6. Financial Model

6.1. Financial Model Overview

This financial modelling module focuses on the components of quality quantitative analyses to support investment decisions and ultimately any capital financing. Using the output and results of all the prior modules, a comprehensive financial model should be developed to evaluate each project and financial alternative of interest to a port. A financial model should be structured to assess the financial impacts of alternative operating, business and financial structures and determine the optimal structure employing Value for Money analyses, as applicable. The financial analysis should incorporate the findings from the credit profile in order to (1) determine the interest rate profile based on current credit spreads, and (2) determine the level of equity and risk a potential private partner could be expected to commit in order to achieve a desired return on investment. The model should be spreadsheet-based and flexible so that risk sensitivities can be evaluated and their impact on outcomes measured.

The project financial model should be integrated with a port pro forma cash flow model. The port model should incorporate all projected operating revenues, operating expenses, renewal & rehabilitation, and outstanding debt service. It should have the flexibility to consider incremental revenues, operating & maintenance costs, and debt service associated with the project. Just as important, it should have the flexibility to subtract revenues, expenses, and debt service, as applicable, should the project be pursued as a stand-alone P3 concession. While the economics of a P3 concession or other innovative finance approach may look attractive, the port has to guard against adverse consequences to its ongoing fiscal position. The dual perspective of a system and project model can help to identify such consequences of a project such that a port can adjust its strategy accordingly.

6.2. Evaluating Project Finance & Delivery Alternatives

To evaluate project opportunities and financial viability, it is important to identify key project inputs and quantified risk assumptions for projects across various public and P3 delivery alternatives. Thereafter, a detailed project finance & cash flow model (more comprehensive than only using a net present value analysis) can be developed using the approach in Exhibit 6.2 including:

- Multiple types of debt can be incorporated
- More than one security lien can be modelled
- Nuances such as debt service coverage ratios, debt to equity ratios, and reserve/liquidity balances must be maintained
- Risk adjustments can be “stressed” against the base case to determine the severity and/or acceptability of impacts
- Capability to analyze different objectives such as more upfront capital versus increased long-term revenue sharing
As applicable, the model should incorporate various debt financing strategies and products that could be used to make the project financially feasible. Such products might include, but are not limited to, various forms of private activity bonds, leasing programs, tax/fee revenue financing, State Infrastructure Bank loans, Transportation Infrastructure Finance and Innovation Act (“TIFIA”) credit, and Railroad Rehabilitation & Improvement Financing (“RRIF”) program loans, among others. The use of such strategies should be developed through close communication with port staff and key decision makers to assure that all issues considered important are properly addressed. The goal of the project financial modelling task is to create a sustainable plan of finance that minimizes “public” funding and results in an overall cost of funds that works for the project.

6.3. Approach for Development of a Financial Plan

Developing a project financial plan also entails conducting a review of the port’s overall financial situation and developing a strategic financial plan related to debt management and infrastructure development, including planning for P3 transactions as needed. A requisite for this task is an understanding of material project finance areas including debt structures and programs, public-private partnerships, and port project development. The plan should be developed through close communication with key port stakeholders to assure that it addresses all issues considered important. Exhibit 6.3.1 provides a general outline for developing a financial plan. This approach will likely build on the port’s success in developing prior strategic financial plans. A preliminary list of major topics for the plan include:

- Credit rating outlook and strategies
- Non-traditional financing approaches including bank debt, Federal and State programs, private equity
- Use of Public-Private Partnerships for construction, financing, and/or operation
- Debt profile including re-structuring/refunding opportunities for existing debt
- Detailed capital project and cash flow modeling, which should incorporate capital costs, projected available revenues and sources, estimated operating & maintenance costs and the timing of potential debt issuance
- Asset-liability management analysis, including potential use of short-term variable rate financing tools
- Investment strategies

