Appendix 4B Economic Benefits Analysis

4B.1 INTRODUCTION

This assessment presents the estimated economic benefits of the Replacement Facility in terms of jobs, labor income, and economic output during its construction and stabilized annual operations.[1] The analysis presents estimates of the economic benefits realized within three geographic areas: New York City, New York State (excluding New York City), and the collective New Jersey counties located within the North Jersey Transportation Planning Authority (NJTPA) region.[2]

4B.2 METHODOLOGY

New York State Environmental Quality Review Act (SEQRA) (6 NYCRR Part 617) states that an Environmental Impact Statement (EIS), must include "a concise description of the proposed action, its purpose, public need and benefits, including social and economic considerations." Prior to making a decision on an action subject to an EIS, the lead agency must "weigh and balance relevant environmental impacts with social, economic and other considerations." According to the National Environmental Policy Act (NEPA) Implementing Regulations (§ 1502.16 Environmental consequences), the discussion of environmental consequences of a proposed action shall include, where applicable, "economic and technical considerations, including the economic benefits of the proposed action." An analysis of economic benefits is not required under New York City Environmental Quality Review (CEQR) regulations. This analysis of economic benefits has been prepared to meet the aforementioned requirements under SEQRA and NEPA.

The analysis was performed using the IMPLAN (IMpact analysis for PLANning) input-output modeling system, which was developed by the U.S. government and subsequently privatized by professors at the University of Minnesota. IMPLAN uses the most recent economic data from sources such as the U.S. Bureau of Economic Analysis, the U.S. Bureau of Labor Statistics, and the U.S. Census Bureau to predict effects on the local economy from direct changes in spending. The IMPLAN model contains data on 546 economic sectors, showing the change in local industry demand within each sector from a change in the quantity of its product or service. The indirect economic activity that is generated through direct investment is often referred to as the "ripple," or multiplier effect.

[1] While this analysis focuses on the estimated economic benefits of the Replacement Facility, similar conclusions could be drawn regarding economic benefits of the No Action Alternative as that project would have a similar capital expenditure.

[2] The 13 counties located within the NJTPA region are Bergen; Essex; Hudson; Hunterdon; Middlesex; Monmouth; Morris; Ocean; Passaic; Somerset; Sussex; Union; and Warren.

Using IMPLAN terminology, economic effects are broken into three components: direct, indirect, and induced.

- *Direct effects* are the initial benefits to the economy of a specific new investment (e.g., direct construction cost) and the resulting demand in employment and changes in labor income.
- *Indirect effects* are the benefits generated by industries purchasing from other industries as a result of the project construction and operational expenditures (e.g., indirect employment resulting from construction expenditures) would include jobs in industries that provide goods and services to the construction industry, including those services typically considered construction soft costs such as architecture and engineering services. A direct investment triggers changes in other industries as businesses alter their production to meet the needs of the industry in which the direct effect has occurred. These businesses in turn purchase goods and services from other businesses, causing a ripple effect through the economy.
- *Induced effects* are the effects caused by increased income in a region. The project-generated direct and indirect employment results in additional labor income that is spent on consumer goods and services, such as food and drink, recreation, and medical services. Benefits generated by these household expenditures are quantified as induced effects.

Economic effects of construction are temporary in nature; therefore, the jobs generated by construction activity are estimated in "person-years" of employment. A person year is the equivalent of one person working full-time for one year. The person-years estimate is for the duration of construction; the total number of workers on the site at any given time would fluctuate. Operational full- and part-time jobs estimates are the number of new jobs that could be expected each year during the project's operations. The operational benefits presented in this appendix are net new as compared to the existing conditions.

Dollar values are presented in 2023 dollars; the actual dollar amounts would increase with inflation over time.

