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USER MANUAL- PORT TARIFF ANALYSIS

CAP-HAITIEN PORT REGULATORY STRENGTHENING PROJECT

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USER MANUAL- PORT TARIFF ANALYSIS

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INTRODUCTION

Like many countries around the world, Haiti aims to transform its port sector to reflect modernized institutional arrangements in order to boost trade and grow the national economy. This transformation, commencing years ago, includes converting Haiti's National Port Authority (APN) from a direct provider of port services (an "operating port") to its ongoing evolution as a regulatory and planning body ("landlord port"). Doing so will highly increase the efficiency of ports and bring Haiti closer to industry practice—greater than 95 percent of the world's largest container ports and 80 percent of Latin American-Caribbean region ports are administered as landlord ports.

USAID is also supporting efforts to prepare Haiti to assume its regulatory role: determining port authority tariff levels, engaging private port service providers in contracts and monitoring their performance, and imposing operational rules governing the conduct of activities within the harbor and port areas. The efforts include the preparation of the Port Authority Regulation series of textbooks, tools, and regulatory procedures manuals addressing the range of regulatory activities conducted by landlord port authorities, with procedures manuals outlining the activities for implementing and/or updating regulatory practices. The Port Authority Regulation series includes the:

1. *Practical Guide and Tool for Monitoring Port Performance*
2. *Port Authority Tariff Analysis Guide and Tool*
3. *Guidebook on Port Service Contracts and Sample Annotated Templates*
4. *Guidebook for Port Operational Regulations and Sample Annotated Template*

Each Port Authority Regulation series textbook, prepared in both student and instructor editions, provides background on best practices and prescribes the frameworks governing the regulatory function at hand. Student texts are accompanied by tools, tool instruction manuals, and manuals outlining the procedures that APN and each of its regional ports should employ to ensure effective implementation of the regulatory activity. These procedures manuals will assure consistency of regulatory procedures across Haiti's entire port system.

This document composes the Tariff Analysis Tool User Instruction Manual as part of the *Port Authority Tariff Analysis Guide and Tool*. Chapter 2 describes the purpose of the Tool, Chapters 3 and 4 present the Tool's input and output components, respectively, and Chapter 5 provides instructions on the Tool's use. The user has the opportunity to apply the Tool, with Chapter 6 directing the user to input

assumptions and providing the output that the user should generate from changes the user makes in the assumptions.

I. BACKGROUND AND PURPOSE OF TARIFF ANALYSIS TOOL

The purpose of the Tariff Analysis Tool is to enable APN to test the effects of adjustments to port authority tariffs on APN cash flows. The Tool provides a systematic simulation of the cash flows generated by APN. It is composed of a dashboard that enables the Tool user to develop multiple tariff and traffic demand scenarios and change operational assumptions - representing major determinants or components of the APN's financial flows. Revenues can be modified to reflect changes in APN's port tariffs as well as other revenue sources. Similarly, the effect of changes in macroeconomic factors, demand forecasts, and capital (CAPEX) and operating (OPEX) expenses can be illustrated in the pro forma financial statements, generating income statements and cash flow statements in accord with changing assumptions.

The user can also test the effects of incorporating tariff levels of non-Haitian port authorities to gauge the impact on APN's financial performance if it matched the tariffs of benchmark ports in order to remain competitive. For example, in a scenario where non-Haitian Port A, which handles some Haitian cargoes, charges lower port authority fees than those of APN, then the user can change the Tool's spreadsheet to reflect Port A's port authority charges. This will allow the user to observe the impact on APN financial performance if port authority tariffs are adjusted to reflect competing port authority charges in a rival port.

The tariff tool is structured to reflect the terminal operator's concession contract payment terms, in this case, the one expected for the port of Cap Haitien. As is typical for port concession contracts, this encompasses fixed and variable fee revenues that are generated for APN. The fixed fee comprises the annual lease payment to APN by the terminal operator holding the concession. The variable fee consists of a royalty payment paid to APN based on a per unit charge for cargo handled. For example, there is a royalty payment paid by the terminal operator per container handled in the terminal, in this case on a per TEU basis. As the terminal operator may also serve non-containerized cargoes, such as bulk and breakbulk cargoes, there is also a royalty payment paid to the port authority on each ton of cargo handled. As the Cap Haitien concession represents the first port concession of public facilities in Haiti, it is expected that future concession contracts will reflect similar payment terms.

There are also charges not now imposed by APN that are imposed by port authorities in other countries. These include security surcharges as well as miscellaneous charges related to services the port authority provides. While these charges are not currently imposed in Haiti, the Tool allows the user to incorporate such charges in the event APN decides to impose them in future years. Additionally, as earlier noted, the Tool allows for assessing the impact on APN's financial performance if APN adopts the port authority tariffs applied in other countries. So the user can input such charges in the Tool.

As in all Excel-based spreadsheets, the Tool also allows the user to create a number of "what if" scenarios. The Tool provides for the use of five different scenarios, four of which are based on the structure of Scenario 1, which forms the base case scenario. All five scenarios reflect seven general categories of port authority charges (fixed and variable and hence revenue sources for APN). Scenarios 2-5 reflect percentage adjustments, up or down, from Scenario 1's base case. While the Tool shows five Scenarios to select from, the user can assign a different Scenario to each of the seven categories of port authority charges. Additionally, port authority revenues are affected by both the level of charges imposed by the port authority as well as cargo and ship volumes handled. Hence, the Tool also allows for adjustments to demand forecasts using three different demand scenarios. Altogether, the user has the possibility of testing nearly 235,000 different configurations and potentially exponentially more given the ability to "hard code" other numbers in a custom run of the model.