Generally for project financings it is necessary to prepare long-term (30+ year) capital planning models for transportation/port organizations. The financial model is used to identify alternatives to meet capital requirements while remaining within certain financial market limitations. An iterative modeling process (Exhibit 6.3.2) allows financial planning to impact project requirements within stated program policy constraints.
The overall result should be a comprehensive analysis and corresponding set of recommendations that will provide a framework for the port’s financial management and financial needs for all its projects. The financial recommendations should incorporate and be consistent with the overall strategic direction of the port as well as the development of debt, investment and reserve policies. Financial plans are often used to support credit ratings as well as to support Federal and State grant and loan applications. New or greenfield project financing is very different from tax/fee-backed funding and even from an existing system net revenue financing. An investment-grade plan of finance requires a different approach than traditional municipal bonding programs. It is important to understand the credit and operating profile for these different programs and projects, and to tailor a financial plan for the port’s particular needs.

A primary goal of financial planning is to become aware of all of the options at a port’s disposal and the consequences of utilizing each of them. Financial planning in and of itself is not intended to make policy choices for the port; rather the intention is to ensure that the port has the appropriate tools to craft a financing strategy that can lead to the lowest cost of borrowing consistent with broader policy and financial objectives. At the outset of the financial planning process, a port should develop a list of basic financial objectives that serves as the foundation for the entire process. Focusing the entire financial team on the port’s goals at the outset of the project facilitates moving the team forward in an organized manner.

Another primary goal of the financial planning model is to support bond issuance and other forms of financing. The financial plan helps to determine the amount, timing, and type of financing. It also helps to establish the creditworthiness of any associated bonds. The components of the financial plan listed above are key components to any credit evaluation. A well thought out financial plan indicates sound and prudent fiscal management. Solid credit ratings are essential to minimizing borrowing costs. The rating agencies place value on comprehensive financial plans and will analyze the components carefully as part of their credit assessment. Therefore, a credible financial plan can help to lower the borrowing costs by establishing a solid credit which in turn results in lower interest rates and/or lower costs of credit enhancement.

6.4. Project Finance Model

In analyzing and structuring for a variety of project finance techniques, numerous modelling constructs could potentially be developed to evaluate the viability of a new project. Regardless of the specific construct of the model, it should have the capability to perform complicated financing structures that may provide alternatives to traditional funding techniques including senior and subordinate
structures with a deeply subordinate component, variable rate debt structuring options, deferred payment structures, etc. A base feasibility model should be utilized to evaluate all aspects of a new port project. The model can be utilized at various milestones along the project timeline which can be critical given potentially lengthy development processes. At the outset, models are utilized to evaluate a project’s viability for investment interest. When the scope of a project is further developed the model can be used to fine-tune estimates of cash flow, debt coverage, and reserves/liquidity. The model also serves as an important tool for supporting the sensitivity testing and credit rating processes.

With a working group consisting of port staff and financial and technical advisors, a customized financial model should be developed for port projects. The model should be updated to reflect new construction cost and timing estimates as well as legal covenants. The financing and valuation model should be interactive with the ability to provide a range of discounted cash flow valuations as well as to quickly evaluate multiple real-world financing scenarios applicable for new project construction. The model should be anchored by a fundamental knowledge of project finance creditworthiness and the general tenants of a financing type. It should also be able to accommodate a myriad of financial structuring options including, but not limited to federal loans such as TIFIA, project revenue private activity bonds, subordination of operating costs, bank debt and private equity. Optimally managing all of these components is critical to attaining an investment-grade credit, indifferent as to whether the type of financing will be through the tax-exempt municipal market, or a form of private financing. Generally, the financing and valuation model should be based on specific project estimates. A few of these include:

- Construction costs - either in the form of the annualized year of expenditure or present value costs
- Operating revenues/expenses - can both be inputted as actual estimates or variable transaction counts and revenue/cost factors
- Maintenance capital expenditure costs - in the form of the annualized year of expenditure or present value costs
- Project reserve funds and sub-accounts - flexible input modules allow for various reserve and sub-accounts to be funded through the flow of funds based on project needs and available cash flow

