The Port Master Plan Is and Is Not…

**A Framework**
Provides a framework of potential options and a guide for future land use decisions

**Near and Long**
Provides near and long-term strategies to ensure delivery of needed infrastructure

**Consistent**
Ensures future development is consistent with goals and policies

**Holistic**
Helps integrate Port facilities into a transportation network

**Commercial**
Facilitates commerce and business growth

**Economic**
Supports long-term economic benefits to the region, including jobs and tax revenue

**Change-Based**
Considers changes in shipping, population, environmental impacts and technological advances

**Flexible**
Adapts to changes in the baseline assumptions and provides flexibility over time

**Definitive**
Not absolute in its recommendations

**Final**
Not the final plan for all development over the next 30 years

…and implementation will require design, permits, outreach and authorization
### Key Statistics: Port Department Facilities

<table>
<thead>
<tr>
<th>Facility</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acres</td>
<td>3,000+</td>
</tr>
<tr>
<td>Port Newark</td>
<td>846</td>
</tr>
<tr>
<td>Elizabeth PAMT</td>
<td>1,124</td>
</tr>
<tr>
<td>Howland Hook MT</td>
<td>279</td>
</tr>
<tr>
<td>Port Jersey PAMT</td>
<td>419</td>
</tr>
<tr>
<td>Brooklyn PAMT</td>
<td>151</td>
</tr>
</tbody>
</table>

| Tenants | ~60 |

### Current State of the Port

#### Cargo Volumes (2018)

- **7.2 million** Containers (TEU)
- **645,760** By Rail (Lifts)
- **3.6 million** Dry Bulk (Tons)
- **573,035** Autos (Units)
- **856,271** Cruise (Passengers)
PONYNJ Benefits

LOCATION
- Located in the middle of the largest consumer markets in one of the most affluent parts of the world
- Greatest port reach on the East Coast. 45 million people within 4 hours’ drive, 1/3 of the nation’s GDP
- Access to 125 million people within a 36-hour drive

CONNECTIVITY AND SUPPORTING INDUSTRIES
- Direct access to major road and rail networks.
- Over 1 billion square feet of warehouses and distribution centers within 50 miles of port.
- More first port of call services than any other East Coast port

INVESTMENT
- Significant private and public sector investment to support future growth
Port Master Plan Process

1. Gather Key Data, Project Goals and Visions
2. Analyze Market, Land Use and Capacity
3. Develop and Assess Options
4. Write Plan, Review Feedback and Present Final

<table>
<thead>
<tr>
<th>4Q/2016 – 2Q/2017</th>
<th>3Q/2017</th>
<th>4Q/2017</th>
<th>1Q/2018 - 2Q/2019</th>
</tr>
</thead>
</table>

Stakeholder Outreach

PANYNJ Workshops
Port Master Plan 2050 Vision

Create a flexible roadmap to develop a competitive, financially successful port, maximizing regional jobs and economic impacts, and minimizing environmental effects

- **Sustainable and Resilient**
  - ...leading by example, the Port Authority will continue to drive down carbon emissions, minimize noise, congestion and environmental impacts at its facilities and throughout the Port of New York and New Jersey.

- **An Economic Generator**
  - ...with increased jobs on the Port and in the region, enabling small and large businesses to thrive and providing opportunities for training, job creation and entrepreneurship.

- **A Platform for Partnership**
  - ...with communities, customers, operators, shippers, logistics providers, and potential investors all actively involved in decision-making and implementation.

- **Shaping Future Growth**
  - ...accommodating the future needs of shippers, rationalizing land uses, consolidating containers, autos, and bulk, and partnering to improve regional rail, road, and off-site facilities.

- **State of the Art**
  - ...with technology, safety and data management at the heart of improved operations.
Port Master Plan Engagement and Outreach

STAKEHOLDERS INCLUDED

- NY & NJ Elected Officials
- Transportation Authorities and Planning Agencies
- Commercial Real Estate & Property Management Groups
- Technology Leaders
- Academic Institutions
- Environmental Justice Groups
- Host Communities
- Current Tenants
- Rail and Terminal Operators
- Federal, State, and Local Agencies
- Harbor Pilots
- Shipping and Labor Management Associations
- Labor
- Trucking and Logistics Companies

45+ Total Presentations to Regional Stakeholders and Community Groups

50+ Planning Workshops, Interviews, and Activities

400+ Stakeholders across New York & New Jersey
Containers

Trends and Emerging Issues

• Container volumes are projected to double or triple by 2050
• Ocean carrier consolidation and alliances
• Vessel size increasing rapidly
• Use of real-time decision making and other technologies

Market Forecast (TEU)

