Economic Assessment for Port of Alaska Terminals

Prepared for Don Young Port of Alaska

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Alaska Relies on the Port

1. Alaska (Southcentral) needs two container / general cargo berths (and liquid petroleum berths) & PAMP should create redundancy
   - Even when considering a stable-to-flat volume outlook
   - Conditions will change over the 75-year planning

2. POA is the best location in the state to do this
   - Confirmed by independent analysis and user / tenant engagement

3. The cost of disruption and / or loss of service is significant
   - Rerouting through alternative ports and / or highway
1) Developing T2 as an identical structure as T1 appears supported by the future market conditions, industry standards, observed practices, stakeholder comments and the potential impact on costs related to delay and/or unforeseen operational disruptions.

**General Cargo Docks**

- **T1**
  - T1 can handle up to 4,000 TEU vessels as a stand-alone structure.

- **T2 @ 69’**
  - TOTE keeps vessels
  - TOTE changes vessels

- **T2 @ 120’**
  - T2 could accommodate TOTE vessels, two container vessel simultaneously, or >4,000 TEU vessels. Making the general cargo berths more flexible for the next 75-years.

**Petroleum & Cement**

- **PCT**
  - 2 petroleum berths are needed to support the volume outlook and vessel sizes + berth needs (occupancy) of cement.

- **Petro Terminal**
  - T2 would remain dedicated to TOTE specialized vessels in relation to cargo activity.
  - T2 is widened
  - T2 could accommodate container, or ConRo vessels, going forward.
Flexibility of Berths

If the objective of PAMP is to develop modern port infrastructure that will prove to be as necessary and adaptive in 75-years as it would be today, then the utility of the uniform berth offering is apparent.
Redundancy - What can cause a dock closure

From the small to the catastrophic...

.... and everything in between

Endangered Osprey Nest Port of San Francisco 10/13

Francis Scott Key Bridge Port of Baltimore 3/24

Yang Ming Vessel Strikes Cranes in Turkey 3/24

Cruise Vessel Excellent Strike in Barcelona 3/19

Tornado, Freeport Bahamas 3/10
Economic Cost Analysis

Calculating the economic cost of a service disruption at POA, helps us understand the value of the infrastructure that is being considered under PAMP

ECONOMIC COSTS ASSOCIATED WITH ONE WEEK POA SHUTDOWN

US$ (Millions)

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Economic costs</th>
<th>Safety costs</th>
<th>Environmental sustainability costs</th>
<th>Macro Economic Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% Seward</td>
<td>$8.8</td>
<td>$4.2</td>
<td>$3.7</td>
<td>$4.2</td>
</tr>
<tr>
<td>75% Seward</td>
<td>$11.3</td>
<td>$10.2</td>
<td>$11.3</td>
<td>$10.2</td>
</tr>
<tr>
<td>50 / 50</td>
<td>$16.6</td>
<td>$16.8</td>
<td>$16.6</td>
<td>$16.8</td>
</tr>
<tr>
<td>25% Seward</td>
<td>$25.7</td>
<td>$23.2</td>
<td>$25.7</td>
<td>$23.2</td>
</tr>
<tr>
<td>100% Highway</td>
<td>$70.1</td>
<td>$29.8</td>
<td>$70.1</td>
<td>$29.8</td>
</tr>
</tbody>
</table>
### Port of Alaska Benchmarking Analysis

The benchmarks have multiple berths capable of accommodating a variety of cargo vessels simultaneously which creates redundancy and resiliency during natural disasters and other events which could disrupt operations.

<table>
<thead>
<tr>
<th>Location</th>
<th>Function</th>
<th>Container Infrastructure</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port of San Juan</td>
<td>The Port of San Juan is Puerto Rico’s primary container port serving the island’s concentrated population</td>
<td>Puerto Nuevo: 39 ft., 4,721 ft., 11 STS Cranes</td>
<td>Hurricanes Irma and Maria left extensive damage to Puerto Rico and the Port in 2017. Puerto Rico used the Port of San Juan and Port of Ponce to transport goods</td>
</tr>
<tr>
<td>Port of Guam</td>
<td>The Port of Guam handles essentially all of the island’s freight</td>
<td>3, 4, 5, 6: 28-35 ft., 1,970 ft., 3 STS Cranes</td>
<td>An earthquake damaged the container terminal in 1993. Part of 5 and part of 6 were damaged so part of 3, 4 and 5 were able to be worked off of.</td>
</tr>
<tr>
<td>Port of Hawaii / Honolulu Harbor</td>
<td>The Port of Hawaii's epicenter is located at the Honolulu Harbor which distributes containerized cargo to the other islands via barge</td>
<td>Sand Island: 40 ft., 4,010 ft., 9 STS Cranes</td>
<td>The Port of Hawaii expects to receive larger vessel calls in the future as is undergoing a modernization program to widen its piers. 5 container berths going to 7.</td>
</tr>
<tr>
<td>Port of Alaska</td>
<td>Port of Alaska is the primary gateway to the state, connecting the isolated population to supplies from the US mainland</td>
<td>T2 (Matson): 35 ft., 610 ft., 3 STS Cranes</td>
<td>Anchorage became the primary cargo port in 1961, after a large earthquake decimated the Seward Harbor</td>
</tr>
</tbody>
</table>
Port of Alaska Competitive Assessment