This economic benefits analysis focuses on the economic activity generated by the Replacement Facility's construction expenditures and operational activities. It does not quantify the broader economic benefits of the operational efficiencies associated with the Replacement Facility, such as the economic benefits of increased travel reliability and travel-time savings for bus passengers as well as those using a less congested local road network. Nor does the analysis quantify the substantial economic benefits that would be realized by the construction and operations of the private development associated with the Proposed Project. Cost estimates are not yet available for the private-development component of the Proposed Project; therefore, input-output modeling was not performed. However, the overall scale of private development would necessitate billions of dollars in capital investment for construction activities, which would generate thousands of person-years of construction employment, as well as indirect jobs

throughout the region in industries supporting construction, and induced jobs from workers' consumer spending. During operations, the private development is anticipated to support over 20,000 direct on-site jobs in numerous professional (office-based) sectors, as well as jobs in building management.

4B.3 ECONOMIC BENEFITS OF REPLACEMENT FACILITY CONSTRUCTION

The Replacement Facility includes a new Main Terminal, a Storage and Staging Facility (SSF) for the storage and staging of buses, and a new ramp structure located west of Tenth Avenue. In addition to space dedicated to bus and passenger movement, the Replacement Facility would include ancillary space for Port Authority of New York and New Jersey (PANYNJ) staff involved with facility operations, approximately 155,344 square feet of retail space, and approximately 3.5 acres of open space.

The construction impact analysis used a preliminary estimate of construction cost as the "input" for input-output modeling. Based on the Replacement Facility's development program, the total investment for the Replacement Facility's construction is an estimated $10.0 billion. This amount includes approximately $7.3 billion of "hard costs" (or actual construction costs) for demolition of the existing Port Authority Bus Terminal (PABT) and construction of the new Main Terminal, SSF, ramp structure, and open space; and approximately $2.7 billion in "soft costs" that include non-tangible costs such as planning, architecture and engineering, legal, and insurance services.

Table 4B-1 summarizes the estimated employment, labor income, and total economic output that would be generated by the construction of the Replacement Facility.

Table 4B-1. Economic Benefits of Construction Replacement Facility

	New York City	New York State (Outside NYC)	NJTPA Region	Total
Employment (person-years)[1]				
Direct (on-site)[2]	25,294	0	0	**25,294**
Indirect (jobs in support industries)	19,404	924	1,212	**21,541**
Induced (jobs from household spending)	13,331	4,663	3,669	**21,663**
Total	**58,030**	**5,587**	**4,881**	**68,498**
Labor Income (millions of 2023 dollars)[3]				
Direct (on-site)	$3,890.00	$0.00	$0.00	**$3,890.00**
Indirect (earnings in support industries)	$2,912.06	$80.64	$135.79	**$3,128.49**
Induced (earnings from household spending)	$1,301.80	$320.17	$294.82	**$1,916.80**
Total	**$8,103.86**	**$400.81**	**$430.61**	**$8,935.29**
Economic Output (millions of 2023 dollars)[4]				
Direct	$8,185.36	$0.00	$0.00	**$8,185.36**
Indirect (output from support industries)	$5,595.48	$305.54	$421.60	**$6,322.61**
Induced (output from household spending)	$3,361.82	$987.30	$827.76	**$5,176.88**
Total	**$17,142.66**	**$1,292.84**	**$1,249.36**	**$19,684.86**

Sources: Construction cost estimates provided by PANYNJ; modeling performed by AKRF in October 2023, using the 2019 IMPLAN model.

Notes: Employment estimates are rounded to the nearest job; labor income and economic output values are rounded to the nearest $10,000; individual values may not add to totals due to rounding.

1 A person-year is the equivalent of one person working full-time for one year. Person-years of direct employment were calculated based on IMPLAN labor income output, divided by the annual 90th percentile wage for construction and extraction occupations for the New York-Newark-Jersey City, NY-NJ-PA Metropolitan Statistical Area in 2020, from the U.S. Bureau of Labor Statistics.

2 The IMPLAN model estimates the amount of direct employment generated at the project site, not the place of residence of workers. The Replacement Facility's construction labor demand would be met by individuals living throughout the region, including workers from New York City, from New York State outside of New York City, and from counties in the NJTPA region.

