal tax revenues	\$15 million

# Impacts of Locks Closure/Failure

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- Service disruption
  - Short, scheduled closures mostly manageable
  - Long closures would lead to significant layoffs and business closures
  - Timing of closure is a major factor in scale of impacts.
- Likely causes of extended closure
  - Vessel collision involving miter gates
  - Mechanical failure of multiple filling culvert valves
  - Flood overpowering/damaging miter gates
  - Earthquake
- USACE risk assessment team is studying this issue; report anticipated in fall 2017

*A long-term closure would be astronomical for us...Contracts would be lost. All of the shipyards would shut down. We would have to lay off workers.*

*– Tug and Barge Company*

*A three-month closure would mean laying off half of our workforce. Any longer, we would go out of business.*

*– Shipyard Owner*

*Quite frankly, if we didn't have the facility inside the Locks, there are not many options to do business in the Seattle area.*

*– Construction Company*

*The Locks are critical for marine firefighting and emergency response.... Without the Locks, it would significantly impact marine operations for firefighting.*

*– Seattle Fire Department*

*Honestly, we could not afford a three-month closure. I don't think it would be viable. We are providing a critical interstate transportation service that would no longer exist.*

*– Tug and Barge Company*



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Lake Washington  
Ship Canal Users  
Group

Prepared for:

**Port of Seattle**

**McDowell**  
GROUP