Estimated Leasehold Acreage

<table>
<thead>
<tr>
<th>Present</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acres</td>
<td>1,649</td>
</tr>
<tr>
<td></td>
<td>1,779 – 1,815</td>
</tr>
</tbody>
</table>

Design Vessel

<table>
<thead>
<tr>
<th>Capacity</th>
<th>18,000 TEU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>ULCV</td>
</tr>
<tr>
<td>Length (LOA)</td>
<td>399 m (1,310 ft)</td>
</tr>
<tr>
<td>Beam (max)</td>
<td>54 m (177 ft)</td>
</tr>
<tr>
<td>Draft</td>
<td>16 m (52 ft)</td>
</tr>
<tr>
<td>Air Draft (est.)</td>
<td>59 m (194 ft)</td>
</tr>
</tbody>
</table>
Autos

Trends and Emerging Issues

• Auto volumes remain strong
• Mobility as an on-demand service
• Autonomous vehicles
• Electric and hybrid vehicles

Market Forecast (CEU)

Estimated Leasehold Acreage

<table>
<thead>
<tr>
<th></th>
<th>Present</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acres</td>
<td>291</td>
<td>390</td>
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</table>

Design Vessel

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>9,000–10,000 CEU</td>
</tr>
<tr>
<td>Class</td>
<td>PCTC</td>
</tr>
<tr>
<td>Length (LOA)</td>
<td>265 m (869 ft)</td>
</tr>
<tr>
<td>Beam (max)</td>
<td>42 m (138 ft)</td>
</tr>
<tr>
<td>Draft</td>
<td>13 m (43 ft)</td>
</tr>
<tr>
<td>Air Draft (est.)</td>
<td>52 m (171 ft)</td>
</tr>
</tbody>
</table>
Bulk

Trends and Emerging Issues

• Bulk volumes remain strong
• Offshore wind and other renewable energy sources
• LNG bunkering
• Additive manufacturing (i.e. 3D printing)
• Beneficial use of recycled commodities

Market Forecast (Tons)

<table>
<thead>
<tr>
<th>Years</th>
<th>0</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millions</td>
<td>0.0</td>
<td>2.0</td>
<td>4.0</td>
<td>6.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Low
- High

Estimated Leasehold Acreage

<table>
<thead>
<tr>
<th>Present</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acres</td>
<td>160</td>
</tr>
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</table>

Design Vessel

<table>
<thead>
<tr>
<th>Capacity</th>
<th>80,000 DWT</th>
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</thead>
<tbody>
<tr>
<td>Class</td>
<td>Panamax</td>
</tr>
<tr>
<td>Length (LOA)</td>
<td>290 m (950 ft)</td>
</tr>
<tr>
<td>Beam (max)</td>
<td>32.3 m (106 ft)</td>
</tr>
<tr>
<td>Draft</td>
<td>14.6 m (47.9 ft)</td>
</tr>
<tr>
<td>Air Draft (est.)</td>
<td>40 m (132 ft)</td>
</tr>
</tbody>
</table>
### Cruise

#### Trends and Emerging Issues

- Consistent growth in passenger volumes
- Increasing vessel size
- NY/NJ as port of call

#### Design Vessel

<table>
<thead>
<tr>
<th>Capacity</th>
<th>5,400 pax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Oasis Class</td>
</tr>
<tr>
<td>Length (LOA)</td>
<td>362 m (1,188 ft)</td>
</tr>
<tr>
<td>Beam (max)</td>
<td>65.5 m (215 ft)</td>
</tr>
<tr>
<td>Draft</td>
<td>9.1 m (30 ft)</td>
</tr>
<tr>
<td>Air Draft (est.)</td>
<td>57 m (187 ft)</td>
</tr>
</tbody>
</table>

#### Estimated Leasehold Acreage

<table>
<thead>
<tr>
<th>Present</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acres</td>
<td>No change</td>
</tr>
</tbody>
</table>

### Market Forecast (Pax)

- **Low**
- **High**

<table>
<thead>
<tr>
<th>Years</th>
<th>0</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millions</td>
<td>0.0</td>
<td>1.0</td>
<td>2.0</td>
<td>3.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Intermodal Rail
Trends and Emerging Issues

- Potential demand for inland port facilities
- Need for additional off-terminal facilities (including storage tracks)
- Discretionary market opportunity

Market Forecast (Lifts)

Estimated Leasehold Acreage

<table>
<thead>
<tr>
<th>Years</th>
<th>Millions</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>5</td>
<td>1.0</td>
</tr>
<tr>
<td>10</td>
<td>2.0</td>
</tr>
<tr>
<td>15</td>
<td>3.0</td>
</tr>
<tr>
<td>20</td>
<td>4.0</td>
</tr>
<tr>
<td>25</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