3 Labor income includes employee compensation and proprietor income, including the cost of benefits. The 90th percentile wage ($135,669) was utilized rather than the IMPLAN default wage assumption to account for prevailing wage requirements with construction of the Replacement Facility.

4 Output is the total value of industry production. For service sector industries, output is total sales; for retail and wholesale trade industries, output is gross margin.

4B.3.1 Employment

Construction of the Replacement Facility would generate new direct construction jobs and would support indirect and induced employment throughout the region, including in New York City, New York State (excluding New York City), and the collective New Jersey counties located within the NJTPA region.

Overall, construction would generate 68,498 person-years of construction-related employment within the three geographic areas analyzed. This includes 25,294 direct (on-site) person-years of employment; 21,541 person-years of indirect employment from business-to-business purchases; and 21,663 person-years of induced employment from direct and indirect workers' consumer expenditures. The following subsections provide a breakdown of these totals for the three geographic areas of analysis.

4B.3.1.1 New York City

Construction of the Replacement Facility would create 25,294 direct person-years of employment in New York City within the construction industry.[3] Assuming a 10-year design and construction period, the 25,294 person-years of employment is the equivalent of about 2,529 people working full-time over the 10-year period.[4]

An estimated 19,404 indirect person-years of employment in New York City would be supported by the construction activities. Examples of industries that indirectly support the construction of the Replacement Facility include architecture, engineering, legal services, wholesale trade, concrete manufacturing, and truck transportation.

The increased labor income in New York City would lead to additional household spending and induced economic activity. Induced employment would total 13,331 person-years in New York City. Induced spending would primarily occur in industries such as real estate, health care services, and retail.

4B.3.1.2 New York State Outside New York City

Construction activities associated with the Replacement Facility would support 5,587 person-years of employment in New York State outside of New York City. This includes 924 person-years of indirect employment; examples of industries that indirectly support the construction of the Replacement Facility include architecture, engineering, legal services, wholesale trade, concrete manufacturing, and truck transportation. The increased labor income from direct and

[3] The IMPLAN model estimates the amount of direct employment generated at the project site, not the place of residence of workers. The Replacement Facility's construction labor demand would be met by individuals living throughout the region, including workers from New York City, from New York State outside of New York City, and from counties in the NJTPA region.

[4] Construction is anticipated to require 8 to 10 years to complete. If construction were to be shorter than 10 years, there would be the same total person-years of employment, but it would be realized over a shorter period.

indirect worker spending also would generate 4,663 person-years of induced employment in New York State outside of New York City.

4B.3.1.3 NJTPA Region

Construction activities associated with the Replacement Facility would support 4,881 person-years of employment within the NJTPA region. This includes 1,212 person-years of indirect employment from business-to-business purchases, and 3,669 person-years of induced employment in the NJTPA region from direct and indirect worker spending of labor income.

4B.3.2 Labor Income

Labor income includes employee compensation and proprietor income, including the cost of benefits. Construction of the Replacement Facility would generate direct labor income for those workers directly involved in construction, as well as indirect and induced labor income that would be generated by the indirect and induced economic activities of the project.

Overall, construction activities would generate approximately $8.94 billion in labor income within the three geographic areas analyzed. This includes approximately $3.89 billion in direct labor income; $3.13 billion in indirect labor income; and $1.92 billion in induced labor income. The following subsections provide a breakdown of these totals for the three geographic areas of analysis.

4B.3.2.1 New York City

Labor income generated in New York City by construction of the Replacement Facility would total approximately $8.10 billion. This includes approximately $3.89 billion in labor income associated with direct jobs created by construction activities. The IMPLAN model estimates the amount of direct employment generated at the project site, not the place of residence of workers. The Replacement Facility's construction labor demand would be met by individuals living throughout the region, including workers from New York City, from New York State outside of New York City, and from counties in the NJTPA region. Indirect labor income generated within industries supporting the direct construction activity would total $2.91 billion in New York City. Induced labor income generated by direct and indirect workers consumers expenditures would be $1.30 billion in New York City.

