

**Port of Garibaldi**  
**Integrated Seafood Services Hub**  
Infrastructure Needs Assessment

August 23rd, 2019

# Table of Contents

<b>Executive Summary</b>	1
Introduction	2
Assessment Purpose	2
How this Assessment Fits into Other Regional Initiatives	2
Summary of Findings	3
<b>Methodology</b>	3
<b>Section 1: Seafood Services Hub Needs Assessment</b>	4
Demographics: Sector, Age, Species Fished	4
Infrastructure Needs: Results of Stakeholder Interviews	6
Key Infrastructure needs	7
Cold Storage	7
Ice Services	7
Fish Waste	8
Bait	9
Surveying Other Ports	9
<b>Section 2: Seafood Services Hub Business &amp; Financial Models</b>	11
Cold Storage	11
Cold Storage: Overview	11
Cold Storage Options: Pros & Cons	11
Cold Storage: Financials & Business Considerations	12
Ice Services	14
Ice Services: Overview	14
Ice Services: Pros & Cons	14
Ice Services: Financials & Business Considerations	15
Fish Waste	17
Fish Waste: Overview	17
Fish Waste: Pros & Cons	19
Fish Waste: Financials & Business Considerations	21
<b>Section 3: Overall Recommendations &amp; Next Steps</b>	22
Summary of Recommendations	22
Food hub overview and opportunities	24
Application: Regional Food Hub	24
<b>Appendices</b>	25
Appendix 1: Survey Questionnaire	26
Appendix 2: Supplier Quotes	39

# Executive Summary

## Introduction

The objective of this report is to provide guidance and recommendations around developing infrastructure services at the Port of Garibaldi, centered on ice, cold storage, and seafood byproduct reuse. It is the result of an infrastructure needs assessment, funded through a grant from USDA and the Ford Family Foundation, and it is part of a larger initiative, the Garibaldi Seafood Value Chain Initiative. The goal of this larger initiative is to increase the wealth and well-being of small commercial fishing boat owners, crew and fish processors/retailers in Garibaldi and the wider Tillamook region.

Section 1 of this report examines, quantifies and prioritizes types of services, as well as what fishermen and seafood businesses are willing to pay for these services.

Section 2 provides business and financial modeling for the seafood services. It identifies the best options for ownership and management, details costs for equipment, maintenance, operation and staffing, documents other service providers/ competition/ collaborators in the region, outlines hub operations, identifies funding opportunities, assesses potential risks and mitigation strategies, and where possible, describes the mix of business activities and volume of business needed for financial sustainability.

## Assessment Purpose

Currently, infrastructure services for small fishing businesses in the area are fragmented and difficult to access. In many cases, small fishermen need to travel outside the area to find essential services, costing both time and money. A more robust service offering would create jobs by providing critical services that small fishing businesses need to survive and grow, as well as increasing efficiency that will help boost incomes for owners and crew. The solutions identified here are intended to increase access and independence for the fleet to critical services, and which saves them from distracting activities that reduce the time they're on the water fishing.

This report will determine the scale and mix of services that would meet the needs of small fishing businesses, and the business structure and ownership options that would be financially viable. This information will inform decisions and next steps that stakeholders take to improve livelihood opportunities for stakeholders in the seafood sector.

## How this Assessment Fits into Other Regional Initiatives

This project flowed out of the Garibaldi Seafood Value Chain Initiative, which identified and prioritized many potential efforts that could be of value to the community around Garibaldi. In 2018, port infrastructure was highlighted as a high-value area for investment, and this resulting

assessment was designed to understand the port community's support for specific needs, with particular (but not exclusive) focus on ice, cold storage, and fish waste.

There is a concurrent effort driven by Food Roots, a non-profit focused on strengthening the local food system in Tillamook County, and Visit Tillamook Coast, a Destination Marketing Organization. they are assessing the needs for storage and distribution of products raised and harvested by farmers and ranchers along the north coast of Oregon., This effort includes exploring ways to cooperate on expanding markets and simplifying small producer logistics to collectively save money and time. With similar needs and challenges, serving a similar customer base, seafood suppliers are a logical addition to developing a broader North Coast food hub strategy, In addition, the Port of Tillamook, Tillamook Creamery, and Fort George are all exploring options for developing more cold storage to serve their own business needs and the needs of their direct constituents.

There is an opportunity to collaborate with these food hub efforts in the development of an overall strategy and business model for a regional North Coast food hub, connecting with buyers on the coast as well as into Portland and the Willamette Valley. A more detailed review of this approach will be addressed in the recommendations and next steps.

## Summary of Findings

The services that were explored for this report represent the most critical operations-related items for the fleet, and each of them (except fish waste) was highlighted by some as their most critical service gap. Earning a living in the seafood sector is difficult; most fishermen have found ways to make it work, but dock workers and crew are in a more precarious situation. The next significant economic downturn or a substantial decline in catch volume could have a severe impact.

For the services considered, cold storage is the most important, and the plans of a port business to install cold storage is welcome. The specific guidance from this work will be synthesized and provided to this business to add in their planning. Ice is also critical, and the addition of a 3rd port ice provider will address the bulk of the fleet's ice volume needs. Fish waste, while not identified as critical, is in a dynamic situation with pending changes to Oregon DEQ's rules and needs to be closely monitored. The emergence of a new bait business at the port could provide a ready outlet, and a local rancher could be another customer for compostable waste.

# Methodology

In the winter and spring of 2019, we completed extensive surveys of 26 members of the seafood sector in Garibaldi, with questions regarding their life and work in seafood, needs from the community and port<sup>1</sup>, and their observations on ways to improve the working and living conditions in Garibaldi for members of the seafood sector community.

These in-depth interviews were carried out by a current fleet member and a long-term resident who played many roles during his long time in the port and done with interviewees throughout the value chain including captains, crew, seafood business owners, and dock workers. For each different role, we tailored the set of questions asked to the unique aspects of their work.

In addition to the interviews, we also completed a survey of six other ports on the Pacific coast to understand how other similarly positioned ports have tackled these infrastructure challenges. We also spoke with suppliers of ice production equipment, cold storage customers, and suppliers of fish grinding equipment. Finally, we completed extensive research online.

## Section 1: Seafood Services Hub Needs Assessment

### Demographics: Sector, Age, Species Fished

22 of the 26 respondents in the survey were male, and none of the boat captains/owners were female. The age range for respondents were fairly evenly spread across multiple age ranges (see Chart 1 below). For captains/boat owners, the age range skews higher, with one third under 45 and two thirds 45 or older. While the “graying of the fleet” is a reality in much of the fishing community, Garibaldi has a significant group of younger fishermen as part of their fleet.

We also have a good cross section of roles on the docks (see Chart 2 below), and we also see that a number of respondents have more than one type of work (Captain, small business owner, etc.) A number of respondents also have other sources of income (retirement income, side work, other businesses, working spouse), many of which are related to the seafood sector as well. It is clear that many of the stakeholders find ways to make fishing work via creative solutions such as cobbling together multiple roles in the sector, or supplementing with other kinds of work, or both. As a result, changes at the port that keep them out fishing or allow them to make more from their catch can make a huge difference for people who are just scraping by, which is 20% of the respondents. These changes can be relatively small and still have an outsized impact on fishermen, and their crew.

---

<sup>1</sup> Please see the full questionnaire in Appendix 1.

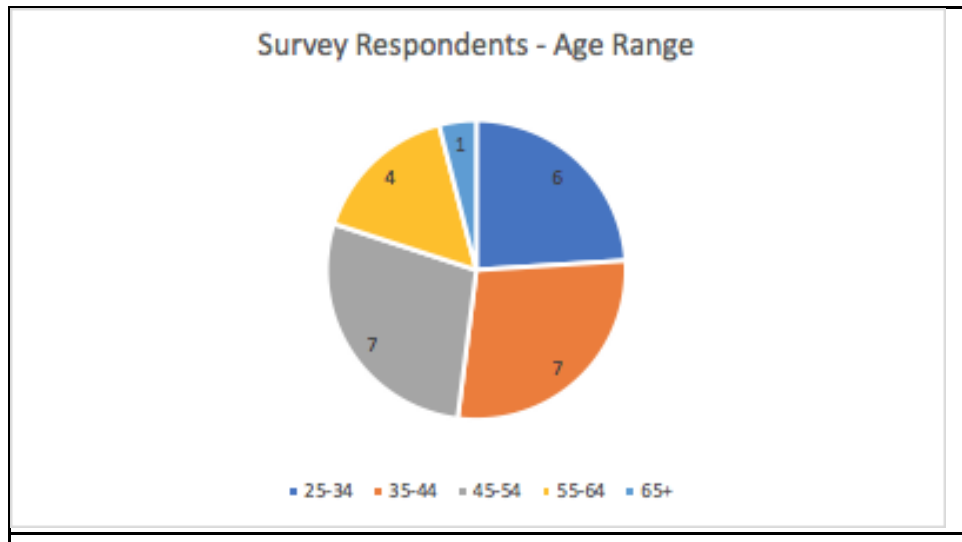


Chart 1: Age

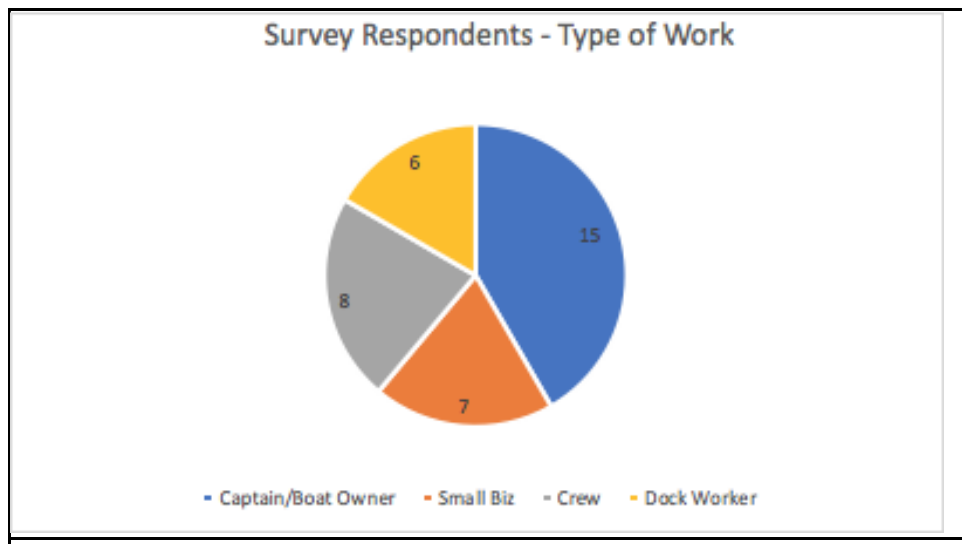


Chart 2: Type of Work

Regarding the species fished, this group of captains/boat owners fishes for a broad cross section of species, covering all the major sources of landings in Garibaldi. 9 of the 15 captains fish for 3 or more species, while only one pursues a single species. This diversity provides confidence for our infrastructure findings, as different species drive different cold storage, bait, and ice needs. It also shows the importance of fishing for multiple species, as it provides insurance against a single species having a bad harvest year. Nearly everyone surveyed fishes year-round, with three respondents stating that they only work seasonally.