2. INPUT COMPONENTS OF THE TOOL

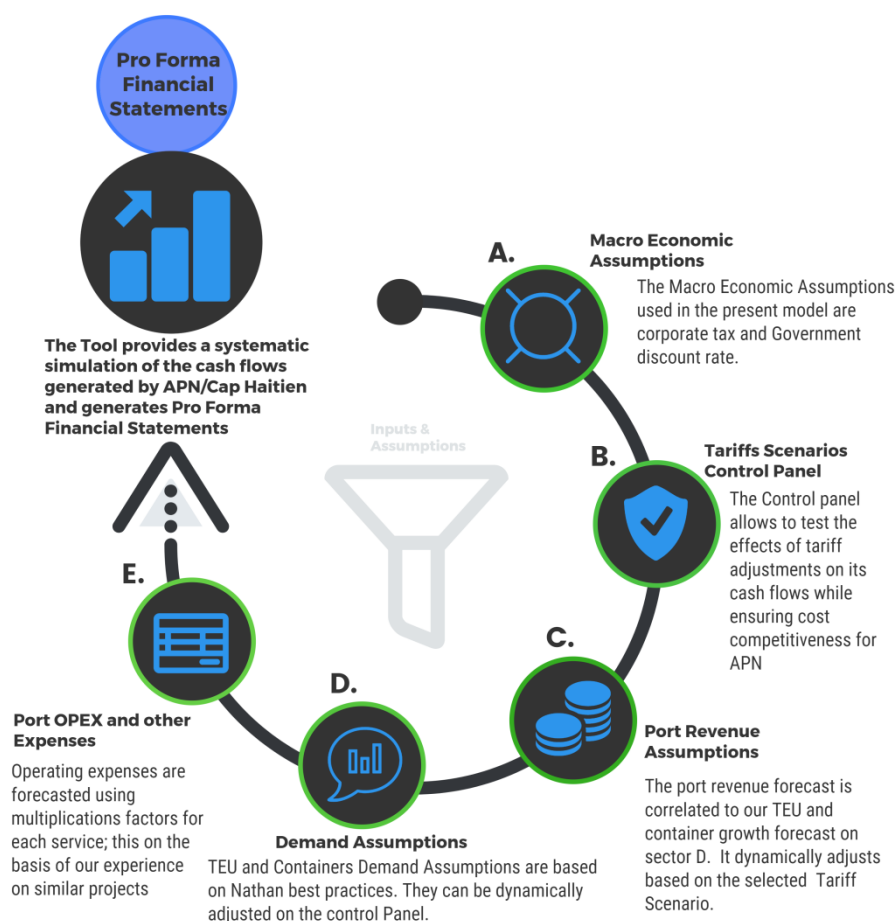
The Tariff Analysis Tool structure is depicted in Figure 1. It is composed of six components that together will generate port authority financial performance. These components are found in the Tool's first worksheet (WS1 – INPUTS). The six components include:

Part A. Macroeconomic Assumptions. Macroeconomic inputs refer to corporate tax and the government's discount rate. The prevailing rates in Haiti are 30% for the corporate tax rate and 12% for the government discount rate. But the user has the ability to change these as desired.

Part B. Revenue Scenarios. This part enables the user to test the effects of revenue adjustments, relative to fixed, variable, and other charges, on APN's cash flows based on the Scenario the user configures. The user can select a Scenario among the Tool's pre-configured scenario options, or build a customized one based on the user's own changes relative to the seven categories of port authority charges.

Part C. Port Revenue Forecast. The port revenue forecast is tied to Part D's TEU and container growth forecasts as well as the user's selected (or configured) revenue scenarios. Hence, the revenues depicted in the Tool change when selecting a Revenue Scenario in Part B or developing a customized one. Forecasted revenues are based on the terminal operator's fixed and variable charges as well as revenues generated from services provided by the Port Authority, such as Tug Assist, Channel Access, and Navigation Aids. Part C is the only one of the six components that does not require input from the user, as inputs are automated based on the inputs made by users in the other parts. However, the user can still make hard entries in Part C if so desired.

Part D. Demand Forecasts. The Container Demand Forecast Growth Scenario selected by the user in Part B is reflected over a 20-year forecast horizon in Part D. Containers (in TEUs) and non-containerized cargo (in tons) forecasts are generated. Based on expected vessel size and capacity, the model calculates the number and size (length overall – LOA) of vessels that will carry the forecasted cargo volumes as the port authority generates revenues from vessel activity in the form of Channel

Figure 1 – Input components of the Tool for generating Tool output components

Source: Nathan Associates

Access fees, Navigation Aids charges, and the earlier noted Security and miscellaneous fees that port authorities normally charge.

Part E. Port Operating Expenses. Operating expenses are day-to-day expenses that are incurred by the port authority. Operating expenses include everything from employee salaries (including compensation, pension and benefits costs for employees in administration, security, operational supervision, etc.) to office supplies, utility costs, facility and equipment maintenance, consulting services, and telecommunications (e.g. phone and internet services). Note that the numbers escalate each year assuming the use of consumer price index or other cost escalation indices that the user may wish to use. While such expenses were not readily available from APN, we have provided numbers that serve as “placeholders” for more accurate numbers that APN can generate for incorporation into the Tool.

Part F. Port Capital Expenses. Capital expenses refer to payments made by the port authority to provide or improve long-term capital assets. This would include port terminal infrastructure and equipment. An investment in capital assets adds to the value of the port authority business, but also

increases the value of the port authority's net worth, the expense associated with a capital investment increases the port authority's liability. Additionally, because capital investments lose value over time, they reduce the port authority's value, which is reflected in depreciation. This loss of value (depreciation) is capitalized over a period of time equal to the expected or useful life of the capital asset. The Tool separates capital expenses by infrastructure and equipment assets. As APN is receiving a grant to cover Cap Haitien's port capital asset improvements, capital asset expenses would not be shown here; however, for purposes of demonstration, the Tool shows a terminal investment of \$20 million and an equipment investment of \$1.5 million. These capital expenses in turn are depreciated annually over the useful life of the asset, in this case 20 years each, as the Tool shows.

3. OUTPUT COMPONENTS OF THE TOOL

The Tool's principal output consists of APN's pro forma financial statements, as generated in the second worksheet (WS2 – Financial Performance) and graphical depictions of the financial results (WS3 – Graphical Depictions). Pro forma financial statements are intended to depict a reasonably accurate portrayal of a port authority's financial situation if prevailing trends continue or if certain assumptions hold true. As noted earlier, pro forma financial statements can also be used to gauge the effects of “what if” scenarios by changing certain assumptions, which reflect possible events that have a potential effect on the port authority's financial outcome.

Normally, there are three primary financial statements composed in pro forma financial statements, including 1) the balance sheet, which depicts the port authority's assets, liabilities, and net worth; 2) the income statement (or profit and loss statement), which reflects an itemization of revenues and expenses and provides insight on what can be done to improve the bottom line, and 3) the cash flow statement, which shows cash inflows and outflows caused by the port authority's activities during a stated period. For our purposes here, the balance sheet is omitted from the Tool as there was insufficient information available to generate one that is reasonably reflective of the Cap Haitien situation.

As noted, the pro forma financial statements are reflected graphically in the Tool's third worksheet, WS3 – Graphical Depictions. Here, the Tool generates graphics depicting income and cash flow statements. We also include a depiction of EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortization) drawn from the WS2 – Financial Performance worksheet. Some financial analysts believe that EBITDA is a more accurate reflection of an entity's financial health as non-cash expenses do little to say about the actual cash flows of an entity. On the other hand, the use of EBITDA can also disguise financial risk and for this reason is not included as a part of the Generally Accepted Accounting Principles (GAAP) standards and procedures that entities follow in compiling their financial statements. However, EBITDA, along with other financial statements, are useful when presenting the full picture of an entity's financial health.

4. INSTRUCTIONS ON THE USE OF THE TOOL

As earlier noted, the Tool is built using Excel. We color coded (Figure 2) the tool to indicate cells that require input and cells that consist of formulas that are applied as the user's inputs change. User inputs are sought only in the green cells, though as earlier noted the user has the option for hard entry of data in blue cells or, alternatively, the user can change the formulas. However, whether changing inputs, making hard entry inputs in blue cells, or changing formulas, the user is strongly advised to save a new file to preserve the integrity of the inputs and formulas of the Tool's original file. Note also that all cells indicating currency are in US dollars, with 2017 representing the base year.