4B.3.2.2 New York State outside New York City

Labor income in New York State outside New York City associated with the construction of the Replacement Facility is estimated to be $400.81 million. Indirect labor income generated within industries supporting the direct construction activity would total $80.64 million in New York State outside New York City. Induced labor income generated by direct and indirect workers' consumers expenditures would be $320.17 million.

4B.3.2.3 NJTPA Region

Labor income realized in the NJTPA region would total approximately $430.61 million, including $135.79 million in indirect labor income generated within industries supporting the direct construction activity, and $294.82 million in induced labor income generated by direct and indirect workers' consumers expenditures.

4B.3.3 Total Effect on the Economy

Total economic output is a metric used to quantify the total value of industry production. It includes intermediate inputs, labor income (including employee compensation and proprietor income), taxes on production and imports, and other property income.

In total, construction of the Replacement Facility would generate approximately $19.68 billion, including the $11.1 billion in initial construction costs, in economic output within the three geographic areas analyzed. This includes approximately $8.19 billion in economic output from the direct construction expenditure; $6.32 billion in indirect output within industries supporting the direct construction activities; and $5.18 billion in induced output generated within industries benefitting from worker spending. The following subsections provide a breakdown of these totals for the three geographic areas of analysis.

4B.3.3.1 New York City

Within New York City, construction of the Replacement Facility would generate approximately $17.14 billion in total economic output. This includes $8.19 billion in direct output from construction expenditure; approximately $5.60 billion of indirect economic output within industries supporting direct construction activities; and $3.36 billion of induced economic output within industries benefitting from worker spending.

4B.3.3.2 New York State outside New York City

Within New York State outside New York City, construction of the Replacement Facility would generate approximately $1.29 billion in economic output. This includes $305.54 million of indirect economic output within industries supporting direct construction activities; and $987.30 million of induced economic output within industries benefitting from worker spending.

4B.3.3.3 NJTPA Region

Within the NJTPA region, construction of the Replacement Facility would generate approximately $1.25 billion in economic output. This includes $421.60 million of indirect economic output within industries supporting direct construction activities; and $827.76 million of induced economic output within industries benefitting from worker spending.

4B.4 ECONOMIC BENEFITS OF REPLACEMENT FACILITY ANNUAL OPERATIONS

By 2032, the Replacement Facility would be constructed and operational. This section presents estimates of the incremental (net new) annual economic benefits associated with the Replacement Facility's "steady-state" operations. Jobs estimates, presented in full- and part-time jobs, would be expected to be ongoing for the life of the Replacement Facility; employee compensation and economic output are presented as annual estimates during steady-state operations.

The analysis of the Replacement Facility's operational benefits utilized a direct (on-site) employment estimate as the "input" for input-output modeling. PANYNJ estimates that there would be approximately 300 full- and part-time PANYNJ staff working at the Replacement Facility during steady-state operating conditions. In addition to PANYNJ staff, there would be an estimated 466 full- and part-time employees working at the approximately 155,344 square feet of retail space within the Replacement Facility. The employment estimate assumes an average of 1 employee per 333 square feet of retail space and assumes a similar composition of store types as the existing PABT facility.

Table 4A-3 in **Appendix 4A, "Socioeconomic Conditions,"** outlines the existing business in the PABT. There are an estimated 23 businesses with approximately 244 workers in the existing PABT. There are also approximately 250 PANYNJ employees and contractors currently working in PABT terminal operations and maintenance. **Table 4B-2** summarizes the estimated total direct employment associated with the existing PABT, the total projected employment associated with the Replacement Facility, and the incremental direct employment associated with the Replacement Facility (subtracting existing PABT employment). The incremental employment directly associated with the Replacement Facility would be 272 jobs, including 222 net new jobs in retail and 50 net new PANYNJ employees.