Upon inputting the various project requirements into the model, an understanding of project creditworthiness and financing structures should be used to determine an appropriate range of financing costs and reserve requirements. An understanding of public debt structures and hybrid debt financing tools - such as private activity bonds and TIFIA loans – is helpful in order to create alternative, flexible financing structures based on projected cash flows and the requirements of the facility. Modeling efforts should focus on developing an efficient financing structure which involves creating a balance of innovative financing mechanisms and market acceptable conditions. When creating the project financing model, it is also important to rely on market knowledge and familiarity with credit agency analysis. Armed with this information as well as the requirements and limits of the project, the financing structure can be modeled to meet the port’s objectives. Exhibit 6.4 shows sample inputs and outputs from a project finance model.
Exhibit 6.4 Sample Inputs and Outputs from a Public-Private Partnership Model

**Public - Private Valuation Statistics**

- Investment Amount: $220,000,000
- Investment as % of Project: 29.38%
- Internal Rate of Return: 7.11%
- Net Present Value: ($0)
- Equity Fully Repaid in: 7/1/2040
- Years to Equity Repayment: 33.0 years
- Average Annual Cash Flow: $116,204,206
- Minimum Annual Cash Flow: $1,083,729

<table>
<thead>
<tr>
<th>Year</th>
<th>Pledged Revenue</th>
<th>Net Bond Debt Service</th>
<th>TIFIA Repayment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>$20,000,000</td>
<td>$30,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2008</td>
<td>$40,000,000</td>
<td>$60,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2009</td>
<td>$60,000,000</td>
<td>$80,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2010</td>
<td>$80,000,000</td>
<td>$100,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2011</td>
<td>$100,000,000</td>
<td>$120,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2012</td>
<td>$120,000,000</td>
<td>$140,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2013</td>
<td>$140,000,000</td>
<td>$160,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2014</td>
<td>$160,000,000</td>
<td>$180,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2015</td>
<td>$180,000,000</td>
<td>$200,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2016</td>
<td>$200,000,000</td>
<td>$220,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2017</td>
<td>$220,000,000</td>
<td>$240,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2018</td>
<td>$240,000,000</td>
<td>$260,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2019</td>
<td>$260,000,000</td>
<td>$280,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2020</td>
<td>$280,000,000</td>
<td>$300,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2021</td>
<td>$300,000,000</td>
<td>$320,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2022</td>
<td>$320,000,000</td>
<td>$340,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2023</td>
<td>$340,000,000</td>
<td>$360,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2024</td>
<td>$360,000,000</td>
<td>$380,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2025</td>
<td>$380,000,000</td>
<td>$400,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2026</td>
<td>$400,000,000</td>
<td>$420,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2027</td>
<td>$420,000,000</td>
<td>$440,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2028</td>
<td>$440,000,000</td>
<td>$460,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2029</td>
<td>$460,000,000</td>
<td>$480,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2030</td>
<td>$480,000,000</td>
<td>$500,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2031</td>
<td>$500,000,000</td>
<td>$520,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2032</td>
<td>$520,000,000</td>
<td>$540,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2033</td>
<td>$540,000,000</td>
<td>$560,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2034</td>
<td>$560,000,000</td>
<td>$580,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2035</td>
<td>$580,000,000</td>
<td>$600,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2036</td>
<td>$600,000,000</td>
<td>$620,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2037</td>
<td>$620,000,000</td>
<td>$640,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2038</td>
<td>$640,000,000</td>
<td>$660,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2039</td>
<td>$660,000,000</td>
<td>$680,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2040</td>
<td>$680,000,000</td>
<td>$700,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2041</td>
<td>$700,000,000</td>
<td>$720,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2042</td>
<td>$720,000,000</td>
<td>$740,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2043</td>
<td>$740,000,000</td>
<td>$760,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2044</td>
<td>$760,000,000</td>
<td>$780,000,000</td>
<td>-</td>
</tr>
<tr>
<td>2045</td>
<td>$780,000,000</td>
<td>$800,000,000</td>
<td>-</td>
</tr>
</tbody>
</table>