Figure 2 – Color Codes for Inputs and Formulas

Tariff Analysis Tool - Haiti Port Project				
Denotes Input	Denotes Formula	in USD	Base Year	2017

Source: Nathan Associates, Tariff Analysis Tool.

5.1 TOOL INPUTS

5.1.1 Macroeconomic Assumptions

The Tool's Part A. Macroeconomic Assumptions of WS2 – Financial Performance allows the user to adjust corporate tax assumptions and the discount rate used to calculate the present value (PV) in the Income and Cash Flow statements in WS2 – Financial Performance. Generally, PV measures profit that is determined by subtracting the present values of cash outflows from the present values of cash inflows over a time horizon. This is not to be confused with net present value (NPV). Both PV and NPV use discounted cash flows to estimate the ongoing value of future income, but the NPV calculation includes the initial capital investment for an infrastructure project, subtracting this value from the discounted revenue.

The user can change the assumed rates in the green cells in Part A. Macroeconomic Assumptions in WSI – Inputs, as shown in Figure 3. Once these rates are set by the user, they are automatically carried into adjacent cells for the entire 20-year financial performance horizon. No inflation rate is considered.

Figure 3 – Macroeconomic Assumptions section

PART A. MACROECONOMIC ASSUMPTIONS			
(all numbers in USD)		2017	2018
		1	2
Marginal rate of corporate tax		30.00%	30.00%
Government discount rate		12.00%	12.00%

Source: Nathan Associates, Tariff Analysis Tool

5.1.2 Revenue Scenarios

The Tool allows the user to select a Revenue Scenario in Part B of WSI – Inputs. As earlier noted, the user can select a Scenario by inputting scenario numbers in the green cells under each of the seven revenue categories (Figure 4). The user need not select the same scenario for each revenue category. In Figure 4, for example, the user may select scenario 1 for fixed annual fees, 2 for variable fees, 5 for security, and so on.

Figure 4 – Revenue Scenario Section

Concession Contract Base Scenario 1		APN Active Tariff Scenario						
Base		1. Fixed Annual Fee	2. Variable Fee - Containers (per TEU)	3. Variable Fee Other Cargo (per ton)	4. Tug Assistance (per vessel)	5. Channel Access	6. Navigation Aids	7. Security
Scenario 2	Base + 15 %	2	1	1	1	1	1	1
Scenario 3	Base + 20 %	3						
Scenario 4	Base -15 %	4						
Scenario 5	Base -20 %	5						

Source: Nathan Associates, Tariff Analysis Tool

Figure 5, copied from Part B of WSI – Inputs, illustrates the impact of the scenario selection on concession fee revenues and revenues from port authority-provided services. For comparison purposes, the impact of other selected scenarios is also shown in the green cells; and, because these cells are green, the user can input any percentage as desired to create more aggressive or conservative scenarios and assess sensitivity in accord with the user’s “customized inputs” on these revenue sources.

Revenues are affected by the volume of cargo and vessels handled in the terminal or port as the port authority applies charges based on volumes. For example, assuming the same container surcharge is continuously applied over the coming years, the total revenue from a \$10 surcharge per TEU of 20,000 TEUs handled in year 1 would certainly be less than the same \$10 surcharge per TEU of 30,000 TEUs handled in year 5. So, we designed three scenarios that the user can select in the Container Demand Forecast and Non-Containerized Cargo Demand portion of Part B. Revenue Scenarios. The user can select one of three container (TEU) growth scenarios (10 percent, 6 percent, and 3 percent) and one of

Figure 5 – Revenue Impact of Scenario Selection

ACTIVE SCENARIO		1	2	3	4	5
Contract			15 %	20 %	-15 %	-20 %
1. Fixed Annual Fee		\$ 60,000.00	\$ 60,000.00	\$ 69,000.00	\$ 72,000.00	\$ 51,000.00
						\$ 48,000.00
ACTIVE SCENARIO		1	2	3	4	5
Contract			15 %	20 %	-10 %	-15 %
2. Variable Fee - Containers (per TEU)		\$ 10.00	\$ 10.00	\$ 11.50	\$ 12.00	\$ 8.50
						\$ 8.00
ACTIVE SCENARIO		1	2	3	4	5
Contract			15 %	20 %	-10 %	-15 %
3. Variable Fee - Other Cargo (per ton)		\$ 1.00	\$ 1.00	\$ 1.15	\$ 1.20	\$ 0.85
						\$ 0.80
ACTIVE SCENARIO		1	2	3	4	5
Contract			15 %	20 %	-10 %	-15 %
4. Tug Assistance (per vessel)		\$ 3,000.00	\$ 3,000.00	\$ 3,450.00	\$ 3,600.00	\$ 2,550.00
						\$ 2,400.00
ACTIVE SCENARIO		1	2	3	4	5
Contract			15 %	20 %	-10 %	-15 %
5. Channel Access PER METER		\$ 0.50	\$ 0.50	\$ 0.58	\$ 0.60	\$ 0.43
						\$ 0.40
ACTIVE SCENARIO		1	2	3	4	5
Contract			15 %	20 %	-10 %	-15 %
6. Navigation Aids PER SHIP		\$ 500.00	\$ 500.00	\$ 575.00	\$ 600.00	\$ 425.00
						\$ 400.00
ACTIVE SCENARIO		1	2	3	4	5
Contract			15 %	20 %	-10 %	-15 %
7. Security PER TEU		\$ 5.00	\$ 5.00	\$ 5.75	\$ 6.00	\$ 4.25
Other fees PER TEU		\$ 10.00	\$ 10.00	\$ 11.50	\$ 12.00	\$ 8.50
						\$ 8.00

Source: Nathan Associates, Tariff Analysis Tool

three non-containerized cargo (tons) growth scenarios by coding 1, 2, or 3 in the cells to the right of the Active Scenario cell (indicated by the red circles in Figure 6).

Figure 6 – Container (in TEUs) and Non-Containerized (in tons) Demand Forecast Scenarios

Containers Demand Forecast (TEU)			Non-Containerized Cargo Demand Forecast		
Domestic	Active Scenario	1	Domestic	Active Scenario	1
Growth Scenario 1	Scenario 1	10%	Growth Scenario 1	Scenario 1	2%
Growth Scenario 2	Scenario 2	6%	Growth Scenario 2	Scenario 2	4%
Growth Scenario 3	Scenario 3	3%	Growth Scenario 3	Scenario 3	6%

Source: Nathan Associates, Tariff Analysis Tool

5.1.3 Port Revenue Forecasts

Part C. Port Revenue Forecasts (Figure 7) are provided in WSI – Inputs to allow the user to immediately observe the impact of the user's input assumptions. Note that for space considerations in this Instruction Manual, Figure 7 depicts only a portion of Part C. Port Revenue Forecasts' 20-year time horizon. Part C. Port Revenue Forecasts relies on automated inputs from Part B (see Figure 5) in

regards to the user's selected Revenue Scenarios for concession-related fees (fixed fees and variable fees) and for APN-provided services. Part C. Port Revenue Forecasts is also dependent upon the Part D. Demand Forecasts (discussed next) and provides inputs needed for WS2 – Financial Performance.