- Low
- High

Estimated Leasehold Acreage

<table>
<thead>
<tr>
<th>Acres</th>
<th>Present</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(included in container leaseholds)</td>
<td></td>
</tr>
</tbody>
</table>

Design Vessel

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Class</th>
<th>Length (LOA)</th>
<th>Beam (max)</th>
<th>Draft</th>
<th>Air Draft (est.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>
Other Emerging Trends and Issues

**Trucking and Logistics**
- Truck data capture
- Shared chassis pools and empty container depots
- Autonomous trucking and platooning
- Driver supply
- Intelligent transportation systems (ITS)
- Digitization of information streams

**Infrastructure and Terminals**
- Kill Van Kull channel becomes a greater constraint without mitigation
- Modal split has opportunity to increase, including rail and marine highway (barge)
- Tenants want to invest in capacity to support growth
Current Container Capacity of Port

- Elizabeth + Newark: 75-80%
- HOWLAND HOOK MARINE TERMINAL: ~10%
- STATEN ISLAND: 80-90%
- BROOKLYN MARINE TERMINAL: <5%
- BROOKLYN: 100%
Current Container Capacity vs. Forecast Demand

- **EXISTING BASELINE CAPACITY**: 12M TEU
- **GROWTH BASED ON LOCAL MARKET FOCUS**
- **GROWTH BASED ON DISCRETIONARY FOCUS**: 17M TEU
- **FORECAST DEMAND**
Forecast of PONYNJ Container Fleet Vessel Size

*Ever-Larger Vessels → Long-Term Decrease in Vessel Calls → Less Pollution*

- CMA CGM T. Roosevelt (14,414 TEU)
- Anticipated to peak at 18,000 TEU
Port Truck Distribution

Primary destinations (first stop) for Port truck traffic (top 4 counties account for almost 75% of trucks)

Interstate highways, showing major routes for Port trucks and peak traffic congestion
Port Truck Distribution

Primary destinations (first stop) for Port truck traffic (top 4 counties account for almost 75% of trucks)

Interstate highways, showing major routes for Port trucks and peak traffic congestion

Key east-west corridors: I-78 and I-80 (along with I-280 and NJ 24)

Key north-south corridors: I-95, I-287 and NJ 17
Phase 1
The First
15 Years
**Phase 1**

The First 15 Years Port-Wide

**GOALS**
- Support growth of existing tenants
- Allow PANYNJ to meet sustainability/resiliency goals
- Lay the foundation for future investments

**ACTIONS**
- Continue to set green goals and policies aimed at driving down port-related impacts
- Establish working group, planning forum and policies for inclusion in projects, processes and leases
- Scope NYNJ waterways capacity study project, South Brooklyn studies, intermodal initiatives
- Establish consistent stakeholder outreach procedure
- Develop scope of work for Port Ivory and Port Jersey South (former MOTBY) development projects
- Conduct detailed future capacity analysis of New York and New Jersey waterways
- Collaboratively plan for the future – expansion options at Newark/Elizabeth and/or Port Jersey
- Increase intermodal (discretionary) rail cargo volume (planning marketing)
Phase 1 Facilities

PORT NEWARK AND ELIZABETH PAMT

- Focus investment on road- and rail-enabling projects
- Implement alternate power source program over time
- Seek to work with Cities of Elizabeth and Newark to envision greater public access
Phase 1: Port Newark/Elizabeth PAMT

**IMPLEMENT**
An alternate power source program converting to low-emissions operations and equipment

**DEVELOP**
A site-wide communications and electrical platform that is forward thinking and resilient

**IMPLEMENT**
Roadside improvement projects including Port Street realignment, data capture utilizing E-Z Pass or GPS reader technology and chassis and empty container storage location studies

**IMPROVE**
Connectivity with I-95 and I-78

**INCREASE**
Intermodal rail volume to ensure ExpressRail facilities are operating efficiently and increase container on barge usage intra-harbor and regionally
Next Steps: Port Newark & Elizabeth PAMT

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>TIMELINE (YEARS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Improve circulation along common transportation spine and local port streets</td>
</tr>
<tr>
<td>02</td>
<td>Establish upgraded power and communications network (study phase, implementation to follow)</td>
</tr>
<tr>
<td>03</td>
<td>Establish community access &amp; education programs</td>
</tr>
<tr>
<td>04</td>
<td>Continue move to low emission operations</td>
</tr>
</tbody>
</table>
Phase 1 Facilities

PORT JERSEY PAMT

• Continue to support establishment of ferry terminal
• Investigate container expansion alternatives
Phase 1: Port Jersey PAMT

**COMPLETION**

Of the 14A interchange and enhanced separation of port and public vehicles

**SUPPORT**

Progressive expansion that could eventually lead to an expanded ICTF Greenville Yard network that provides high-efficiency (i.e. longer working track) on-dock rail capability