Table 4B-2. Incremental Direct Employment Associated with the Replacement Facility

Category	Existing PABT Facility	Replacement Facility	Increase
PANYNJ employees and contractors	250	300	50
Retail employment	244	466	222
Total	494	766	272

Sources: AKRF, Inc. and PANYNJ retail tenant inventory.
Note: Employment estimates are based on standard industry employment density ratios commonly used for CEQR analysis and other business operating characteristics. The employment estimates for the existing PABT facility are based on PANYNJ retail tenant inventory and assume 1 employee per: 250 gsf office; 333 gsf local retail (e.g., storefront and terminal interior retail); 200 gsf small local retail (e.g., retail of less than 200 gsf per store); and 875 gsf destination retail. Projected retail employment associated with the Replacement Facility assumes 1 employee per 333 gsf of retail space. The existing conditions retail employment is calculated based on actual occupancy and the type of business and therefore differs from the estimates used to derive future retail employment.

Table 4B-3 summarizes the incremental estimated employment, labor income, and total economic output that would be generated by annual operations of the Replacement Facility.

Table 4B-3. Incremental Economic Benefits of Annual Operations Replacement Facility (Build Year 2032)

Category	New York City	New York State (Outside NYC)	NJTPA Region	Total
Employment (full- and part-time)				
Direct (on-site)[1]	272	0	0	**272**
Indirect (jobs in support industries)	34	2	6	**42**
Induced (jobs from household spending)	40	13	10	**63**
Total	**346**	**15**	**16**	**377**
Labor Income (millions of 2023 dollars)[2]				
Direct (on-site)	$13.85	$0.00	$0.00	**$13.85**
Indirect (earnings in support industries)	$3.90	$0.14	$0.42	**$4.47**
Induced (earnings from household spending)	$3.35	$0.79	$0.68	**$4.82**
Total	**$21.10**	**$0.94**	**$1.10**	**$23.14**
Economic Output (millions of 2023 dollars)[3]				
Direct	$49.97	$0.00	$0.00	**$49.97**
Indirect (output from support industries)	$10.10	$0.56	$1.15	**$11.81**
Induced (output from household spending)	$8.68	$2.36	$1.92	**$12.96**
Total	**$68.75**	**$2.92**	**$3.06**	**$74.74**

Sources: Direct employment based on information from PANYNJ and estimates using standard industry ratios for proposed uses; modeling performed by AKRF in October 2023, using the 2019 IMPLAN model.

Notes: Employment estimates are rounded to the nearest job; labor income and economic output values are rounded to the nearest $10,000; individual impacts may not add to totals due to rounding.

1 The IMPLAN model estimates the amount of direct employment generated at the project site, not the place of residence of workers. The Replacement Facility's operational labor demand would be met by individuals living throughout the region, including workers from New York City, from New York State outside of New York City, and from counties in the NJTPA region.

2 Labor income includes employee compensation and proprietor income, including the cost of benefits.

3 Output is the total value of industry production. For service sector industries, output is total sales; for retail and wholesale trade industries, output is gross margin.

4B.4.1 Incremental Employment

Operations of the Replacement Facility would generate new direct jobs and would support indirect and induced employment throughout the region, including in New York City, New York State (outside of New York City), and within the NJTPA region. Operational employment is presented in full- and part-time jobs and is assumed to be realized for the life of the Replacement Facility.

Overall, the Replacement Facility's operations would support 377 incremental full- and part-time jobs within the three geographic areas analyzed. This includes an estimated 272 incremental direct (on-site) jobs; 42 incremental indirect jobs at businesses supporting the facility's operations; and 63 incremental induced jobs supported by direct and indirect workers' consumer expenditures. The following provides a breakdown of these totals for the three geographic areas of analysis.

4B.4.1.1 New York City

Operations of the Replacement Facility would support 272 incremental direct full- and part-time jobs at the project site in New York City. This would include approximately 50 net new Port Authority personnel, and an estimated 222 net new workers at retail storefronts. The IMPLAN model estimates the amount of direct employment generated at the project site, not the place of residence of workers. The Replacement Facility's operational labor demand would be met by individuals living throughout the region, including workers from New York City, from New York State outside of New York City, and from counties in the NJTPA region.