<b>Species Fished</b>	
Crab	10
Salmon	9
Tuna	7
Lingcod	6
Rockfish	5
Clam	5
Halibut	2

Table 1: Species Fished

## Infrastructure Needs: Results of Stakeholder Interviews

A significant section of the survey focused on services and solutions that would be of direct value to captains and seafood entrepreneurs, including cold storage, ice, bait, and solutions for the positive disposal of fish waste. From previously taken informal surveys, these were the potential services that were of most interest to the commercial fishermen. This report primarily focuses on cold storage, ice, and fish waste; however, it also touches on items that emerged from our interviews, and items needed as part of addressing the core services.

It will not address the need for other major infrastructure improvement like jetties, dredging or more slips, which many interviewees brought up during interviews. These issues are being addressed by the port as part of their core services.

### Summary of Interview Results

In the table below, the positive responses by captains/boat owners are tabulated for each of the potential services identified in the survey.

<b>Service</b>	<b># positive</b>
Cold storage	15
Significant need?	4
Bait	12
Ice	10

Flash freezing	6
Hoists/forklifts	6
Ramps	4
Fish waste processing	0

Table 2: Summary of results

## Key Infrastructure needs

### Cold Storage

Cold storage is one of the most critical service needs at the port, as evidenced by the high level of need identified through the interviews. Every single captain/boat owner either has or needs access to cold storage, often for multiple uses. 4 out of 15 captains identified it as a significant need, and 6 said they would also use flash freezing services, if available.

There were three main uses identified:

1. Freezer for holding bait for crab/salmon
2. Blast freezing for tuna
3. Holding catch for consolidation to optimize transportation or to get more favorable prices

### Ice Services

Ice is a critical need for many fishermen, depending greatly on the species fished. 10 out of 18 respondents reported that they would like better access to ice. It generally isn't used by crab fishermen during January through March (Chart 4, below), but is critical for tuna, which is caught during the summer months. It's also critical for cooling crab down quickly after cooking.

Currently, there are two options for accessing ice at the port, with a third that has just come online in August 2019. Both of previous suppliers are seafood buyers, purchasing the catch directly from the fishermen at the dock. As described by local fishermen, the current limitations of getting ice are competing with demand from the buyers themselves, as well as confronting a hierarchy of who actually gets access to ice, which is based on relationships and sales of catch to that particular buyer. Some fishermen are averse to making such a tradeoff and prefer to find an ice supply without strings attached. The new ice provider sells to both commercial and recreational fishermen, and currently will sell to anyone, dependent on supply.

The price is driven by quantity, supply source, and standing with suppliers. The three highest prices paid for ice are for the smallest quantities. The median price paid by interviewees is ~\$115/ton, based on their survey responses.



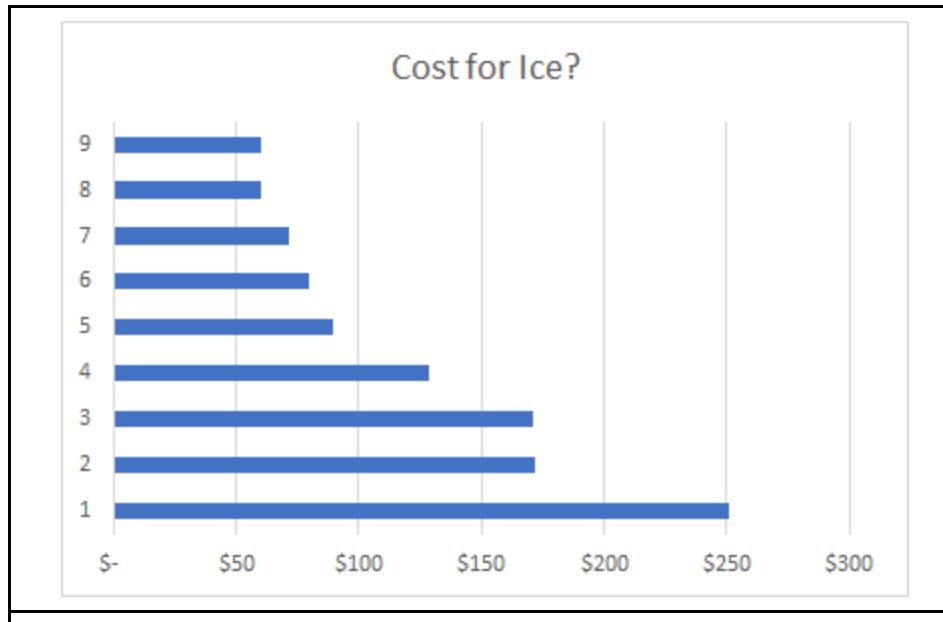


Chart 3: Price paid for ice per ton

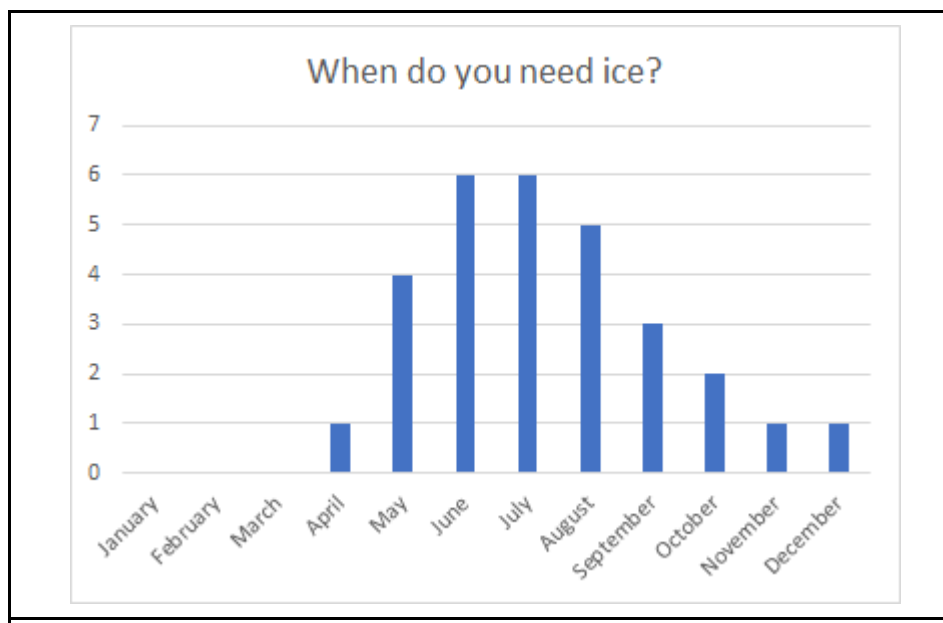


Chart 4: Monthly needs

### Fish Waste

As shown in Table 2 above, nobody interviewed highlighted fish waste as an important issue. From the details of the surveys, we do know that some fishermen save some waste (i.e. tuna carcasses) for use as bait. Otherwise, it is deposited in the channel, or goes into the municipal

waste stream. There was little familiarity with the pending DEQ rule changes, however this is unsurprising since the regulations are highly unlikely to directly impact fishermen and fall more heavily on processors.

## Bait

Bait is a critical component for harvesting crab, and an issue for many fishermen. Nine fishermen identified bait as an issue, with logistical challenges and availability most often cited. Dealing with bait management keeps fishermen off the water. Currently, without a sufficient available supply of bait at the Port, they have to pursue other less convenient sources for their bait or harvest their own (usually clams). Public access cold storage would allow fishermen to buy their bait in bulk and store it for significant periods of time throughout the season. A competitively priced independent bait supplier with product stored at the port could also provide a much-needed service.

## Surveying Other Ports

Many of the other small ports along the Pacific coast deal with the same challenges as Garibaldi and have explored and experimented with solutions for cold storage, ice, and fish waste. We spoke with people familiar with these challenges at other ports as the basis for this section, including Port of Charleston, Port of Umpqua, Port of Newport, Port of Santa Barbara, Port of San Francisco, and Port of Port Orford.

**Cold Storage:** A few ports have looked at offering cold storage as a port service and have found the economics to be challenging enough to opt not to offer the service. Like Garibaldi, the other ports depend on private companies to offer cold storage services, and this can also come with quid pro quo for fishermen if storage is offered by a buyer: Rental of cold storage space for bait means that they are expected to sell their resulting catch to the cold storage purveyor. The only port to offer cold storage was Brookings Harbor, however they ceased operations in 2017, after selling the cold storage & icehouse to a private company. They experienced two main challenges: 1) Technical: Having one shared compressor for both the icehouse and cold storage resulted in critical power outages. 2) Business: Operating costs (\$11K/ month overhead) exceeded their monthly sales revenue.

**Ice:** Ice is the one service under consideration in Garibaldi that is more frequently offered by other ports as an independent service. Santa Barbara, Charleston, Brookings, and San Francisco (via the commercial fishing co-op) offer ice services. Price by ton varies between \$60 and \$120/ton. Modern operations typically use flake ice (it is the type of ice preferred by fishermen) Ice is delivered via an auger and funneled into a tube that can extend out and reach directly to the hold of a fishing vessel. For these services, fishermen are willing to pay those prices for the convenience and quality offered. Every port identified the challenges of keeping ice machines in operation, and the severe impact on fishermen when the service is not available, and the resulting complaints that come in from the fleet. Investing in a high-quality solution with high uptime can provide a return on investment and can be accomplished with ice production and storage capacity that exceeds expected demand. Purchasing an ice machine

that is capable of producing more than currently needed by the fleet means the system is only infrequently running at full capacity. Other ports also noted the impact of ample ice as a draw for other fishing vessels who home port elsewhere to deliver catch to their port because of the availability of high-quality ice. Better ice supply in Garibaldi has the potential to expand opportunities for higher volumes of landings when fishermen have a good year, or for supporting more ice dependent fisheries, such as shrimp.