Figure 7 – Part C's Port Revenue Forecasts

PART C. PORT REVENUE FORECASTS					2017	2018	2019	2020
Concession Fess	UNIT	FEES						
Fixed Annual Fee	FIX	\$ 60,000.00	\$	60,000	\$	60,000	\$	60,000
Variable Fee - Containers	PER TEU	\$ 10.00	\$	200,000	\$	220,000	\$	266,200
Variable Fee - Other Cargo	PER TON	\$ 1.00	\$	100,000	\$	105,000	\$	115,763
Services APN								
Tug Assistance (per vessel)	PER VESSEL	\$ 3,000.00	\$	350,000	\$	377,500	\$	439,844
CHANNEL ACCES	PER METER	\$ 0.50	\$	11,667	\$	12,583	\$	14,661
NAVIGATION AIDS	PER VESSEL	\$ 500.00	\$	58,333	\$	62,917	\$	73,307
SECURITY	PER TEU	\$ 5.00	\$	100,000	\$	110,000	\$	133,100
OTHER	PER TEU	\$ 10.00	\$	200,000	\$	220,000	\$	266,200
OTHER REVENUES APN					1,080,000	1,168,000	1,264,100	1,369,075

Source: Nathan Associates, Tariff Analysis Model

5.1.4 Demand Forecasts

Part D. Demand Forecasts of WSI – Inputs reflects the results of the user's container growth scenario selection made in Part B. But the user can also input its own estimates for the number of containers as indicated by the green (user input) cells (Figure 8). The user can also change the number of vessels and their length overall (LOA). The number of vessels is used to estimate the average volume of containers (in TEUs) handled per call; Part D. Demand Forecasts automatically calculates the average container volume per call by dividing the number of TEUs by the number of ships to generate annual TEU volume for the 20-year forecast horizon. Similarly, the average loaded or discharged volume of non-containerized cargoes is calculated by dividing the forecasted cargo volume (in tons) by the number of vessels. The user can also change the growth rate and base case volume for non-containerized cargo growth. Part D's forecasts are then used as inputs to Part C's revenue forecasts.

5.1.5 Port Operational Expenses

Port authorities in exercising their roles in port administration, maintenance, and service provision incur annual operating expenses that have ramifications on their financial performance. These expenses are identified in Part E. Operational Expenses. While port authorities in general may differ in the range of operational expenses they incur, experience shows that the expenses enumerated in Figure 9 are broadly representative of the vast majority of operational expenses. These include expenses associated with payroll costs for port administration, maintenance, security, and tug assist, which are personnel functional areas generally representative of Cap Haitien. Additionally, we reflect a host of other non-payroll related operational expenses normally incurred by port authorities, including utilities (water supply, electricity, telephone), office supplies and expenses, facility and equipment maintenance supplies,

and advertising and promotion. We have also included an “other expenses” items that port authorities may incur that cannot be apportioned to the other operational expense categories.

Figure 8 – Part D Demand Forecasts

PART D. DEMAND FORECASTS				
	2017	2018	2019	2020
Containers Demand Forecast (TEU)				
Domestic	20,000	22,000	24,200	26,620
Growth Scenario 1	20,000	10%	10%	10%
Growth Scenario 2	20,000	6%	6%	6%
Growth Scenario 3	20,000	3%	3%	3%
Total Containers (TEUs)	20,000	22,000	24,200	26,620
Number of Vessels				
LOA (m)	300	67	73	81
	200	13,333	14,667	17,747
General Cargo Demand Forecast (Tons)				
Domestic	5%	100,000	105,000	110,250
Transit				
Total Cargo (Tons)	100,000	105,000	110,250	115,763
Number of Vessels				
LOA (m)	2,000	50	53	55
	200	10,000	10,500	11,025

Source: Nathan Associates, Tariff Analysis Model

As shown in Part E. Operational Expenses, the user has the ability to insert these costs directly. Additionally, we assume an inflation adjustment factor of 3 percent.

Figure 9 – Port Authority Operational Expenses

PART E. OPERATIONAL EXPENSES				
TRAFFIC AND TERMINAL AREA FACTORS FOR EXPENSES	2017	2018	2019	2020
C1- EXPENSES CALCULATIONS				
Port Authority Total Annual Payroll	\$ 193,000	\$ 198,790	\$ 204,754	\$ 210,896
Port Administration	\$ 80,000	\$ 82,400	\$ 84,872	\$ 87,418
Maintenance crews and supervisor	\$ 35,000	\$ 36,050	\$ 37,132	\$ 38,245
Security	\$ 45,000	\$ 46,350	\$ 47,741	\$ 49,173
Tug assist	\$ 33,000	\$ 33,990	\$ 35,010	\$ 36,060
Pension and other benefits				
assumed factor = 22% of total APN/Cap Haitian Payroll	\$ 42,460	\$ 43,734	\$ 45,046	\$ 46,397
Payroll taxes				
assumed factor = 8% of total APN/Cap Haitian Payroll	\$ 15,440	\$ 15,903	\$ 16,380	\$ 16,872
Other Operating Expenses	\$ 31,700	\$ 32,651	\$ 33,631	\$ 34,639
Water supply	\$ 1,000	\$ 1,030	\$ 1,061	\$ 1,093
Electricity	\$ 15,000	\$ 15,450	\$ 15,914	\$ 16,391
Telephone	\$ 4,000	\$ 4,120	\$ 4,244	\$ 4,371
Office supplies and expenses	\$ 1,200	\$ 1,236	\$ 1,273	\$ 1,311
Facility and equipment maintenance supplies	\$ 7,000	\$ 7,210	\$ 7,426	\$ 7,649
Advertising and promotion	\$ 2,000	\$ 2,060	\$ 2,122	\$ 2,185
Other expenses	\$ 1,500	\$ 1,545	\$ 1,591	\$ 1,639
Inflation Factor	3%			
OPERATING EXPENSES (USD) (APN)	\$ 291,078	\$ 299,810	\$ 308,805	\$ 318,069

Source: Nathan Associates, Tariff Analysis Model

5.1.5 Port Authority Capital Expenses

As a landlord port authority, APN is responsible for development of common access areas. Common access areas are places within the port area to which many port users have the right to use. In most ports, such areas include truck and passenger car parking, perimeter gates, public use berths, common use storage areas, navigation channels, and breakwaters. In some ports, there may also be common access equipment; for example, the port authority may provide a crane that can be used by licensed stevedores. This is distinguished by concessioned terminals, where the terminal operator and its personnel normally have sole access to fixed and mobile assets within the confines of the terminal.

To accommodate the possibility that APN will make investments in common access areas in future years, we have incorporated Part F. Capital Expenses in WSI – Inputs (see Figure 10). Part F distinguishes between Fixed Assets and Mobile Assets. Fixed Assets usually refer to infrastructure and installations (things that cannot be moved), while Mobile Assets refer to equipment, such as cranes and tug boats. As shown in Figure 10, there is also a provision for asset depreciation. Depreciation allows the port authority to reallocate the cost of a capital asset over its useful life. This effects the net income that is reported as it becomes an expense each year for the time the asset is being depreciated. In our case here, we assume capital assets to have useful lives of 20 years. Hence, Figure 10 shows a depreciation expense for each year over a 20-year period for both fixed and mobile assets. As currently configured, the user can input additional capital asset investment, both fixed and mobile, in the green cells over the time horizon.