**Facility Inputs (Construction & Revenue Assumptions)**

- Construction Assumptions: 25% Contingency
- Construction Start Date: 12/1/2007
- Construction End Date: 12/1/2016
- Construction Length (mos): 110 months
- Facility Cost (YOE): 2,376,028,569
- TIFIA Loan Amount: $301,737,227
- Capitalized Interest Amount: $260,930,465
- TIFIA Full Repayment Date: 7/1/2044

**Public - Private Valuation Statistics**

- Investment Amount: $220,000,000
- Investment as % of Project: 29.38%
- Internal Rate of Return: 7.11%
- Net Present Value: ($0)
- Equity Fully Repaid in: 7/1/2040
- Years to Equity Repayment: 33.0 years
- Average Annual Cash Flow: $116,204,206
- Minimum Annual Cash Flow: $1,083,729

**Sources and Uses of Cash Flow**

**Cash Flow Sources**

- Gross Project Revenues: $53,599,216,248
- Construction Fund Interest Earnings: 50,891,221
- Debt Service Reserve Interest Earnings: 71,695,781
- Liquidated Debt Service Reserve Fund: 55,961,900
- Renewal and Replacement Interest Earnings: -
- Operations and Maintenance Reserve Interest Earnings: 156,208,396
- Rate Stabilization Reserve Interest Earnings: -
- General Reserve Fund Interest Earnings: -
- Equity Refinancing Proceeds: -
- Accelerated Loan Proceeds: -

**Total Cash Flow Sources**: $53,933,973,546

**Cash Flow Uses**

- Deposit to Construction Fund (Revenue & Interest): 50,891,221
- DSRF Interest to Debt Service: 127,657,681
- Renewal and Replacement Expenses: 587,202,075
- Deposit to Debt Service Reserve Fund: 33,300,792
- Deposit to Capitalized Interest Fund: -
- Deposit to Renewal and Replacement Fund: -
- Deposit to Operations and Maintenance Reserve: 155,659,688
- Operations and Maintenance Expenses: 20,214,957,860
- Deposits to Rate Stabilization Reserve Fund: -
- Deposits to General Reserve Fund: -
- Debt Service Payments: 830,250,469
- TIFIA Loan Payments: 1,144,507,989
- Equity to Construction: 220,000,000
- Income Tax Payments: 10,689,210,659
- Equity Distributions: 19,880,335,113
- Equity Refinancing Loan Payments: -
- Acceleration Loan Payments: -

**Total Cash Flow Uses**: $53,933,973,546

**Funds and Subaccounts Assumptions**

- Gross or Net Fund?: Net
- Construction Fund Earning Rate: 5.00%
- Debt Service Reserve Fund
- Include Debt Service Reserve Fund?: Yes
- Debt Service Reserve Funding Basis: Gradual MADS
- DSRF Interest Earning Rate: 5.50%
- Capitalized Interest Fund
- Fund Capitalized Interest?: Yes
- Gross or Net Fund?: Net
- Capl Fund Earning Rate: 5.00%
- Operations & Maintenance Reserve Fund
- Fund Operation & Maintenance Reserve?: Yes
- O&M Months in Reserve: 2 months
- O&M Subaccount Earning Rate: 5.00%
- Renewal and Replacement Reserve Fund
- Fund Renewal & Replacement Reserve?: No
- R&R Months in Reserve: 2 months
- R&R Subaccount Earning Rate: 5.00%
- O&M Loan / Reimbursement Subaccount
- O&M Loan Rate (if Gross Pledge): 5.00%
- Rate Stabilization Fund
- Fund Rate Stabilization Reserve?: No
- Op Revenue Months in Reserve: 2 months
- RS Subaccount Earning Rate: 5.00%
- General Reserve Fund
- Fund General Reserve?: Yes
- General Fund Earning Rate: 5.00%
- Forced Initial Deposit Amount: 0
- Forced General Deposit (% of Available): 0.00%