**Fish Waste:** Fish waste processing appears to be a lower priority problem for all the ports interviewed, and generally they are not moving to tackle this issue, as legal ramifications fall more heavily upon processors. Most often, fish waste generated by recreational fishing operations and other similar sources is ending up as crab bait, placed in dumpsters or thrown back into the ocean. Today, under the current regulations of the Oregon Department of Environmental Quality, only 18 operations<sup>2</sup> are being regulated, including one in the Port of Garibaldi region, Pacific Oysters in Bay City. The new Oregon 900J rules will be most impactful on the larger processing operations, but the draft rules will also, at some point, impact smaller operations. The rules are currently open for comment, and it is not clear how this is going to settle out, and what impact it will have on the Port of Garibaldi and the small processors currently operating around the port.

---

<sup>2</sup> 'Oregon weakens seafood processing pollution permit amid opposition', May 5, 2019, Salem Statesman Journal: <https://www.statesmanjournal.com/story/news/2019/05/05/oregon-weakens-seafood-processing-pollution-permit-amid-opposition/3622156002/>

## Section 2: Seafood Services Hub Business & Financial Models

Detailed assessments were limited to cold storage, ice, and fish grinding, consistent with the Integrated Seafood Hub contractual Scope of Work. Connections to other potential service options were identified, but not analyzed.

### Cold Storage

#### Cold Storage: Overview

As described in Section 1, cold storage is something that nearly all fishermen and seafood businesses need: it is, after all, a business with a highly perishable product. There is absolutely a need for publicly accessible cold storage, with deep freeze, fresh cold storage, and blast freezing all being cited as needed services. Discussions with other ports and industry research underscore the financial and logistical challenges around the provision of cold storage.

Currently, there is no publicly available cold storage at the Port of Garibaldi, although two businesses are exploring options for providing cold storage services. One is looking at putting in ~1200 ft<sup>2</sup> of cold storage, split between fresh refrigerated storage, frozen storage (-20°F), and blast freezing (-50°F). This is being planned for the next 1-2 years. The second is leasing space for containerized cold storage to provide bait products on the dock.

Options considered and the pros and cons for each:

#### Cold Storage Options: Pros & Cons

##### ***Option 1: Continue to leave cold storage services to port-located businesses.***

Advantages:

- Does not require investment or management of a service which has proven problematic for ports to offer.
- Provides additional revenue for existing port tenants for their cold storage services.

Disadvantages:

- Cold storage providers decide which fishermen can and cannot use their facilities.
- May leave some commercial fishermen without a viable on-location cold storage solution.

##### ***Option 2: Provide space for containerized cold storage in a rental or lease model for the space and access to electrical hookup, much like an RV park does.***

Advantages:

- Provides a solution that will work very well for the extensive bait needs, and will keep fishermen on the water, rather than heading offsite to access bait.

- Use and needs can be tracked and understood. Today, because of the lack of experience in the fleet with public cold storage, there is limited knowledge of what it should cost and how they might need it. This service will allow fishermen to find other creative uses and determine if there is a business model that works.
- This solution is sized right for entrepreneurs who need access for their new business, but cannot justify the expense of installing their own cold storage.

Disadvantages:

- Food grade cold storage will require businesses offering this service to provide logistical support. The economics of doing so with the limited cold storage may be a problem.
- May leave commercial fishermen without a viable on-location cold storage solution.

***Option 3: Install a commercial quality cold storage facility***

Advantages:

- Provides best quality, highest efficiency cold storage option.
- Provides the best and most convenient access and flexibility.

Disadvantages:

- Requires a full-service offering or secured, partitioned storage. The requirements for offering food-grade services demands ensuring that temperatures are maintained at safe levels.
- Puts the Port squarely in competition with some of their tenants.
- Requires a sizable capital investment and a long-term management commitment to offering cold storage.
- Puts the Port in competition with industrial scale cold storage suppliers. Will require that the cost of local storage is less than the cost of remote storage and transportation costs.

***Option 4: food hub associated cold storage (this section is somewhat theoretical, since food hub needs and details are not yet clearly defined.)***

Advantages:

- Targeted storage for food hub customers; should be a smaller facility for product consolidation.
- Part of a larger storage + distribution service that lowers the cost of higher-value distribution. May make it easier to absorb the cost of higher than average cold storage costs.

Disadvantages:

- Greater level of coordination required with the wider food sector.
- Location may be less optimal for fishermen.

## Cold Storage: Financials & Business Considerations

Based on the survey responses, all of the captains said they have or need cold storage. Of the captains that then said they would use cold storage and provided a peak storage estimate, it

works out to be 60-90 pallets in total<sup>3</sup>. Assuming 31 cubic feet / pallet and 32-48 pounds per cubic foot of fish<sup>4</sup>, the estimated storage demand is between 59,000 and 134,000 pounds at peak. The bulk of the storage demand is for -20(deg)C, with every person who gave a demand estimate citing this temperature. It is not known what fraction of overall cold storage demand was represented by the surveyed individuals, but it is safe to assume this storage estimate is under the actual demand.

For costs, and break-even storage costs for a 38'x40' facility were used. Data was derived from the 3rd edition of the Planning Seafood Cold Storage, a publication of Alaska Sea Grant, this sized facility is estimated to be able to store 200,000 pounds of seafood. For our purposes, annual costs are assumed to be ~\$7000 for this size facility, while install costs are assumed to be ~\$110,000. Using straight line depreciation and a 10-year useful life results in annual amortized cost of \$11,052. Applied labor is assumed to be ~\$40-50K annually. Finally, an additional \$10k of miscellaneous costs was applied for the most conservative forecast.

This resulted in a range of costs between \$4800 and \$6500 per month. Assuming 40 pounds/foot<sup>3</sup>, this storage capacity can store 161 pallets, at a cost of between \$32 and \$47. For reference, one of the interviewees cited \$75/pallet/month for cold storage of < 10 pallets.

<b>Annual Costs (\$K)</b>	<b>Low</b>	<b>High</b>
Operating costs	\$5	\$10
Labor	\$40	\$50
Amortized install cost	\$11	\$15
Miscellaneous costs	\$5	\$15
<b>Total costs</b>	<b>\$61</b>	<b>\$90</b>
<b>Monthly Pallet Costs (\$)</b>	<b>Low</b>	<b>High</b>
Monthly from above	\$5,083	\$7,500
Per Pallet (assume 161 pallets)	\$32	\$47

<sup>3</sup> The specificity of the responses makes it difficult to know exactly what is meant by a tote vs. a pallet, as they are sometimes used interchangeably and sometimes not. A standard pallet stack is 31 feet<sup>3</sup>, which a standard white seafood tote is ~18feet<sup>3</sup>. As a result, ranges will be used for this section.

<sup>4</sup>Planning Seafood Cold Storage, 3rd edn, Alaska Sea Grant, 2006.  
<https://seagrant.uaf.edu/bookstore/pubs/MAB-46.html>

# Ice Services

## Ice Services: Overview

Ice is a highly demanded service as well. Many ports have opted to offer it to their commercial fleet and have managed to do so at a competitive price. Good ice service benefits fishermen by saving them time and logistical challenges that keep them off the water. Other ports have also seen that ample, high quality ice is a draw for transient vessels to land and sell their catch in their port, and turn around and return to fishing. This is of high value, because it increases landings without requiring expansion of the number of commercial slips.

Currently, two businesses provide ice to the fleet, depending on their selling choices. A third source has come on line in August 2019, with an ice machine offering 20 ton of capacity.

## Ice Services: Pros & Cons

### ***Option 1: Continue to leave ice services to port businesses***

Advantages:

- Does not require investment or management of an additional port service.

Disadvantages:

- Depends on the businesses to decide which fishermen can and cannot use their ice.
- May leave commercial fishermen without a viable on-location ice solution.

### ***Option 2: Install ice service and offer it as an additional port service.***

Advantages:

- Streamlines fishing operations for many commercial fishermen who no longer need to shovel and move ice or venture off-port for alternative ice options. This means more time fishing and less time dealing with their ice needs.
- Creates a draw for transient boats to use Garibaldi as a port of landing, by offering a key service that can allow them to turn around and return to the sea.
- Demand for high quality ice will come from other industries who have intermittent needs that can align to seasons with lower demand.
- Provides ice that would allow creative entrepreneurs to explore offerings that would be impossible without it. Increasing local crab processing, which requires ample ice for cooling the crab after cooking, would be possible.
- Ice availability is critical for fisheries, like shrimp, that have abandoned Garibaldi, and may be a draw to attract these fishermen to land in Garibaldi once again.

Disadvantages:

- Most likely requires a \$100-150K+ investment and ongoing operational costs that depend on ample ice demand to ensure ice does not become a cash sink. While it is certainly a real risk, the experiences from other ports suggests it is manageable.

- Competition with existing port businesses

**Option 3: Coinvest with a port-based business to expand the capacity and availability of ice.<sup>5</sup>**

Advantages:

- Moderates the port investment and operating challenges in order to offer ice.
- Results in more ample ice supply, dampening the dependency of fishermen on port buyers.
- Gives the port a say in how ice services are provided.

Disadvantages:

- Requires the port to choose a partner, with potential impact on the relationships with other businesses in the port.

## Ice Services: Financials & Business Considerations

The fleet survey was not broad enough to determine overall ice demand, but extrapolating using the data from the respondents who did provide detailed answers and combining with the choices and recommendations made by other ports yields a demand range that is serviceable for sizing overall port ice demand. This coupled with the solid demand seasonality data from the surveys yields a peak daily demand range of 4-13 tons.<sup>6</sup> Annually, using the same basic data for overall fish (groundfish, tuna, and salmon) landings, and the estimate of 1-2x landings for ice demand, yields annual ice demand of 250-500 ton.

On the cost side, a new industrial flake ice machine from a leading manufacturer (North Star) has an installed cost of between \$125,000 and \$175,000, based on estimated costs from our conversations with other ports. Cost for a new stainless-steel food grade flake ice machine (not including installation or site preparation) is above \$70,000.

---

<sup>5</sup> This is the model being employed by the port with the new ice purveyor. The port offers a 20% discount for site lease in exchange for making the service publicly available.

<sup>6</sup> This is based on a few assumptions: sum of peak annual landings for tuna, salmon, and groundfish is 180MT, that ice demand is 1-2x landed weight, and that 40% of the tuna demand is landed during a single month, based off 2017 seasonality data.





Figure 1: North Star 20-ton machine

There is a vibrant secondary market for flake ice machines as a result of the global construction market demand for concrete cooling, which is a temporary need where the cost of the ice making is much smaller than the overall project budget, and consequently the machines are liquidated at the end. This often results in machines that have significant useful life left in them at a significant discount to new machines. This is an attractive option, but would require hiring an experienced refrigeration expert<sup>7</sup> to assess the available equipment. Quotes for great condition used machines of the same variety as above were \$40,000, a significant savings. Using a used machine would decrease the overall installed cost close to the low end of our range at \$125,000.