**INVESTIGATE**

Expansion alternatives for future additional container capacity north of the existing facility

**ACQUIRE**

Land if needed to enable the envisaged plan and seek potential partnering for development that will improve circulation and ease congestion
Phase 1: Port Jersey PAMT

___

**DEVELOP**

A coordinated distribution and warehousing hub in conjunction with adjacent property owners along Port Jersey South (former MOTBY)

___

**CONTINUE**

To support the establishment of a ferry terminal

___

**ENHANCE**

Provisions for a future second cruise berth
Next Steps: Port Jersey

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>TIMELINE (YEARS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Establish ferry terminal service</td>
</tr>
<tr>
<td>02</td>
<td>Strategic land acquisition</td>
</tr>
<tr>
<td>03</td>
<td>Assist development of Port Jersey South</td>
</tr>
<tr>
<td>04</td>
<td>Expand GCT Bayonne</td>
</tr>
<tr>
<td>05</td>
<td>Plan for future capacity</td>
</tr>
</tbody>
</table>
Phase 1
Facilities

HOWLAND HOOK MARINE TERMINAL

- Support enhanced container-handling capacity
- Potential to develop Port Ivory site as a facility for logistics and distribution or to support offshore wind and other renewable energies
Phase 1: Howland Hook Marine Terminal

**SUPPORT**
Enhanced container-handling capability

**LEVERAGE**
Logistics and distribution center developments through greater connectivity between the facilities, marine terminal and local road & interstate networks

**DEVELOP**
Port Ivory into a logistics facility linked to the existing ExpressRail network with a realigned Western Avenue (Parcel B)

**BROADEN**
Potential cargoes and take advantage of emerging opportunities in offshore wind and renewable energy support on Port Ivory (Parcel C)
Next Steps: Howland Hook

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>TIMELINE (YEARS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Support HHMT growth, including review of current Howland Hook Toll Reimbursement Program</td>
</tr>
<tr>
<td>02</td>
<td>Implement coordinated marketing strategy</td>
</tr>
<tr>
<td>03</td>
<td>Develop Port Ivory &amp; realign Western Ave</td>
</tr>
</tbody>
</table>
Phase 1 Facilities

BROOKLYN PAMT AND WATERFRONT FACILITIES

- Continue evaluating alternatives to maintain and grow East-of-Hudson marine cargo operations
  - Partnering and collaboration among numerous public and private stakeholders
Phase 1: Brooklyn PAMT and Waterfront Facilities

---

**EVALUATE**

Alternatives to maintain and grow East-of-Hudson marine cargo operations

---

**ACTIONS**

Arising from the study of alternatives are dependent on timing, and partnering/collaboration among public and private stakeholders

---

**CONTINUATION**

Of ongoing Red Hook marine activity at Brooklyn Port Authority Marine Terminal (BPAMT) will necessitate additional investment in infrastructure improvements and exploration of ways to improve capacity to grow

---

**DEVELOPMENT**

At SBMT could enable establishment of a state-of-the art marine facility with opportunities for expansion to meet the future needs of the East-of-Hudson market
Next Steps: Brooklyn PAMT

<table>
<thead>
<tr>
<th>PROJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
</tr>
<tr>
<td>02</td>
</tr>
</tbody>
</table>

**TIMELINE (YEARS)**

<table>
<thead>
<tr>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5+</td>
</tr>
</tbody>
</table>
Phase 2
15-30 Years
Port Master Plan 2050 Results

When successfully implemented, the PONYNJ will be a competitive and financially successful port that is environmentally sustainable and provides the maximum benefit for regional jobs and economic impact.

- **Sustainable and Resilient**
  - greenhouse gas emissions reduced by 35% by 2025 and 80% by 2050
  - alternative-fuel vehicles deployed
  - alternative energy sources harnessed
  - new construction includes resiliency measures
  - increasing modal split

- **An Economic Generator**
  - 80,000 new jobs created regionally
  - $25 billion in incremental economic activity
  - implements 30 major projects and develops unused space
  - workforce development and education opportunities

- **A Platform for Partnership**
  - community engagement
  - industry forums and summits
  - public access

- **Shaping Future Growth**
  - proactive rather than reactive
  - partnering with state and regional planning organizations

- **State of the Art**
  - leveraging technology developments to:
    - improve safety
    - streamline infrastructure operations and maintenance (O&M)
    - increase efficiency across the port and the region

When successfully implemented, the PONYNJ will be a competitive and financially successful port that is environmentally sustainable and provides the maximum benefit for regional jobs and economic impact.
Thank You

Beth Rooney
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Charlie Bontempo
Senior Program Manager, Port Department
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