Port Planning and Investment Toolkit
Port Planning and Investment Toolkit (PPIT)

- Develop capital plans that clearly identify future needs;
- Determine the most cost-effective, sustainable and efficient solutions to port challenges;
- Position port projects for federal funding such as TIGER, FASTLANE and MPO grants; and
- Get port infrastructure projects into MPO and state transportation programs to qualify for other government funding;
- Obtain private sector funding to support their infrastructure projects.

The possible applications of the Toolkit are broad!
Initial Pool of Volunteers
- Led by:
  - Jean Godwin – AAPA
  - Lauren Brand – MARAD
  - Stephen Shafer - MARAD
- 64 Port Staff & Consultant Volunteers
- Port Staff, Consultants, PPMs and PPM Candidates

Table of Contents Working Group
- 14 Volunteers
- Multiple areas of expertise

Finance Module Working Group
- 16 Volunteers
- Primarily finance, legal and accounting experts

Planning & Feasibility Modules Working Group
- 9 Volunteers
- Primarily engineering/planning, marketing and economic experts
The Toolkit can be used to lead a port through a logical and thorough step-by-step process to make sound investment decisions.

The key is that planning, feasibility and finance decisions can be made based on certain thought processes, and adapted to specific and changing circumstances of each port project under consideration.
The Toolkit contains numerous tables, graphics, and examples to help users quickly identify information relevant to their specific situation.
Planning Module 1

- *Planning Module* clearly defines the planning road map required for successful project financing and funding.

- Guides users through a common set of planning concepts and methods to maintain a highest and best use strategy for port resources with regard to market, community, environment, land-use, economic, and financial considerations.
Planning Module 1 - Initiation

- Every project begins with an initiation effort that involves developing a thorough understanding of the port’s needs that led to the project
  - Data Collection
  - Stakeholder Engagement
  - Project Goals and Objectives

<table>
<thead>
<tr>
<th>Vision</th>
<th>Mission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-term intended future direction</td>
<td>General purpose and enduring focus</td>
</tr>
</tbody>
</table>

- Goals
  - Statements of desired achievements

- Objectives
  - Specific measurable outcomes that fulfill goals

- Strategies
  - Focused initiatives to meet objectives
Identify and quantify the Port’s needs by comparing its current capabilities to its potential opportunities and requirements of stakeholders and the community.

<table>
<thead>
<tr>
<th>Project Drivers</th>
<th>Market Dynamics</th>
<th>Market Forecast</th>
<th>Strategic Direction</th>
<th>Government/Political Commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td>Deeper Berths, Larger Cranes</td>
<td>Densification, New Terminal</td>
<td>Lower Emissions Equipment</td>
<td>Electrification of Cranes</td>
</tr>
<tr>
<td><strong>Operations</strong></td>
<td>Larger Stevedore Gang Size</td>
<td>Longer Gate Hours</td>
<td>Automated Storage</td>
<td>Safer Working Environment</td>
</tr>
<tr>
<td><strong>External Influences</strong></td>
<td>New Foreign Trade Zone</td>
<td>Tax Increases</td>
<td>More Public Interaction</td>
<td>Stricter Trucker Credentials</td>
</tr>
<tr>
<td><strong>Volumes/Trade Flows</strong></td>
<td>Seasonal Peaking</td>
<td>Increasing Volumes</td>
<td>Broader Markets</td>
<td>Shifting More Freight to Rail</td>
</tr>
<tr>
<td><strong>Capacity</strong></td>
<td>Labor Negotiations</td>
<td>Higher Capacity</td>
<td>Service Enhancement</td>
<td>Goods Movement Services</td>
</tr>
<tr>
<td><strong>Impacts</strong></td>
<td>Productivity Enhancement</td>
<td>Revenue Enhancement</td>
<td>More Jobs</td>
<td>Waterfront Access</td>
</tr>
<tr>
<td><strong>Competitive Position</strong></td>
<td>Deeper Channel</td>
<td>Distribution Center</td>
<td>Market Penetration</td>
<td>Financial Stabilization</td>
</tr>
</tbody>
</table>
Planning Module 1 - Plan

- Plan Context
- Plan Development and Analysis
  - Plan Creation
  - Analysis of Capacities and Impacts
  - Plan Review
- Plan Refinement
Feasibility Module 2

- **Feasibility Module** describes how ports create financially feasible project plans that take into account all aspects of cost, risk, and reward.
- Identifies the metrics for the physical, commercial and financial components of project success and how the metrics can be measured and evaluated.
- Focuses on performing feasibility analyses specific to a port’s individual capabilities, markets, and competitive relationships.
Feasibility Module 2

- **Physical Feasibility**: Will the project be able to physically support the forecasted demand?
- **Financial Feasibility**: Will the project generate sufficient net cash flow to cover debt service and provide an acceptable return of and return on the Port’s invested capital?
- **Market Feasibility**: Will the project improve the port’s competitive position and attract the forecasted demand?
- **Risk**: How will potential variances in projected conditions affect these feasibility elements?