---

<sup>7</sup> Contacts for this purpose can be provided on request.

Another recommendation is to consider a design approach with two smaller ice machines, rather than one larger one. Garibaldi's ice demand is seasonal, and this would allow for ice production to be dropped during low demand periods by shutting off one of the machines, cutting operating costs significantly. In Garibaldi, a single smaller machine would likely address all but 4 months during the summer. The result is a 25% reduction in operating costs; however, this doesn't comprehend installation, which will be incrementally higher. Assuming 25% more of a cost of \$150,000, it would be a little over 6 years for payback with operating cost savings.

Options	Monthly operating cost	Annual operating cost
Single 30-ton machine	\$2500-3000	\$30,000
Dual 15-ton machine	\$1.5k - 8 mos, \$3k - 4 mos	\$24,000

Table 3: Operating cost comparison - single vs. dual machine configuration

## Fish Waste

### Fish Waste: Overview

Fish waste is a reality at every port, with contributions from local processing, charter and sport fishermen, as well as the commercial fleet. However, unlike ice and cold storage, this is currently not an area of high concern to the commercial fleet, with only two survey respondents noting this as priority. These businesses are not subject to the current Oregon DEQ 900J regulations that apply to seafood processors. Often, waste from these sources ends up being used as crab bait and thrown in a dumpster or back into the channel.

Fish waste, a nutrient dense resource, can be placed into many positive applications where that waste is used as a beneficial component for businesses and/or the environment. The Icelandic Ocean Cluster is on the leading edge in this regard. Through the cluster many businesses are working together, and they have been able to extract \$3,500 of value from what would normally be considered a \$12 cod.<sup>8</sup>

<sup>8</sup> <https://humanprogress.org/article?p=1376>

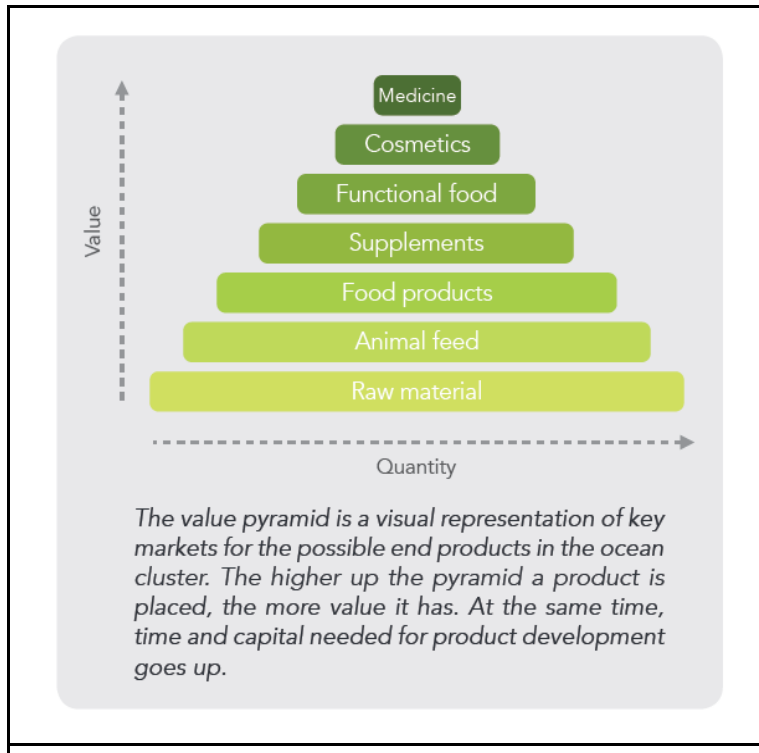


Figure 2: Icelandic Ocean Cluster value pyramid

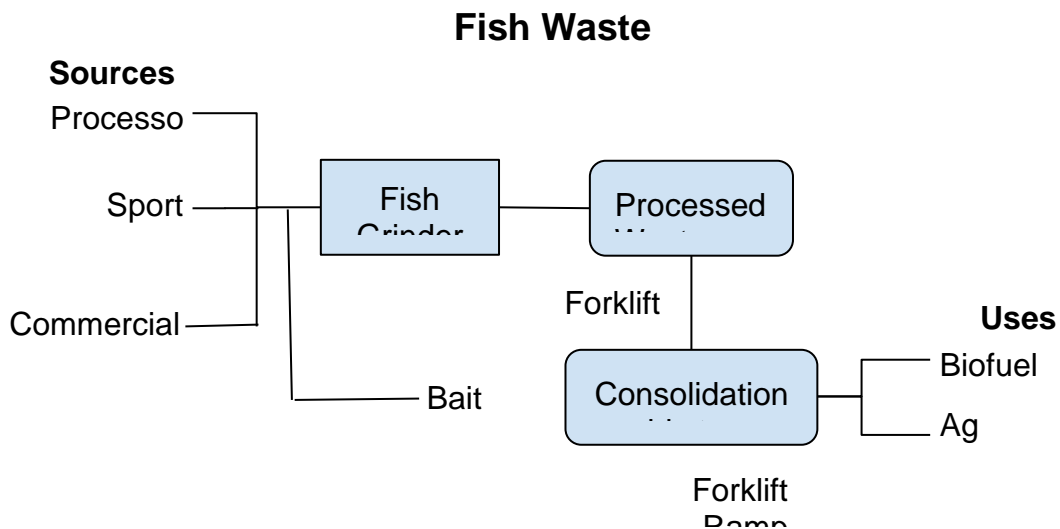
This illustration of the “value pyramid” for fish waste demonstrates markets where fish waste can be channeled. To have fish waste reach these higher value markets, the waste needs to be kept in temperature-controlled environment to prevent spoilage. Often these high value markets are using very specific parts of specific species fish (e.g. salmon skins or cod livers) to create their value-add products. In these scenarios they often require higher consistent volumes of the specific resource being utilized.

The Port of Garibaldi has reported that they have anywhere from 400-500 lbs. of fish waste fill a dumpster each day in the height of the summer activities and other processors may produce about ~300 lbs./ week during the same time period. While during the slower seasons, it may take a couple of weeks or longer to garner the same amount of waste. This points to a highly variable input of fish waste into the ports operating systems throughout the year. The fish waste being generated in Garibaldi is likely not sufficient enough or consistent enough to draw a potential business serving higher value fish waste streams, such as medicine, cosmetics, functional food, or supplements. However, there are options for fish waste to service local businesses that will provide some additional positive economic and/or ecological benefits to the local community and environment.

There are several operations along the coast that are consumers of fish waste, including the biodigester at the Port of Tillamook Bay, a pet food raw material supplier in Astoria, and an advanced protein processor. However, these more technologically advanced options might still

be unattractive or less viable to the port due to factors such as distance from the port and barriers with distribution and/or exorbitant tipping fees for the waste. There are at least two options locally that may be more viable for the port and allow for waste to be utilized at the raw material level. Some established business at the port, both newly forming operations and longer-term tenants, have cold storage and currently utilize waste as bait or have plans to do so. As well, local farming operations, such as Nehalem River Ranch, have an interest in utilizing fish waste to support composting operations on the ranch.

With an appropriately sized fish grinder, the waste should be able to go directly into the grinder and into totes. The resulting ground and processed fish can then be moved to cold storage for consolidation prior to transportation to the users of the waste. This will require access to forklifts and ramps, in addition to space in cold storage. Previously, work has been completed by Jared Johnson, 2018 MIT Learning Lab Participant, to describe opportunities for fish waste uses with local businesses.<sup>9</sup>



## Fish Waste: Pros & Cons

### **Option 1: Take no action**

#### Advantages:

- Does not require investment or management of an additional port service.
- Allows time for DEQ regulations to settle out

#### Disadvantages:

- DEQ may implement regulations in the future that will require the Port to find outlets for its waste.
- This nutrient dense and useful resource is not being utilized to a greater potential of supporting local businesses or the environment.

### **Option 2: Work with established local business who may utilize the port's fish waste as bait or compost.**

<sup>9</sup> [Seafood value chain development at the Port of Garibaldi](#), Jared Johnson, April 2018:

*Advantages:*

- Fish waste can be utilized by local businesses to support the local economy and could be utilized to support the environment and soil health, if used as a compost application.
- If used to support the sale of bait, it can support local sport, charter, and commercial fishing operations at a time when bait is becoming more expensive and harder to come by.
- If DEQ regulations change, the port of Garibaldi is already putting itself in a good position to move fish waste into appropriate channels.
- Fish waste could be removed from the port for free, or at least very little cost to the Port of Garibaldi.

*Disadvantages:*

- The Port of Garibaldi would likely need to invest in some new infrastructure, such as larger fish grinding mechanism and appropriate storage to support the movement of waste to businesses in a form and state in which it can be used.
- Waste management systems will need to be reestablished/revised where fish grinding occurs to ensure fish waste is handled by pedestrians, anglers, and fishermen in such a way that it usable for the businesses utilizing the waste.
- The port has limited capacity and would not likely be able apply staff resources to fish waste management services regularly. Again, new management systems with clear and easy steps for appropriate use of the equipment will be necessary.
- Businesses may require exclusive rights to the waste to ensure they have enough supply to make their business venture a viable one. This may be especially true for composting operations. This may lead to issues regarding “favoritism” or fair access to resources should other businesses begin to see fish waste as an opportunity. Clear guidelines and a clear process for accessing fish waste or creating a contract should be established early to help reduce negative impressions and create a fair and equitable opportunity.
- Startup businesses and entrepreneurs may go out of business or change business strategies in the short to mid-term phases of their operations, which could leave the Port of Garibaldi looking for another alternate channel for its fish waste.

***Option 3: Work with BioGas Corp. to transport fish waste from around the port to the bio digester at the Port of Tillamook.***

*Advantages*

- Fish waste will be turned into a local source of electricity and fertilizer for local fields.
- BioGas Corp. has interest potentially creating an organic waste grinding/processing operation near the bio digester in Tillamook. This could alleviate the need for the Port of Garibaldi to grind and process waste itself and fish waste could be shipped out whole.
  - In this scenario, BioGas Corp. would work with [Andgar](#) to help create the equipment needed to process the waste.
  - Crab carcass could potentially work in this system, though they need to be crushed. They can typically process shells and things like this, but

- would need to do some analysis of the waste type to understand if it has positive, neutral, or negative impact for the digester.
  - If the port becomes interested in this option, the Port of Garibaldi could explore a relationship with BioGas Corp. to support the establishment of an organic waste grinding/processing operation near the bio digester. This could be done through collaborative grant-based fundraising or other mechanisms. In doing so, the port may also be able to develop a strategy to bargain a better cost for tipping fees to haul the waste away.
- Partnership with an established professional business may provide a long-term solution for channeling fish waste and alleviate barriers or issues that may be experienced in working with new startup businesses for entrepreneurs.