5.2 Tool Outputs

Outputs reflecting user assumptions are located in three areas of the Tool. In WSI – Inputs, we have provided the user with three graphs (Figure 11) to allow for an instantaneous “snapshot” of user input changes without having to go back and forth to another worksheet where the same information is also provided. Additionally, WSI – Inputs also generates a port revenue forecast table, shown earlier in this Instruction Manual in Figure 7.

The second location of outputs is WS2 – Financial Performance. This worksheet encompasses the pro forma financial statements, with outputs provided graphically and in table formats (Figure 12). User inputs made in WSI – Inputs are reflected in the generation of the Profit and Loss (P&L) and Cash Flow statements. The present value (PV) is calculated at the end of the table’s time horizon. Note, unlike the Tool, Figure 12 does not display each year of the time horizon; some years are omitted here to be able to display the Figure in full.

The third location of outputs is WS3 – Graphical Depictions, which present graphical displays for EBITDA, Net Income (P&L), and Cash Flow results (Figure 13). These are provided here so that the user can readily copy and paste the graphics in other documents. The user also has the option of copying the same graphics from WSI – Inputs and WS2 – Financial Performance.

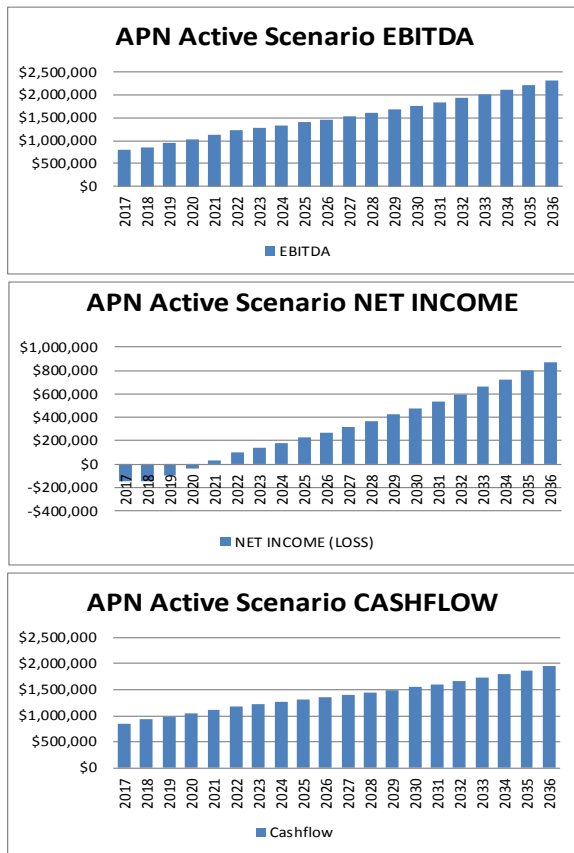
Figure 10 – Port Authority Capital Expenses

PART F. CAPITAL EXPENSES

		CAPEX	Year	2017	2018	2019	2020
FIXED ASSETS		20,000,000		\$ 20,000,000.00	-	-	-
Total		20,000,000		20,000,000	-	-	-
Years							
1	20	20,000,000	2017	1,000,000	1,000,000	1,000,000	1,000,000
2	20	-	2018		-	-	-
3	20	-	2019			-	-
4	20	-	2020				-
5	20	-	2021				
6	20	-	2022				
7	20	-	2023				
8	20	-	2024				
9	20	-	2025				
10	20	-	2026				
11	20	-	2027				
12	20	-	2028				
13	20	-	2029				
14	20	-	2030				
15	20	-	2031				
16	20	-	2032				
17	20	-	2033				
18	20	-	2034				
19	20	-	2035				
20	20	-	2036				
Annual Depreciation		20,000,000		1,000,000	1,000,000	1,000,000	1,000,000
		CAPEX	Year	2017	2018	2019	2020
MOBILE ASSETS		1,500,000		\$ 1,500,000.00	-	-	-
Total		1,500,000		1,500,000	-	-	-
Years							
1	20	1,500,000	2017	75,000	75,000	75,000	75,000
2	20	-	2018		-	-	-
3	20	-	2019			-	-
4	20	-	2020				-
5	20	-	2021				
6	20	-	2022				
7	20	-	2023				
8	20	-	2024				
9	20	-	2025				
10	20	-	2026				
11	20	-	2027				
12	20	-	2028				
13	20	-	2029				
14	20	-	2030				
15	20	-	2031				
16	20	-	2032				
17	20	-	2033				
18	20	-	2034				
19	20	-	2035				
20	20	-	2036				
Annual Depreciation		1,500,000		75,000	75,000	75,000	75,000
Total Annual Depreciation				1,000,000	1,075,000	1,075,000	1,075,000
Total Capex				21,500,000	-	-	-

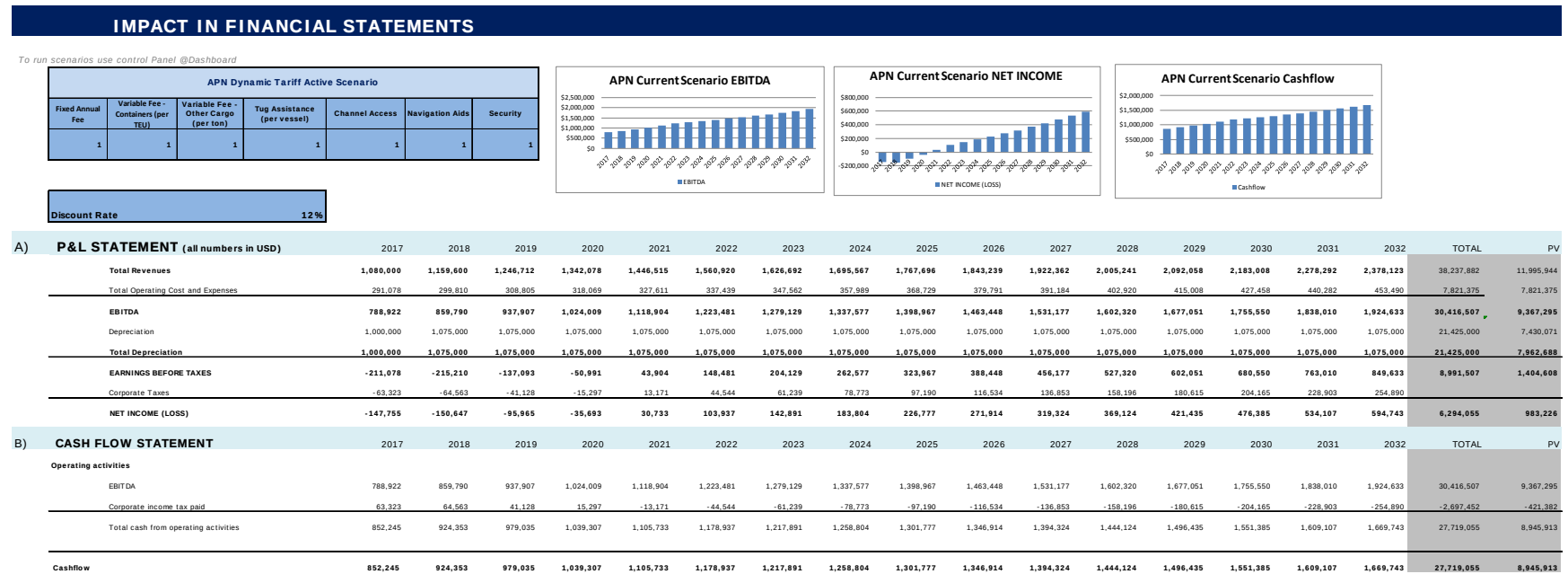
Source: Nathan Associates Inc., Tariff Analysis Model