- A feasibility analysis of a project plan may lead to iterative adjustments to a project plan.
Feasibility Module 2 - Measure

- Business Strategy (asset development and revenue/cost schedules)
- Risk Assessment (register and mitigation strategy)
- Financial Performance (rate of return/NPV)
- Economic Impact (employment, benefit cost, local/state/national impacts)
Quantitative and qualitative measures are used to evaluate project feasibility and to ultimately select a recommended project plan.

Example criteria include:
- Capital expenditures
- Operating expenses
- Capacity and revenue potential
- Life-cycle cost per unit handled
- Vessel service performance
- Landside transport service performance
- Environmental impact
- Project risk

### Performance Element Scores

<table>
<thead>
<tr>
<th>Performance Element</th>
<th>Measure</th>
<th>Weight 1 to 10</th>
<th>Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational Performance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity at Site Buildout</td>
<td>M TEU/Year</td>
<td>8.4</td>
<td>271.7</td>
</tr>
<tr>
<td>Berth Productivity at Buildout</td>
<td>Net Lifts/Hr</td>
<td>9.0</td>
<td>90</td>
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<tr>
<td>Gate Truck Cycle Time</td>
<td>Min/Truck</td>
<td>7.3</td>
<td>60</td>
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<tr>
<td>Intermodal Service</td>
<td>Qualitative</td>
<td>6.1</td>
<td>38</td>
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<tr>
<td>Development</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suitability for Phased Implementation</td>
<td>Qualitative</td>
<td>6.9</td>
<td>62</td>
</tr>
<tr>
<td>Development Complexity</td>
<td>Qualitative</td>
<td>6.9</td>
<td>60</td>
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<tr>
<td>Risk of Delay: Infrastructure</td>
<td>Qualitative</td>
<td>7.6</td>
<td>66</td>
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<tr>
<td>Risk of Delay: Information Systems</td>
<td>Qualitative</td>
<td>8.7</td>
<td>81</td>
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<tr>
<td>Economics</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Net Present Value of Costs ($M)</td>
<td>NPV</td>
<td>8.3</td>
<td>77</td>
</tr>
<tr>
<td>Initial (5-year) Capital Outlay ($M)</td>
<td>$(2017-2021)</td>
<td>8.3</td>
<td>83</td>
</tr>
<tr>
<td>Unit Operating Cost</td>
<td>$/Vessel Lift</td>
<td>7.9</td>
<td>52</td>
</tr>
<tr>
<td>Operating Cost Risk</td>
<td>Qualitative</td>
<td>8.3</td>
<td>75</td>
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<tr>
<td>Workforce</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worker Safety</td>
<td>Qualitative</td>
<td>8.0</td>
<td>51</td>
</tr>
<tr>
<td>Skilled Workforce Availability</td>
<td>Qualitative</td>
<td>7.1</td>
<td>59</td>
</tr>
<tr>
<td>Optimization of Workforce</td>
<td>FTE/Lift</td>
<td>7.5</td>
<td>43</td>
</tr>
<tr>
<td>Environmental Impact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon Fuel Consumption</td>
<td>Gal/Lift</td>
<td>5.4</td>
<td>31</td>
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<tr>
<td>Noise Pollution</td>
<td>Qualitative</td>
<td>4.7</td>
<td>25</td>
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<tr>
<td>Light Pollution</td>
<td>Qualitative</td>
<td>4.2</td>
<td>23</td>
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<tr>
<td>Total Energy Consumption</td>
<td>GJ/Year</td>
<td>5.7</td>
<td>57</td>
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<tr>
<td>Land Utilization</td>
<td>TEU/Acre/Year</td>
<td>7.7</td>
<td>77</td>
</tr>
<tr>
<td>Commercial</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market Competitiveness</td>
<td>Qualitative</td>
<td>8.3</td>
<td>56</td>
</tr>
<tr>
<td>Terminal Modernization/Innovation</td>
<td>Qualitative</td>
<td>6.4</td>
<td>36</td>
</tr>
<tr>
<td>Security</td>
<td>Qualitative</td>
<td>6.2</td>
<td>46</td>
</tr>
<tr>
<td>Port Wide Strategy</td>
<td>Qualitative</td>
<td>8.0</td>
<td>61</td>
</tr>
</tbody>
</table>
Finance Module 3

- **Finance Module** provides a framework to help port professionals navigate a wide range of capital investment decisions, from simple to complex.