POA operates within a system of ports that work together to serve the state’s widespread population centers. These ports generally do not compete with one another given that they are focused on serving the needs of their immediate / local communities.

<table>
<thead>
<tr>
<th>Region</th>
<th>Facility</th>
<th>Vessel Type</th>
<th>Inland Connectivity</th>
<th>Primary Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anchorage</td>
<td>Port of Alaska</td>
<td>Container, RoRo</td>
<td><img src="Image" alt="Stronger" /></td>
<td>Anchorage, Interior</td>
</tr>
<tr>
<td></td>
<td>Ship Creek</td>
<td>Barge</td>
<td><img src="Image" alt="Stronger" /></td>
<td>Anchorage, Interior</td>
</tr>
<tr>
<td>Kenai Peninsula</td>
<td>Seward</td>
<td>Barge</td>
<td><img src="Image" alt="Weaker" /></td>
<td>Local population</td>
</tr>
<tr>
<td></td>
<td>Whittier</td>
<td>Barge</td>
<td><img src="Image" alt="Weaker" /></td>
<td>Local population</td>
</tr>
<tr>
<td>Southeast</td>
<td>Juneau, Ketchikan</td>
<td>Barge</td>
<td><img src="Image" alt="Stronger" /></td>
<td>Local population</td>
</tr>
</tbody>
</table>
User / Tenant Outreach

M&N interviewed a number of port users and tenants as part of its economic assessment to better understand their relationship with the Port and how they plan to use its facilities in the future.

1. PoA’s importance in the economy of the region cannot be overstated.

2. Need for reliability for both liquid bulk and cargo operations is a key area of interest for all users.

3. There are no economically viable alternatives to PoA from both a maritime infrastructure and inland connectivity standpoint.
Vessel Operations at Port of Alaska

POA supports several vessel types including container, specialized roll on roll off, cruise, oil tankers and bulk cement.

PORT OF ALASKA PRIMARY VESSEL TYPES

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Vessel Type</th>
<th>Vessel Calls (2023)</th>
<th>Operations</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2</td>
<td>Container</td>
<td>99</td>
<td>Containers lifted on and off vessel by STS cranes</td>
<td>Vessel size will increase</td>
</tr>
<tr>
<td>T3</td>
<td>RoRo</td>
<td>87</td>
<td>Trailers, containers, vehicles and equipment driven on and off vessel using special ramps</td>
<td>RoRo specially designed for Port of Alaska</td>
</tr>
<tr>
<td>T2 / T3</td>
<td>Cruise</td>
<td>3</td>
<td>Passengers disembark at cargo terminals</td>
<td>Expected to visit Anchorage more</td>
</tr>
<tr>
<td>PCT / POL2</td>
<td>Liquid Bulk Tanker</td>
<td>37</td>
<td>Unloading at POL2</td>
<td>Facing depth restrictions at the Port</td>
</tr>
<tr>
<td>PCT</td>
<td>Dry Bulk / Cement</td>
<td>5</td>
<td>Unloading at new Petroleum Cement Terminal</td>
<td>Spending a long time at Port, will eventually share the terminal with liquid bulk tankers</td>
</tr>
<tr>
<td>Military</td>
<td>Mixed Use / LMSR</td>
<td>4</td>
<td>Roll-On Roll-Off &amp; Lift-On Lift-Off</td>
<td>Can rely at times on Port cranes to service as tidal swings limit utility of ramps</td>
</tr>
</tbody>
</table>
Volume Outlook

Building for the base

Forecast

4-to-6 million tons

Tons (Million)

2007 2010 2013 2016 2019 2022 2025 2028 2031 2034 2037 2040 2043 2046 2049

- Total Petroleum Products
- Vans/Flats/Containers
- Dry Bulk
- Other Freight

2007: 4-to-6 million tons

2049: 8-to-10 million tons
Thank You