#### *Disadvantages*

- Removal of waste, tipping fees could be steep, and more than the port is willing to pay.
- There are no current options for processing/grinding fish waste to service this option. Grinding/processing operations will need to be established at the Port of Garibaldi or at the Port of Tillamook.
- A “minimum threshold” would need to be established with BioGas Corp. to identify the minimum amount of waste that must be collected by the Port of Garibaldi before being picked up and transported by BioGas Corp to the digester.
- The bio digester has specific needs for size of solid waste pieces and in its % of water to solid waste ratio (8% solid to 92% liquid). If done at the Port of Garibaldi, the port would need to create a new system or remodel its current design to grind the waste and pump in water or another resource to get to the proper ratio. The port would need to purchase some sort of holding tank for the liquid waste.
  - However, this would allow to port to process all the waste and when waste is minimal, it could be held in the tank until more waste comes in, the tank is filled, and it then makes financial/business sense to transport the waste to the digester.
  - BioGas Corps could send a liquid truck to haul the liquid waste.

## Fish Waste: Financials & Business Considerations

A new fish Grinder can be purchased for \$25,000 (10hp) to \$40,000 (25hp). The 10hp version would require some knowledge to ensure reliable operation; the 25hp could be safely operated with no supervision or training. Totes for placement and hauling of the waste will likely also be necessary. A standard 21 cu. Ft. tote can be purchased for \$250 (non-insulated lower-end) to \$1000 (insulated higher-end). While this report does not include specific design specifications, other infrastructure that may need to be purchased could include an auger, hose, or shoot to funnel grinded waste into a tote for reuse by local businesses.

Signed agreements with businesses using the waste will need to be established and should outline terms and conditions of access to the waste and use of any port owned infrastructure. As the public will likely continue to be the users of the fish waste system, clear guidelines for how to dispose of the waste with signage to support proper use will need to be established. This will include guidance for use of the grinder and proper disposal of other waste. Regardless of how the port moves forward regarding fish waste channels, there will be a continued need for management of the fish waste system established to ensure it is working, partners are holding up their end of the contract, and to tend to issues with infrastructure and/or transportation.

## Section 3: Overall Recommendations & Next Steps

### Summary of Recommendations

**Cold storage:** While this service is in high demand, port provision of cold storage would be a high-risk operation. However, providing infrastructure for other commercial enterprises to bring in portable storage fits in with the scale necessary to satisfy the most critical cold storage demands, while keeping the financial risk to the port low. Applications which demand local storage, such as catch consolidation, operate under different economic conditions and offsite commodity cold storage cannot compete due to the high value of quick turn offloading at the port. Creating a cold storage solution like this allows the locally sold seafood stream to integrate with other food products such as vegetables and beef in a food hub model. (see below for more discussion on a north coast food hub).

The intentions of the containerized storage site tenant to offer bait also takes some pressure off the demand for cold storage since some of the identified storage is for bait and is expected to be a welcome new service for the fleet.

The plans for commercial cold storage being made available by an existing port tenant are exciting, and given the known plans at this stage, will likely satisfy a significant percentage of the cold storage demand cited by the fleet. We do not know costs or services levels at this time, so it is premature to suggest this will satisfy all of the needs. When final plans, pricing, and detailed services are known, it is recommended that the highest usage stakeholders be re-contacted to assess their likelihood to use this new service. In the interim, the details from this report regarding cold storage demand will be provided to the port tenant to assist in the sizing of their cold storage service.

**Ice:** Ice is provided in most ports either directly from the port, or via co-management with coops or other commercial businesses. In larger ports, the demand is sufficient to allow for sustainable, stand-alone ice businesses. In all these approaches, fishermen are able to access the highest quality, most convenient flake ice for from between \$60 and \$120/ton, which matches the range for what Garibaldi fishermen are currently paying for ice.

The launch by an existing port tenant to offer ice services is another welcome change, and before any further planning for port-offered ice, it will be important to understand how this additional ice supply supports the fleet's needs. The proposed capacity is 20-ton daily, with 20-ton storage, which should provide ample supply when combined with the other available ice.

**Fish waste:** There is unlikely to be a financial model that allows the port to charge for waste in a way that recovers both the investment and the ongoing operating costs. To justify the investment would require either a subsidy or a value-add use of the waste that could change the economics. Then potential waste management solutions could be created/adapted with local businesses benefiting from the utilization of the waste. The other factor is the impact of the DEQ 900J rule changes. It is possible that with changes that impact smaller processors, these processors might require a different solution for their waste that would increase their demand for an alternative to their current waste solutions.

The recommendation in this case is for the port to look to supporting local businesses and entrepreneurs selling bait at the dock or creating local compost streams. With high prices for bait, such as clams, and sources of bait becoming scarcer, this will help further alleviate the issue, while supporting local businesses. For businesses selling bait, fish waste could likely be provided whole, eliminating the need for new fish grinding solutions for this portion of the waste stream. New totes may need to be purchased at \$250-1000 each, depending on quality, size, and whether they are insulated. Providing waste, a local business creating compost will require more infrastructure (new grinder and 4 insulated totes) for a total of \$29,000 - \$44,000. Additional costs will need to be considered for modification of the current fish grinding system to catch and divert solid waste into totes.

Businesses (especially if used for compost) require waste with no non-organic material. In other words, "clean fish waste". Often fish waste has lines, hooks, and other non-organic debris that becomes enmeshed and tangled in the waste. This waste would need to go in a common waste bin, where trash and other non-organic items are channeled. Again, clear guidelines for how to dispose of the waste with signage to support proper use will need to be established with those contributing the waste.

Other considerations should be taken for establishing the use of a forklift and ramp, as it will be needed to move the totes to businesses on the dock or to load into the back of trucks. For off dock businesses, such as Nehalem River Ranch, the port would likely need to work the forklift for the business to hoist waste onto a truck/trailer. For businesses on the dock, it may be possible for them to run a forklift themselves. If businesses are allowed the use of port owned equipment, the port will need to establish a training protocol to ensure proper operation. The port should check with their insurance company on other needs to limit liability. In creating a contract with business to utilize fish waste, the contract should spell out terms of use. This could include outlining responsibilities for returning totes and ensuring the waste is removed from bins in a timely manner (e.g. within 24hrs.) If more than one business would like access to the product, and the port does not provide exclusive access to one single business, a rotating schedule should be established where business share access to the product. This could be on a



daily, weekly, or monthly rotation. To ensure more equitable access, a weekly rotation is suggested for times when fish waste is more prevalent and available.

#### **Other infrastructure:**

- **Ramps:** Portable ramps are inexpensive and can be moved around to satisfy various uses. We recommend including them in any of these proposals that drive demand for loading and unloading at the port.
- **Forklifts:** Key lock public forklift access can be accomplished in a similar way as the existing hoist card-lock solution to limit access to only those who have met training, insurance, and safety requirements. The best initial option for forklift access is to rent one during the high-demand crab season, when the loading & unloading of pots and catch are at their peak. While it is more expensive than purchasing the appropriate forklift, it allows for a low-risk approach to gauging needs and requirements for a permanent solution. With the addition of another ice source as well as bait and cold storage, it should be expected that demand for forklifts will increase, and it would be a valued offer by the fleet, even if they don't yet see this gap.

#### **Other recommendations:**

- **Fishermen Organization:** For the commercial fleet, their interests and needs often align, and this project has clearly demonstrated the need for a lasting structure that can represent the collective needs of the fishing community. This project has progressed from a situation of initial wariness from the fleet, to the current predominantly trusted relationship. The final progression is to go from an activity that is done to and then for them, to one that is done by them. There is merit to an exploration with the fleet regarding a lasting association representing their collective interests. This structure is in place in other ports (Santa Barbara & San Francisco) and plays an active and important advocacy role for the fleet.
- **Port Network:** In the conversations with the other ports, it is clear that they too have many shared interests and challenges, and likewise could benefit from regular collaboration and sharing. While there are situations where the ports are in competition for limited resources (i.e. harbor maintenance with the federal government), most of the fishing port activities and challenges are the same everywhere and collaboration could reduce each port's resource load to understand options, complete assessments, and address common needs.

#### Food hub overview and opportunities

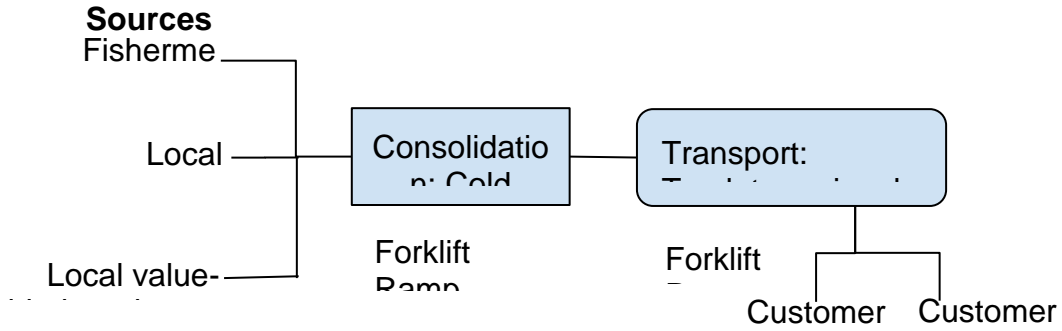
This section will be extended at a future date.

#### Application: Regional Food Hub

This application assumes that consolidated seafood from multiple sources will integrate with agricultural products at a larger facility, for distribution to both north coast and

Portland/Willamette valley customers. Processed or whole seafood will be stored in local port cold storage prior to transportation to a distribution center, where it will be co-located in segregated storage with other food products and managed for efficient distribution to a broad spectrum of customers.

## Regional Food



# Appendices

## Appendix 1: Survey Questionnaire

### Introductory Text:

Thank you so much for your willingness to meet with us and answer some questions.

We are part of an initiative that wants to improve the well-being of fishermen and seafood workers in and around Garibaldi.<sup>10</sup>

### **Purpose**

The purpose of the interview is to better understand the situation of people involved in fishing and seafood businesses such as yourself, so that we can tailor our initiative to address areas of greatest priority. We are aiming to conduct around 30 interviews total with a broad range of people involved in this sector.