Figure 11 – Snapshot Financial Results from WSI – Inputs



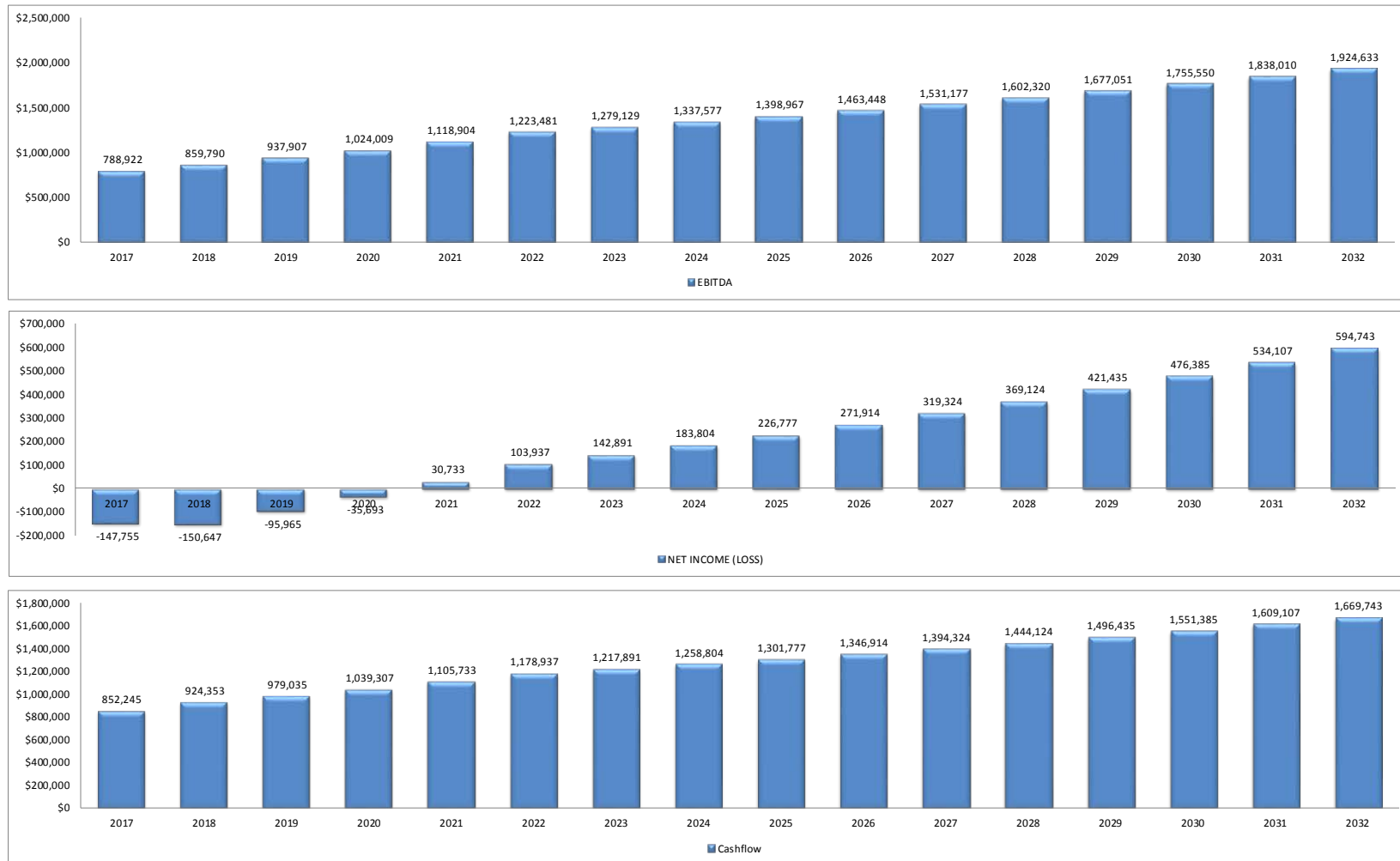
Source: Nathan Associates Inc., Tariff Analysis Model

Figure 12 – Pro Forma Financial Statement



Source: Nathan Associates, Tariff Analysis Model

Figure 13 – Graphical Depictions Pro Forma Financial Statement



Source: Nathan Associates, Tariff Analysis Model

5. A PRACTICE RUN

Armed with the descriptions and instructions provided above, the user will now proceed through a practice run. The intent is to provide the user with some assumptions to achieve the results that should be generated given these assumptions. This practice run will provide the user with familiarity for inputting assumptions and generating correct outputs. In the following, we will provide assumptions that the user should input into the Tool. We will then present the pro forma financials that should be generated given these inputs.

To commence the practice run, we have to begin first by having a clean slate – that is, the user must begin with calibrating the model so that it reflects the base case. We start by inserting the number **one** for each of the seven revenue categories in Part B. Revenue Scenarios in WSI – Inputs. Figure 14 shows where the user should insert these Base Case scenario inputs in Part B of WSI -- Inputs, indicated with red circles, for the seven revenue categories.