Net new indirect jobs in New York City supported by the facility's operations would total 34 jobs. Examples of industries that indirectly support the operations include warehousing and storage and services to buildings.

The increased labor income would lead to additional household spending and induced economic activity. Net new induced employment would total 40 jobs in New York City. Induced spending would primarily occur in industries such as real estate, health care services, and retail.

4B.4.1.2 New York State Outside New York City

Operational activities associated with the Replacement Facility would support 15 net new jobs in New York State outside of New York City. This includes induced jobs in industries benefitting from workers' consumer spending.

4B.4.1.3 NJTPA Region

Operational activities associated with the Replacement Facility would support 16 net new jobs in the NJTPA region. This includes 6 indirect jobs in industries supporting the facility's operations, and 10 jobs in industries benefitting from workers' consumer spending.

4B.4.2 Labor Income

Labor income includes employee compensation and proprietor income, including the cost of benefits. The Replacement Facility would generate direct labor income for those workers directly involved in facility operations, as well as indirect and induced labor income that would be generated by the indirect and induced economic activities of the project.

Overall, the Replacement Facility's operational activities would generate approximately $23.14 million in net new labor income annually within the three geographic areas analyzed. This includes approximately $13.85 million in direct labor income; $4.47 million in indirect labor income; and $4.82 million in induced labor income. The following subsections provide a breakdown of these totals for the three geographic areas of analysis.

4B.4.2.1 New York City

Net new labor income generated in New York City by operations of the Replacement Facility would total approximately $21.10 million annually. This includes approximately $13.85 million annually in labor income associated with new direct jobs at the Replacement Facility. Indirect labor income generated within industries supporting the facility's operations would total $3.90 million annually in New York City. Induced labor income generated by workers' consumers expenditures would be $3.35 million annually in New York City.

4B.4.2.2 New York State Outside New York City

Net new labor income generated in New York State outside of New York City by operations of the Replacement Facility would total approximately $0.94 million annually. Indirect labor income generated within industries supporting the direct operational activity would total $0.14 million, and induced labor income generated by direct and indirect workers' consumers expenditures would be $0.79 million.

4B.4.2.3 NJTPA Region

Net new labor income realized in the NJTPA region would total approximately $1.10 million annually, including $0.42 million annually in indirect labor income generated within industries supporting the direct operational activity, and $0.68 million annually in induced labor income generated by direct and indirect workers' consumers expenditures.

4B.4.3 Total Effect on the Economy

Total economic output is a metric used to quantify the total value of industry production. It includes intermediate inputs, labor income (including employee compensation and proprietor income), taxes on production and imports, and other property income.

Operation of the Replacement Facility would generate approximately $74.74 million in net new economic output annually within the three geographic areas analyzed. This includes approximately $49.97 million in annual economic output from on-site operations; $11.81 million in annual net new indirect output within industries supporting the direct on-site operations; and $12.96 million in net new annual induced output generated within industries benefitting from worker spending. The following subsections provide a breakdown of these totals for the three geographic areas of analysis.

4B.4.3.1 New York City

Within New York City, operations of the Replacement Facility would generate approximately $68.75 million in total net new annual economic output. This includes $49.97 million annually in net new direct output; $10.10 million annually in net new indirect economic output within industries supporting direct operational activities; and $8.68 million annually in net new induced economic output within industries benefitting from worker spending.

4B.4.3.2 New York State Outside New York City

Within New York State outside New York City, operations of the Replacement Facility would generate approximately $2.92 million in annual economic output. This includes $0.56 million annually in net new indirect economic output within industries supporting direct operational activities; and $2.36 million annually in net new induced economic output within industries benefitting from worker spending.

4B.4.3.3 NJTPA Region

Within the NJTPA region, operations of the Replacement Facility would generate approximately $3.06 million in annual economic output. This includes $1.15 million annually in net new indirect economic output within industries supporting on-site operational activities; and $1.92 million annually in net new induced economic output within industries benefitting from worker spending.