- Used for any number of capital investment activities including, but not limited to:
  - Asset-Backed and Lease Financing
  - Weighing Traditional vs. Alternative Financing
  - Project Finance Structuring
  - Evaluation and Implementation of Public-Private Partnerships
  - Procuring Government Loans and Grants
Finance Module 3 - Strategize

- Finance Module can be used to assist with the full range of finance strategies that are available to ports
- Doesn’t Emphasize One Strategy Over Another

Finance Strategies

Public

- Pledged Security
- Financing Instruments
- Public Taxes
- Public Tax-Exempt Debt
- Port Facility Tariffs & User Fees
- Net Operating Revenue PABs

Private

- Facility Lease Revenues
- Equipment Leases
- Tenant Min Annual Guarantees
- Special Purpose Facility Bonds
- Tenant Balance Sheet
- Taxable Debt/Investor Equity
Aside from tax-backed bonds, there are four main security structures that a public port can use to issue operating revenue backed debt:

- Port Net Operating Revenue Bonds
- Port Asset Backed Debt
- Port Special Purpose Facility Bonds, backed by lessee/concessionaire revenue and parent guarantee
- Port Special Purpose Facility Bonds, backed by the net operating revenue of a single terminal concession, i.e. apart from the Port’s “System”

The chosen debt security structure is port and project specific, taking into consideration the unique operating and business characteristics of any given set of port facilities, lease arrangements, or P3.
The basic framework for project finance includes public-private partnerships.

*Finance Module* additionally provides a framework for modelling and evaluating P3s.

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**Finance Module 3 - Incorporates P3s**

**The P3 Process**

1. Analysis and Valuation
2. Transaction Development
3. Transaction Execution

**Modeling Approach**

**Multiple Capital Elements & Operating Strategies**

- 1. Public Financing
- 2. Hybrid P3 Approaches
- 3. P3 Concession

**Multiple Financial Approaches**

- Multiple Container Volume/Lease Scenarios

**Project Delivery Models**

- Public
- Private
- Privatized

**Contracts**

- Design-Bid-Build
- PM/CM at Risk
- Design-Build

**Concessions**

- Design-Build-Finance
- Design-Build-Operate-Maintain
- Design-Build-Finance-Operate
- Asset sales
Grant funding continues to be a key factor for ports in meeting capital investment requirements.

Government loan programs, such as the USDOT TIFIA program and various SIB programs, have become very important tools for U.S. infrastructure financing.

*Finance Module* provides an approach to the funding process using various positioning strategies to effectively compete for limited government grants and loans.
Appendices

- Project Profiles/Case Studies
- Toolkit Checklist
- Sample Financial Model
- Helpful Resources
  - Manuals and Guides
  - RFQs and Scopes of Service
- Strategic/Master Plans
- Feasibility Studies
- EIS/EIR Documents
- Glossary of Terms
The Toolkit includes project profiles representing a range of port projects which have utilized various funding techniques to move those projects towards successful completion.

- **New Container Terminal for a Dedicated Carrier**
- Single Marine Terminal Concession by Third Party Operator
- Crane Lease Financing
- CIP Funding with Port System Revenue Bonds and Grants
- Marine Terminal Expansion using State Port Fund Bonds
- Shorepower Installation at Cruise Ship Terminals
- Construction of Inset River Harbor
The PPIT Checklist is for both experienced and inexperienced port industry professionals alike for use as a general guide in making port capital investment decisions:

- The Checklist aims to enable port professionals to understand and navigate the capital funding process at a broad-based level.

References in the Checklist are included to enable users to quickly locate sections of the report where further background discussion on a particular topic can be found.
Sample Financial Model

- Both port system pro forma cash flow models and project finance models are user and project specific
  - Included with the Toolkit is a sample financial model for illustrative purposes

- For port system pro forma models, existing system net revenues can be augmented by off balance sheet project revenue streams, both of which factor into the port’s system debt service coverage levels and fund balances

- For the project finance components of a model, as project revenues flow through the various operating, debt, and reserve requirements, the model should solve for the cash flows available for private partner payments, including the Internal Rate of Return
The processes outlined in the Toolkit are the very steps that have been undertaken in port project financings
– The Toolkit steps have been successfully used to attract billions of investment dollars for public port and transportation enterprises…
– …and it’s all available on the AAPA website at www.aapa-ports.org/toolkit
Questions?