Figure 14 – Setting the Base Case by Inserting the Number 1 for Each of Seven Revenue Categories

PART B. REVENUE SCENARIOS									
Concession Contract Base Scenario 1	Base		APN Active Tariff Scenario						
			1. Fixed Annual Fee	2. Variable Fee - Containers (per TEU)	3. Variable Fee - Other Cargo (per ton)	4. Tug Assistance (per vessel)	5. Channel Access	6. Navigation Aids	7. Security
Scenario 2	Base + 15 %	2	1	1	1	1	1	1	1
Scenario 3	Base + 20 %	3							
Scenario 4	Base -15 %	4							
Scenario 5	Base -20 %	5							

Source: Nathan Associates, Tariff Analysis Model

Next, we also enter the number **one** in Part B's Container Demand Forecast and the Non-Containerized Cargo Demand Forecasts, as indicated by the red circles in Figure 15. Making these changes will set the Tool in the base case, generating the revenues in the areas indicated with a red circle in Figure 16. Before moving forward with the exercise below, the user should confirm the

Figure 15 – Setting the Base Case by Inserting the Number 1 for Container and Non-Containerized Demand Forecasts

Source: Nathan Associates, Tariff Analysis Model

Containers Demand Forecast (TEU)			Non-Containerized Cargo Demand Forecast		
Domestic	Active Scenario	1	Domestic	Active Scenario	1
Growth Scenario 1	<i>Scenario 1</i>	10%	Growth Scenario 1	<i>Scenario 1</i>	2%
Growth Scenario 2	<i>Scenario 2</i>	6%	Growth Scenario 2	<i>Scenario 2</i>	4%
Growth Scenario 3	<i>Scenario 3</i>	3%	Growth Scenario 3	<i>Scenario 3</i>	6%

Figure 16 – Base Case Revenues for the Revenue Categories

Concession Fees		<table><tr><th>ACTIVE SCENARIO</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th></tr><tr><td>Contract</td><td>15%</td><td>20%</td><td>-15%</td><td>-20%</td><td></td></tr><tr><td>\$ 60,000.00</td><td>\$ 60,000.00</td><td>\$ 69,000.00</td><td>\$ 72,000.00</td><td>\$ 51,000.00</td><td>\$ 48,000.00</td></tr></table>						ACTIVE SCENARIO	1	2	3	4	5	Contract	15%	20%	-15%	-20%		\$ 60,000.00	\$ 60,000.00	\$ 69,000.00	\$ 72,000.00	\$ 51,000.00	\$ 48,000.00
ACTIVE SCENARIO	1	2	3	4	5																				
Contract	15%	20%	-15%	-20%																					
\$ 60,000.00	\$ 60,000.00	\$ 69,000.00	\$ 72,000.00	\$ 51,000.00	\$ 48,000.00																				
1. Fixed Annual Fee																									
		<table><tr><th>ACTIVE SCENARIO</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th></tr><tr><td>Contract</td><td>15%</td><td>20%</td><td>-10%</td><td>-15%</td><td></td></tr><tr><td>\$ 10.00</td><td>\$ 10.00</td><td>\$ 11.50</td><td>\$ 12.00</td><td>\$ 8.50</td><td>\$ 8.00</td></tr></table>						ACTIVE SCENARIO	1	2	3	4	5	Contract	15%	20%	-10%	-15%		\$ 10.00	\$ 10.00	\$ 11.50	\$ 12.00	\$ 8.50	\$ 8.00
ACTIVE SCENARIO	1	2	3	4	5																				
Contract	15%	20%	-10%	-15%																					
\$ 10.00	\$ 10.00	\$ 11.50	\$ 12.00	\$ 8.50	\$ 8.00																				
2. Variable Fee - Containers (per TEU)																									
		<table><tr><th>ACTIVE SCENARIO</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th></tr><tr><td>Contract</td><td>15%</td><td>20%</td><td>-10%</td><td>-15%</td><td></td></tr><tr><td>\$ 1.00</td><td>\$ 1.00</td><td>\$ 1.15</td><td>\$ 1.20</td><td>\$ 0.85</td><td>\$ 0.80</td></tr></table>						ACTIVE SCENARIO	1	2	3	4	5	Contract	15%	20%	-10%	-15%		\$ 1.00	\$ 1.00	\$ 1.15	\$ 1.20	\$ 0.85	\$ 0.80
ACTIVE SCENARIO	1	2	3	4	5																				
Contract	15%	20%	-10%	-15%																					
\$ 1.00	\$ 1.00	\$ 1.15	\$ 1.20	\$ 0.85	\$ 0.80																				
3. Variable Fee - Other Cargo (per ton)																									
Services		<table><tr><th>ACTIVE SCENARIO</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th></tr><tr><td>Contract</td><td>15%</td><td>20%</td><td>-10%</td><td>-15%</td><td></td></tr><tr><td>\$ 3,000.00</td><td>\$ 3,000.00</td><td>\$ 3,450.00</td><td>\$ 3,600.00</td><td>\$ 2,550.00</td><td>\$ 2,400.00</td></tr></table>						ACTIVE SCENARIO	1	2	3	4	5	Contract	15%	20%	-10%	-15%		\$ 3,000.00	\$ 3,000.00	\$ 3,450.00	\$ 3,600.00	\$ 2,550.00	\$ 2,400.00
ACTIVE SCENARIO	1	2	3	4	5																				
Contract	15%	20%	-10%	-15%																					
\$ 3,000.00	\$ 3,000.00	\$ 3,450.00	\$ 3,600.00	\$ 2,550.00	\$ 2,400.00																				
4. Tug Assistance (per vessel)																									
		<table><tr><th>ACTIVE SCENARIO</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th></tr><tr><td>Contract</td><td>15%</td><td>20%</td><td>-10%</td><td>-15%</td><td></td></tr><tr><td>\$ 0.50</td><td>\$ 0.50</td><td>\$ 0.58</td><td>\$ 0.60</td><td>\$ 0.43</td><td>\$ 0.40</td></tr></table>						ACTIVE SCENARIO	1	2	3	4	5	Contract	15%	20%	-10%	-15%		\$ 0.50	\$ 0.50	\$ 0.58	\$ 0.60	\$ 0.43	\$ 0.40
ACTIVE SCENARIO	1	2	3	4	5																				
Contract	15%	20%	-10%	-15%																					
\$ 0.50	\$ 0.50	\$ 0.58	\$ 0.60	\$ 0.43	\$ 0.40																				
5. Channel Access	PER METER																								
		<table><tr><th>ACTIVE SCENARIO</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th></tr><tr><td>Contract</td><td>15%</td><td>20%</td><td>-10%</td><td>-15%</td><td></td></tr><tr><td>\$ 500.00</td><td>\$ 500.00</td><td>\$ 575.00</td><td>\$ 600.00</td><td>\$ 425.00</td><td>\$ 400.00</td></tr></table>						ACTIVE SCENARIO	1	2	3	4	5	Contract	15%	20%	-10%	-15%		\$ 500.00	\$ 500.00	\$ 575.00	\$ 600.00	\$ 425.00	\$ 400.00
ACTIVE SCENARIO	1	2	3	4	5																				
Contract	15%	20%	-10%	-15%																					
\$ 500.00	\$ 500.00	\$ 575.00	\$ 600.00	\$ 425.00	\$ 400.00																				
6. Navigation Aids	PER SHIP																								
		<table><tr><th>ACTIVE SCENARIO</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th></tr><tr><td>Contract</td><td>15%</td><td>20%</td><td>-10%</td><td>-15%</td><td></td></tr><tr><td>\$ 5.00</td><td>\$ 5.00</td><td>\$ 5.75</td><td>\$ 6.00</td><td>\$ 4.25</td><td>\$ 4.00</td></tr></table>						ACTIVE SCENARIO	1	2	3	4	5	Contract	15%	20%	-10%	-15%		\$ 5.00	\$ 5.00	\$ 5.75	\$ 6.00	\$ 4.25	\$ 4.00
ACTIVE SCENARIO	1	2	3	4	5																				
Contract	15%	20%	-10%	-15%																					
\$ 5.00	\$ 5.00	\$ 5.75	\$ 6.00	\$ 4.25	\$ 4.00																				
7. Security	PER TEU																								
Other fees	PER TEU																								
		<table><tr><th>ACTIVE SCENARIO</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th></tr><tr><td>Contract</td><td>15%</td><td>20%</td><td>-10%</td><td>-15%</td><td></td></tr><tr><td>\$ 10.00</td><td>\$ 10.00</td><td>\$ 11.50</td><td>\$ 12.00</td><td>\$ 8.50</td><td>\$ 8.00</td></tr></table>						ACTIVE SCENARIO	1	2	3	4	5	Contract	15%	20%	-10%	-15%		\$ 10.00	\$ 10.00	\$ 11.50	\$ 12.00	\$ 8.50	\$ 8.00
ACTIVE SCENARIO	1	2	3	4	5																				
Contract	15%	20%	-10%	-15%																					
\$ 10.00	\$ 10.00	\$ 11.50	\$ 12.00	\$ 8.50	\$ 8.00																				