### **Interview Details**

We anticipate that this interview will take approximately [30 - 45 minutes for crew and workers / 1 hour for captains and seafood business owners].

**Confidentiality:** Your identity will not be shared publicly or with any other groups. We do plan to share the common themes and findings that emerge from all of the interviews.

We would like to record the interview so that we capture all of the information accurately, but we will erase the recording once we have transcribed it and will not share it with anyone. Are you comfortable with this?

Because we value the time you are spending with us, we have a \$50 visa gift card for you, which can be used anywhere that accepts credit cards.

Do you have any questions before we start?

**Begin recording now.**

---

<sup>10</sup> Our group is a coalition that includes the Port of Garibaldi, Columbia Pacific Economic Development District, Visit Tillamook Coast, Rural Development Initiatives, and Ecotrust.

## Section 1: General Questions

1. Which of the following best describes you? (check all that apply)  
 Crew Member                       Dock / Seafood Worker  
 Captain / Boat Owner             Seafood Business Owner (Processor / Distributor)
2. Gender \_\_\_\_\_
3. What is your age range?:    <25    25-34    35-44    45-54    55-64    65+
4. In which community do you live?
5. How many years have you been involved in the fishing/seafood sector?
6. Do you work in the fishing sector seasonally or year-round?
7. Do you have other employment or is fishing/seafood work your sole source of income? If yes, what is the other employment?

**If Crew Member, go to Section 2.  
If Dock/Seafood Worker, skip to Section 3.  
If Captain, skip to Section 4.  
If Seafood Business Owner, skip to Section 5.  
If the interviewee belongs to more than one category, either pick the predominant category, or ask questions from multiple sections (the repeating questions do not need to be asked twice).**

## Section 2: Questions for Crew Members

1. What species do you fish/which fisheries do you participate in?
2. Are there fisheries you have thought about participating in but have not? Why or why not?
3. Do you feel you are receiving fair pay from your captain? Why / why not?
4. **What are the primary challenges you face making your living as a crew member?** *(After initial answer, show visual aid. List all that apply. Probe for more detail, and rank in importance.)*

_____ Job Stability	_____ Housing
_____ Income	_____ Health
_____ Taxes	_____ Transportation
_____ Insurance	_____ Other

**Do you have ideas about how these challenges could be addressed? What are they?**

**Would you like support with any of these? What specifically?**

5. Income-related Questions
  - a. In the past three years, have you struggled financially to meet your personal or household needs? *(If yes, ask the following questions):*
    - i. How specifically?
    - ii. Do you use or are you eligible for benefits such as food stamps or Oregon Health Plan? Do you want to find out more about such benefits?
    - iii. Do you have difficulty filing taxes, and if so, is this preventing you from accessing support services such as social or financial services?
    - iv. Do you want tax advice or support with your taxes?
  - b. Would you be willing to share with us your yearly household income range? *(Show visual aid.)*

< 20k	20k-35k	35k-50k	50k-75k	75k+
-------	---------	---------	---------	------
  - c. What percentage of your yearly income is from fishing-related work?
 

0-25%	25-50%	50-75%	>75%	All
-------	--------	--------	------	-----
6. Do you want to make fishing your long-term livelihood? Y / N
  - a. Do you want to own a boat and a permit, and if so, do you see a pathway to this ownership?

- b. What are the main obstacles to making this happen?

Skip to Section 6 Screening Questions

### Section 3: Questions for Dock / Seafood Workers

1. What kind of products do you sell, process, or distribute?
2. Do you feel you are receiving a fair wage from your employer? Why / why not?
3. **What are the primary challenges you face making your living as a dock/seafood worker?** *(After initial answer, show visual aid. List all that apply. Probe for more detail, and rank in importance.)*

_____ Job Stability	_____ Housing
_____ Income	_____ Health
_____ Taxes	_____ Transportation
_____ Insurance	_____ Other

**Do you have ideas about how these challenges could be addressed? What are they?**

**Would you like support with any of these? What specifically?**

4. Income-related Questions
  - a. In the past three years, have you struggled financially to meet your personal or household needs? *(If yes, ask the following questions):*
    - i. How specifically?
    - ii. Do you use or are you eligible for benefits such as food stamps or Oregon Health Plan? Do you want to find out more about such benefits?
    - iii. Do you have difficulty filing taxes, and if so, is this preventing you from accessing support services such as social or financial services?
    - iv. Do you want tax advice or support with your taxes?
  - b. Would you be willing to share with us your yearly household income range? *(Show visual aid.)*

< 20k	20k-35k	35k-50k	50k-75k	75k+
-------	---------	---------	---------	------
5. Do you see a career pathway for yourself in the seafood sector? Y / N
  - a. If yes, can you describe?
  - b. What are the main obstacles to making this happen?

## Section 4: Questions for Captains / Boat Owners

1. What species do you fish/which fisheries do you participate in?
2. Are there fisheries you have thought about participating in but have not?
  - a. Why or why not?
3. Where do you primarily land your catch?
  - a. Would you prefer to land your catch in a different location?
  - b. If so, where, and why do you not land your catch there now?
4. Are you the \_\_\_\_\_ Vessel Owner, \_\_\_\_\_ The Captain, or \_\_\_\_\_ Both?
  - a. If not the owner, what is your arrangement with the vessel owner?
    - i. Would you like to own a vessel, and if so, what barriers to you face to owning one?
  - b. If the owner, how many vessels do you own?
    - i. Does your vessel(s) need upgrades? What? (How much \$)? If so, is it preventing you from participating in fishing activities?
5. Do you own permits? Y / N
  - a. If no, do you lease permits from someone else?
    - i. Which ones?
    - ii. Would you like to own a permit, and if so, what barriers to you face to owning a permit?
  - b. If yes, which ones?
    - i. If you are near retirement, do you have a plan for what you will do with the permits?
  - c. Do you fish to the capacity of these permit(s)? If not, why not?
  - d. Would you want more permits for more volume or species if you could access them? Which ones?

6. Do you have crew members? How many?
  - a. Are they part time / full time, seasonal / year-around?
  - b. How do you find crew to hire?
  - c. What challenges do you have to find and keep good crew members?
  - d. In a typical year, how much do your crew get paid?
7. Business planning & management:
  - a. Do you see yourself fishing in 5, 10 years?
  - b. If you are nearing retirement, do you have a retirement or transition plan?
  - c. Do you keep a balance sheet for your fishing business? If so, what do you use to do this? (Bank statements, QuickBooks, Quicken, personal spreadsheet, etc.)  
If not, why not?
  - d. Do you have insurance for your boat and crew? If so, what type and who do you use?  
  
If not, what's the barrier for you to do so?
  - e. Do you plan to grow in the next 2-5 years? How, and by how much?
8. Marketing:
  - a. Who do you currently deliver or sell your seafood to in Garibaldi? Outside of Garibaldi?
  - b. Are you satisfied with your current options for delivering/selling your fish? Why?
  - c. Do you feel you are receiving a fair price for your fish from the processor/buyer? Why?
  - d. Have you ever tried direct marketing or any other alternative forms of marketing? If not, are you interested in any other forms of marketing? Which ones?
9. **What are your greatest challenges in running a fishing business?** *(After initial answer, show visual aid. List all that apply. Probe for more detail, and rank in importance.)*

_____ Financial Management	_____ Taxes
_____ Accessing loans	_____ Marketing
_____ Workforce Issues	_____ Other
_____ Retirement planning	_____ Disaster response
_____ Insurance	



Do you have ideas about how these challenges could be addressed? What are they?

Would you like support with any of these? What specifically?

10. What are the primary challenges you face making your living as a captain?  
(After initial answer, show visual aid. List all that apply. Probe for more detail, and rank in importance.)

- |                     |                      |
|---------------------|----------------------|
| _____ Job Stability | _____ Housing        |
| _____ Income        | _____ Health         |
| _____ Taxes         | _____ Transportation |
| _____ Insurance     | _____ Other          |

Do you have ideas about how these challenges could be addressed? What are they?

Would you like support with any of these? What specifically?

11. Income-related Questions

a. In the past three years, have you struggled financially to meet your personal or household needs? (If yes, ask the following questions):

- i. How specifically?
- ii. Do you use or are you eligible for benefits such as food stamps or Oregon Health Plan? Do you want to find out more about such benefits?
- iii. Do you have difficulty filing taxes, and if so, is this preventing you from accessing support services such as social or financial services?
- iv. Do you want tax advice or support with your taxes?

b. Would you be willing to share with us your yearly household income range?

(Show visual aid.)

< 20k      20k-35k      35k-50k      50k-75k      75k+

Skip to Section 6 Screening Questions

## Section 5: Seafood Businesses (Processing, Distributing, etc.)

1. What kind of product do you sell, process, or distribute?
  - a. What format do you process it into? (frozen, fresh, H&G, J-cut, portion sizes, etc.)
  - b. How much product do you process?
2. Who do you purchase product from? (fishermen, other processors, etc.)
3. Do you have workers? How many?
  - a. Are they part time / full time, seasonal / year-around?
  - b. How do you find workers to hire?
  - c. What challenges do you have to find and keep good workers?
4. Business planning & management:
  - a. Do you see yourself running this business in 5, 10 years?
  - b. If you are nearing retirement, do you have a retirement or transition plan? What is it?
  - c. Do you keep a balance sheet for your business? If so, what do you use to do this? (Bank statements, QuickBooks, Quicken, personal spreadsheet, etc.)  
  
If not, why not?
  - d. Do you have insurance for your business and workers? If so, what type and who do you use?  
  
If not, what's the barrier for you to do so?
  - e. Do you have equipment / facility needs, such as upgrades or new equipment? What? Is this keeping you from growing as a business?
  - f. Do you plan on expanding your product line or services? How?  
  
What challenges do you face to pursue these opportunities?
5. Marketing:
  - a. Who do you currently deliver or sell your product to in Garibaldi? Outside of Garibaldi?

- b. All products or just some?
- c. Are you satisfied with your current options for delivering/selling your products, or would you like to make connections with more buyers and markets?
- d. If more, what types of buyers/markets? For what products?