Source: Nathan Associates, Tariff Analysis Model

generation of numbers identified by the red circles in Figure 16. Matching these numbers confirm the Tool is now reflecting the Base Case.

6.1 INSERTING THE ASSUMPTIONS

Now that the Tool is set in the Base Case, we will begin our exercise with the incorporation of new scenarios. We begin with adjusting the seven revenue categories and cargo demand forecasts in Part B. Here are the assumptions the user should enter:

- 1) Select Scenario 2 for **Fixed Annual Fee**
- 2) Select Scenario 3 for **Containers Fee**
- 3) Select Scenario 2 for **Cargo Fee**
- 4) Select Scenario 5 for **Tug Assistance Fee**
- 5) Select Scenario 4 for **Channel Access Fee**
- 6) Select Scenario 3 for **Navigation Aids Fee**
- 7) Select Scenario 2 for **Security Fee**
- 8) Select Scenario 2 for **Container Demand Forecast**
- 9) Select Scenario 3 for **Non-Containerized Cargo Demand Forecast**

Figure 17 shows how Part B's revenue category portion should appear when inserting the above seven assumptions. Figure 18 shows how the Container and Non-Containerized scenario selection should appear after the revisions are made.

Figure 17 – Changing the Scenarios for Revenue Categories in Part B. Revenue Scenarios

PART B. REVENUE SCENARIOS									
Concession Contract Base Scenario 1			APN Active Tariff Scenario						
	Base		1. Fixed Annual Fee	2. Variable Fee - Containers (per TEU)	3. Variable Fee Other Cargo (per ton)	4. Tug Assistance (per vessel)	5. Channel Access	6. Navigation Aids	7. Security
Scenario 2	Base + 15 %	2							
Scenario 3	Base + 20 %	3	2	3	2	5	4	3	2
Scenario 4	Base -15 %	4							
Scenario 5	Base -20 %	5							

Source: Nathan Associates, Tariff Analysis Model

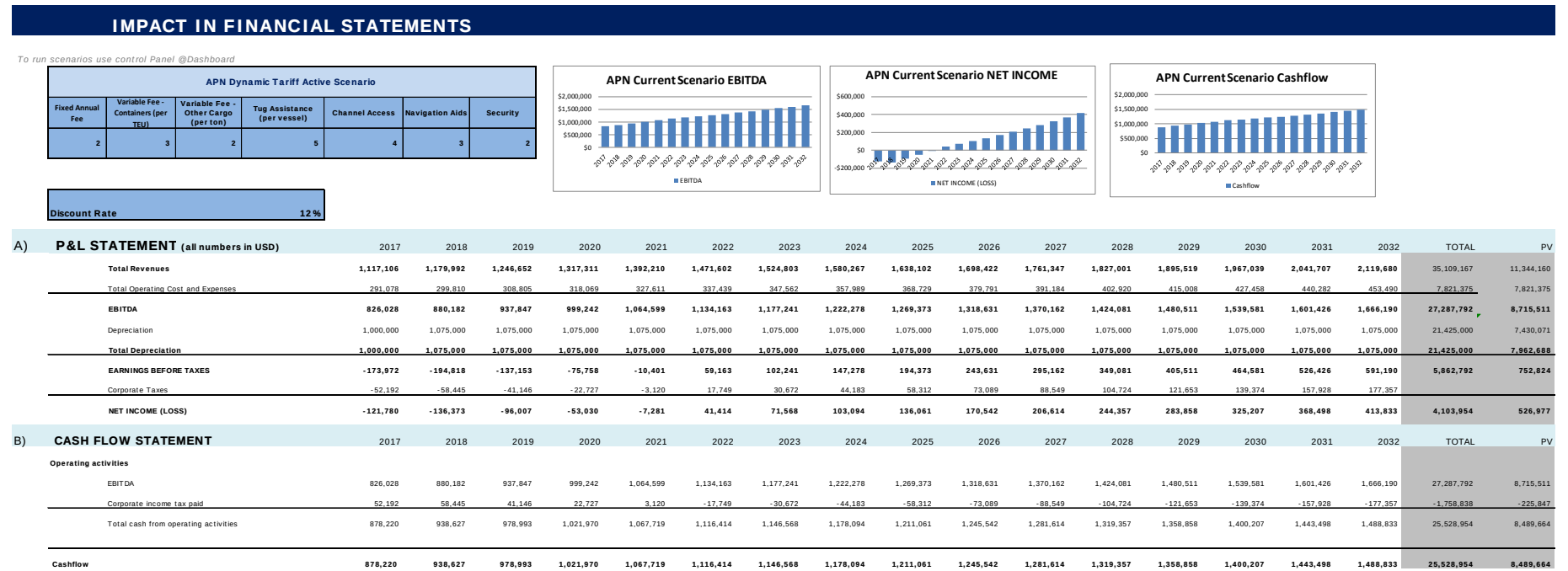
Figure 18 – Changing the Cargo Demand Scenarios in Part B. Revenue Scenarios

Containers Demand Forecast (TEU)			Cargo General Demand Forecast		
Domestic	Active Scenario	2	Domestic	Active Scenario	3
Growth Scenario 1	<i>Scenario 1</i>	10%	Growth Scenario 1	<i>Scenario 1</i>	2%
Growth Scenario 2	<i>Scenario 2</i>	6%	Growth Scenario 2	<i>Scenario 2</i>	4%
Growth Scenario 3	<i>Scenario 3</i>	3%	Growth Scenario 3	<i>Scenario 3</i>	6%

Source: Nathan Associates, Tariff Analysis Model

The changes to the scenarios will have an effect on the port authority's financial performance results (WS2 – Financial Performance). Figure 19 presents the pro forma financial statements that should be generated when the user makes the scenario changes as instructed above. If the financial results the user generates are different from those presented in Figure 19, then the user should return to WS1 – Inputs and ensure changes were made as earlier instructed.

Figure 19 – Financial Results from Practice Run



Source: Nathan Associates, Tariff Analysis Model