6. **What are your greatest challenges in running a seafood business?** *(After initial answer, show visual aid. List all that apply. Probe for more detail, and rank in importance.)*

- \_\_\_\_\_ Financial Management
- \_\_\_\_\_ Accessing loans
- \_\_\_\_\_ Workforce Issues
- \_\_\_\_\_ Retirement planning
- \_\_\_\_\_ Insurance
- \_\_\_\_\_ Taxes
- \_\_\_\_\_ Marketing
- \_\_\_\_\_ Other

**Do you have ideas about how these challenges could be addressed? What are they?**

**Would you like support with any of these? What specifically?**

7. Which businesses or organizations do you collaborate or partner with? How and why?

8. Are there others you might like to work with that you currently are not?

9. **What are the primary personal challenges you face as business owner?** *(After initial answer, show visual aid. List all that apply. Probe for more detail, and rank in importance.)*

- |                     |                      |
|---------------------|----------------------|
| _____ Job Stability | _____ Housing        |
| _____ Income        | _____ Health         |
| _____ Taxes         | _____ Transportation |
| _____ Insurance     | _____ Other          |

**Do you have ideas about how these challenges could be addressed? What are they?**

**Would you like support with any of these? What specifically?**

10. Income-related Questions

a. In the past three years, have you struggled financially to meet your personal or household needs? *(If yes, ask the following questions):*

i. How specifically?

- ii. Do you use or are you eligible for benefits such as food stamps or Oregon Health Plan? Do you want to find out more about such benefits?
  - iii. Do you have difficulty filing taxes, and if so, is this preventing you from accessing support services such as social or financial services?
  - iv. Do you want tax advice or support with your taxes?
- b. Would you be willing to share with us your yearly household income range?  
*(Show visual aid.)*
- |       |         |         |         |      |
|-------|---------|---------|---------|------|
| < 20k | 20k-35k | 35k-50k | 50k-75k | 75k+ |
|-------|---------|---------|---------|------|

## Screening Questions for Infrastructure Participants

1. Are you the decision-maker for how and where to get necessary supplies/services for your fishing operation? I.e., do you decide where to buy ice, how much to buy, etc.?
2. Do you buy supplies/services for the boat you own/work on? (Ice, storage, gas, etc.)

If the participant answers either question yes, continue with Section 6. Otherwise, skip to Section 7.

## Section 6: Infrastructure & Services

### 1. Bait:

- a. Where do you get your bait?
- b. Approximately how many pounds of bait do you use monthly? What are your top three months for bait demand?  
\_\_\_\_ January            \_\_\_\_ April            \_\_\_\_ July            \_\_\_\_ October  
\_\_\_\_ February            \_\_\_\_ May            \_\_\_\_ August            \_\_\_\_ November  
\_\_\_\_ March            \_\_\_\_ June            \_\_\_\_ September            \_\_\_\_ December
- c. Do you have any problems related to bait? What exactly?
- d. Are you using fish waste for bait?

### 2. Ice:

- a. Do you need ice for your fishing operations, or do you want/use an alternative system (i.e. onboard blast freezing or refrigerated sea water systems)?
- b. Where do you currently get your ice?
- c. Do you have any problems related to ice? What exactly?
- d. What do you currently pay for ice per ton?
- e. How much ice do you need, by month?  
\_\_\_\_ January            \_\_\_\_ April            \_\_\_\_ July            \_\_\_\_ October  
\_\_\_\_ February            \_\_\_\_ May            \_\_\_\_ August            \_\_\_\_ November  
\_\_\_\_ March            \_\_\_\_ June            \_\_\_\_ September            \_\_\_\_ December

### 3. Cold Storage:

- a. Do you need cold storage? Y / N If so, for what products?
- b. Do you currently use public cold storage? Y / N  
If so, where is it located?

- c. Do you have private cold storage? Y / N  
 If yes, how much? (Circle one) <1000 SF 1,000 - 5,000 SF  
 >5,000 SF
- d. How much of a constraint is the lack of public cold storage for your operation?  
 (Circle one)  
 Not at all A little bit Somewhat Significant Extreme
- e. Are you interested in using public cold storage to store your product? Y / N  
 If yes, what products would you want to store?
- f. At peak need, approximately how much space would your operation use? (i.e.,  
 number of pallets, square feet, etc.)
- g. How much would you be willing to pay for cold storage services, per pallet, per  
 month?
- h. What temperatures would you need to store your product? (Check all that  
 apply)  
 -20°F to -8°F                       33°F to 39°F                       Ambient  
 -7°F to -1°F                       40°F to 50°F                       Not sure  
 0°F to 32°F                       51°F to 70°F
- i. Would you use flash freezing services? Y / N
- j. What months are your peak needs for storage? (Check all that apply.)  
 January                       April                       July                       October  
 February                       May                       August                       November  
 March                       June                       September                       December

**4. Fish Waste:**

- a. What kind of fish waste do you deal with? How much?
- b. What do you do with it?
- c. Are you aware of the pending changes to the 900J permits? Y / N Do these  
 changes affect your business?
- d. Do you have any ideas for how to creatively deal with fish waste?

**5. Other infrastructure needs:**

- a. Do you have other services from the port that you need? Are any of these your most needed service, over ice/cold storage/bait? (check all that apply)
- |                                            |                                              |
|--------------------------------------------|----------------------------------------------|
| <input type="checkbox"/> Dock Improvements | <input type="checkbox"/> Fuel                |
| <input type="checkbox"/> Ramps             | <input type="checkbox"/> Ramps               |
| <input type="checkbox"/> Additional slips  | <input type="checkbox"/> Other (please list) |
| <input type="checkbox"/> Hoists/forklifts  |                                              |

## Section 7: Big Picture Questions (for everyone):

1. How would you like to see Garibaldi five years from now?
2. What opportunities do you see in the seafood sector here in the Garibaldi area?
3. Can we contact you again if we need further clarification?
4. Would you like us to contact you with more information about the results of these interviews?
5. **Fish Biz Day:** We are planning a “Fish Biz” day for this spring where we could connect people such as yourself in the seafood sector with support providers such as small business and marketing specialists, a lawyer, and/or an accountant. Would you be interested in participating in this event? What kind of support would you want to see at such an event? When would a good date/time be for you for such an event?

### Closing the Interview

1. Turn off the recording device now.
2. Thank the participant for their time and input.
3. Give the interviewee a VISA gift card and have them sign the Survey Signature Sheet.

Visual aid to show interviewees:

Greatest challenges ***making a living:***

- |                                        |                                         |
|----------------------------------------|-----------------------------------------|
| <input type="checkbox"/> Job Stability | <input type="checkbox"/> Housing        |
| <input type="checkbox"/> Income        | <input type="checkbox"/> Health         |
| <input type="checkbox"/> Taxes         | <input type="checkbox"/> Transportation |
| <input type="checkbox"/> Insurance     | <input type="checkbox"/> Other          |

Greatest challenges ***running a fishing or seafood processing business:***

- |                                               |                                    |
|-----------------------------------------------|------------------------------------|
| <input type="checkbox"/> Financial Management | <input type="checkbox"/> Insurance |
| <input type="checkbox"/> Accessing loans      | <input type="checkbox"/> Taxes     |
| <input type="checkbox"/> Workforce Issues     | <input type="checkbox"/> Marketing |
| <input type="checkbox"/> Retirement planning  | <input type="checkbox"/> Other     |

***Yearly household income range:***

< 20k      20k-35k      35k-50k      50k-75k      75k+

## Appendix 2: Supplier Quotes

Below are quotes received or pricing and source for selected elements of the infrastructure report.




## Ice Machines

Source: Email quote

Contact: Mark McMillan II (mark@genemco.com)

Current catalog: <http://genemco.com/catalog/icemakers.html>

North Star M40-SS Flake Ice Maker	
Mfg: North Star Ice	Model: M40-85S4
Stock No: <b>NPSI01</b>	Serial No: 5618
<p><b>Used North Star Flake Ice Maker.</b></p>  <p><b>Model: M40-85S4. Serial 5618.</b> <b>Refrigerant: ammonia. Freeze surface: stainless. Rating: 20.3 tons of ice per 24 hours, 1.5 mm thick, -35F evaporator temperature, +60F make-up water. Baldor motor: 0.75 HP, 208-230/460V, 3-phase, 60 Hz.</b></p>	

**Weight: 4100 LBS (1860 KG).**

**Overall dimensions: 56 in. W x 84 in. L x 72 in. H.**

**PRICE: \$32,500**

## Portable Loading Ramps

Source: Discount Ramps

Contact: 1-888-651-3431

Current catalog: <https://www.discountramps.com/forklift-ramps/c/4140/>

Item#: RYR-37-22

Price: \$10,750 (new)

**Description:** When you need to unload a truck, trailer or railcar and dock space isn't available, our heavy duty 22,000 lb. capacity steel yard ramp is the solution to your problem. Easily movable on solid rubber wheels, each yard ramp includes a dual cylinder hydraulic pump to raise or lower the ramp to the proper loading height. The loading ramp is 37' long and 81-1/2" wide. Two steel 39" long approach ramps ensure a smooth transition from the ground to the ramp. You won't find a higher capacity yard ramp engineered as well as ours at a lower cost!

This steel yard ramp is designed for loading and unloading a truck, trailer, or railcar when dock space isn't available. Manufactured from durable steel, this yard ramp has a 22,000 lb. weight capacity and measures 37' L x 81-1/2" W. The surface of the ramp includes a middle diamond plated strip that is surrounded by serrated steel grating, which allows for snow, dirt, and debris to fall through, preventing dangerous build-up on the ramp (please note, the grated surface of this ramp is not designed for forklift turning maneuvers). Additional safety features include 8" tall side rails on either side to prevent forklifts from driving over the edges, and two 60" safety chains to hold the ramp secure to the loading surface. The chains can be attached to a semi-truck trailer's ICC bumper to prevent the ramp from kicking out.

This yard ramp also includes a dual action hydraulic pump for smooth raising and lowering of the yard ramp. To use the pump, simply push the lever forward or back to raise the front and open the

release valve to safely lower the ramp into position. The pump is conveniently stored internally for safety and protection.



**Specifications:**











<b>Length</b>	37'
<b>Width</b>	6' 10"
<b>Minimum Height</b>	42"
<b>Maximum Height</b>	62"
<b>Weight</b>	5,717 lbs.
<b>Maximum Capacity</b>	22,000 lbs.
<b>Material</b>	Steel
<b>Lift Type</b>	Dual Cylinder Hydraulic
<b>Guard Rail Height</b>	8"
<b>Usable Width</b>	6' 5"
<b>Tire Size</b>	18"


Source: Yard Ramp Guys

Contact: 888.977.4224

Current catalog: <https://yardrampguy.com/used-yard-ramp-inventory/>

Used inventory

Used Yard Ramp Inventory								
CLICK <a href="#">VIEW</a> for SPECS & PIX		CITY	ST	PRICE	CAP	W	L	ID
	<a href="#">VIEW</a>	Scottsdale	AZ	<b>\$7,500.00</b> MSRP: \$10,235.00	16K lbs	70"	30'	<b>6202</b>
	<a href="#">VIEW</a>	Anaheim	CA	<b>\$8,999.00</b> Regular: \$10,470	20K lbs	84"	35'	<b>4028</b>
	<a href="#">VIEW</a>	Tracy	CA	<b>\$8,999.00</b> Regular: \$11,058	20K lbs	84"	35'	<b>3093</b>
	<a href="#">VIEW</a>	Largo	FL	<b>\$8,000.00</b> MSRP: \$10,475.00	16K lbs	84"	36'	<b>6157</b>
CLICK <a href="#">VIEW</a> for SPECS & PIX		CITY	ST	PRICE	CAP	W	L	ID
	<a href="#">VIEW</a>	Ocala	FL	<b>\$10,366.00</b> MSRP: \$11,058.00	20K lbs	84"	35'	<b>3041</b>
	<a href="#">VIEW</a>	Tampa	FL	<b>\$9,889.00</b> MSRP: \$11,058.00	20K lbs	84"	35'	<b>3034</b>
	<a href="#">VIEW</a>	Lihue	HI	<b>\$11,800.00</b>	20K lbs	84"	36'	<b>3107</b>
	<a href="#">VIEW</a>	Plainfield	IL	<b>\$12,000.00</b> MSRP: \$14,175.00	20K lbs	120"	30'	<b>6185</b>
	<a href="#">VIEW</a>	Houma	LA	<b>\$8,300.00</b> MSRP: \$10,760.00	16K lbs	90"	36'	<b>6208</b>
	<a href="#">VIEW</a>	Iron Mountain	MI	<b>\$8,600.00</b> MSRP: \$11,495.00	20K lbs	84"	36'	<b>6173</b>

CLICK <a href="#">VIEW</a> for SPECS & PIX		CITY	ST	PRICE	CAP	W	L	ID
	<a href="#">VIEW</a>	Denton	NC	<b>\$5,000.00</b> MSRP: \$10,895.00	20K lbs	144"	144"	<b>8005</b>
	<a href="#">VIEW</a>	Dayton	OR	<b>\$4,500.00</b> MSRP: \$6,390.00	20K lbs	84"	15'	<b>8001</b>
	<a href="#">VIEW</a>	Philadelphia	PA	<b>\$1,250.00</b>	Handrail Set		30'	<b>6007</b>
	<a href="#">VIEW</a>	Boerne	TX	<b>\$10,686.00</b> Regular: \$14,095	20K lbs	84"	36'	<b>3075</b>
	<a href="#">VIEW</a>	Longview	TX	<b>\$9,967.00</b> MSRP: \$11,495.00	20K lbs	84"	36'	<b>3038</b>

## Forklifts

Source: Forklift Select

Contact: Taylor Hansen ([taylor@forkliftselect.com](mailto:taylor@forkliftselect.com)) 1-877-733-LIFT

Current catalog: <https://www.forkliftselect.com/product-category/used/>



**FORKLIFTSELECT**



## **KOMATSU 5K PNEUMATIC TIRE FORKLIFT**



# **KOMATSU**

- **CAPACITY: 5,000 LBS**
- **TIRES: PNEUMATIC**
- **HOURS: ONLY 7,628**
- **FUEL: LP GAS**
- **ATTACHMENTS: SIDE SHIFT**
- **MAST TYPE: 3 STAGE (188" LIFT)**
- **FORKS AND PROPANE TANK INCLUDED**

**\$12,489 DELIVERED W/WARRANTY!**

Finance As Low As \$265/mo (WAC)  
100% Tax Deductible!



**FORKLIFTSELECT**



## 1998 HYSTER 5K PNEUMATIC TIRE FORKLIFT



# HYSTER

- CAPACITY: 5,000 LBS
- TIRES: PNEUMATIC
- HOURS: 7,300
- FUEL: LPG
- ATTACHMENTS: SIDESHIFT
- MAST TYPE: 3 STAGE (189" LIFT)
- FORKS AND LP TANK INCLUDED

**\$10,989 DELIVERED W/WARRANTY!**

Finance As Low As \$218/mo (WAC)  
100% Tax Deductible!



**FORKLIFTSELECT**



## 2006 YALE 4K PNEUMATIC TIRE FORKLIFT



- CAPACITY: 4,000 LBS
- TIRES: PNEUMATIC
- HOURS: **ONLY 4,100-5,000!**
- FUEL: LPG
- MAST TYPE: 2 STAGE (128" LIFT)
- FORKS AND LP TANK INCLUDED

**UNPAINTED: \$11,989 DELIVERED W/WARRANTY!**

**NEW PAINT/DECALS: \$12,989 DELIVERED W/WARRANTY!**

**Add New Sideshifting Carriage For \$1,200 More**  
Finance As Low As \$232/mo (WAC)  
100% Tax Deductible!





**FORKLIFTSELECT**



## 2013 Doosan 4k Pneumatic Tire Forklift



- CAPACITY: 4,000 LBS
- TIRES: PNEUMATIC
- HOURS: 9,200
- FUEL: LPG
- ATTACHMENTS: SIDESHIFT
- MAST TYPE: 3 STAGE (189" LIFT)
- FORKS AND LP TANK INCLUDED

**\$13,489 Delivered w/ Warranty**

Finance As Low As \$297/mo (WAC)  
100% Tax Deductible!



**FORKLIFTSELECT**



## 2015 NISSAN 5K PNEUMATIC TIRE FORKLIFT



**NISSAN**  
FORKLIFT

- CAPACITY: 5,000 LBS
- TIRES: PNEUMATIC
- HOURS: 4,500!
- FUEL: LPG
- ATTACHMENTS: SIDESHIFT & FORK POSITIONER
- MAST TYPE: 3 STAGE (110"/256" LIFT)
- ENCLOSED CAB
- FORKS AND LP TANK INCLUDED

**\$16,989 DELIVERED W/WARRANTY!**

\*Qualifies For 2 Year Extended Warranty\*  
Finance As Low As \$327/mo (WAC)  
100% Tax Deductible!



**FORKLIFTSELECT**



## 2005 Toyota 5k Pneumatic Tire Forklift



Sister Lift Shown-Will Look Similar When Completed in Paint



- CAPACITY: 5,000 LBS
- TIRES: PNEUMATIC
- HOURS: ONLY 4,780!
- FUEL: LPG
- ATTACHMENTS: SIDESHIFT
- MAST TYPE: 3 STAGE (189" LIFT)
- FORKS AND LP TANK INCLUDED

**\$14,989 Delivered w/ Warranty**

Finance As Low As \$297/mo (WAC)  
100% Tax Deductible!



**FORKLIFTSELECT**



## 2014 YALE 4K PNEUMATIC TIRE FORKLIFT



- CAPACITY: 4,000 LBS
- TIRES: PNEUMATIC
- HOURS: 4,000
- FUEL: LPG
- ATTACHMENTS: SIDESHIFT
- MAST TYPE: 3 STAGE (169" LIFT)
- FORKS AND LP TANK INCLUDED

**\$15,989 DELIVERED W/WARRANTY!**

**\*Qualifies For 2 Year Extended Warranty\***

Finance As Low As \$260/mo (WAC)  
100% Tax Deductible!



## 2015 Toyota 4k Pneumatic Tire Forklift



\*New OEM Decals Will Be Added Before Shipping\*



**#1 FORKLIFT IN THE WORLD!!** Toyota Available in **EXCELLENT CONDITION**, **ONLY 4,040 HOURS!** 4,000lb Lift Capacity. **SOLID PNEUMATIC TIRES** (Dirt/Gravel Terrain-Never Get A Flat!). **SIDESHIFT EQUIPPED** (carriage moves hydraulically left and right). 3 Stage Mast w/ 189" Lift Height. New Paint, Body and OEM Decals. Automatic Transmission. 42" or 48" Forks and LP Tank Included w/ Purchase.

**\$16,989 Delivered w/ Warranty**

\*Qualifies For 2 Year Extended Warranty\*

Finance As Low As \$336/mo (WAC)

100% Tax Deductible!



**FORKLIFTSELECT**



## 2005 DOOSAN 5K PNEUMATIC TIRE FORKLIFT



- **CAPACITY: 5,000 LBS**
- **TIRES: PNEUMATIC (NEWLY GROOVED-NOT SHOWN)**
- **HOURS: 7,050**
- **FUEL: LPG**
- **ATTACHMENTS: SIDESHIFT**
- **MAST TYPE: 3 STAGE (186" LIFT)**
- **FORKS AND LP TANK INCLUDED**

**\$13,989 DELIVERED W/WARRANTY!**

Finance As Low As \$277/mo (WAC)  
100% Tax Deductible!



**FORKLIFTSELECT**



## 2011 CLARK/HAMECH 5K PNEUMATIC TIRE FORKLIFT



\*Recent Sister Unit Shown-Will Look Similar When Completed in Paint\*



- CAPACITY: 5,000 LBS
- TIRES: SOLID PNEUMATIC
- HOURS: ONLY 1,100-2,600!
- FUEL: LPG
- ATTACHMENTS: SIDESHIFT
- MAST TYPE: 3 STAGE (189" LIFT)
- FORKS AND PROPANE TANK INCLUDED

**\$16,989 DELIVERED W/WARRANTY!**

**\*Up To 2 Year Extended Warranty Available\***

Finance As Low As \$337/mo (WAC)  
100% Tax Deductible!



**FORKLIFTSELECT**



## 2004 HYSTER 5K PNEUMATIC TIRE FORKLIFT



**HYSTER**

- CAPACITY: 5,000 LBS
- TIRES: PNEUMATIC
- HOURS: 6,030
- FUEL: LPG
- ATTACHMENTS: SIDESHIFT
- MAST TYPE: 3 STAGE (189" LIFT)
- FORKS AND LP TANK INCLUDED

**\$13,989 DELIVERED W/WARRANTY!**

Finance As Low As \$277/mo (WAC)  
100% Tax Deductible!





**FORKLIFTSELECT**



## 2013 YALE (sumitomo) 5K PNEUMATIC TIRE FORKLIFT



- CAPACITY: 5,000 LBS
- TIRES: PNEUMATIC
- HOURS: 6,196
- FUEL: LPG
- ATTACHMENTS: FORK POSITIONER
- MAST TYPE: 2 STAGE (118" LIFT)
- FORKS AND LP TANK INCLUDED

**\$13,489 DELIVERED W/WARRANTY!**

Finance As Low As \$275/mo (WAC)  
100% Tax Deductible!