

APPENDIX D
Expanded Screen Results

ALTERNATIVE 1: Continuation of SEPTA Subway-Surface Line to the Waterfront via and underground tunnel from City Hall to 9th Street near Cherry Street and operate on-street between the tunnel portal and Columbus Boulevard via a connection at Franklin Square. (*Renamed PA-1 Extended for Public Outreach*).

Phase I: Fatal Flaw Screen: (P) Pass; (F) Fail; or (U) Undecided: **PASS**

Phase I Result: PA-1 Extended advanced to the Phase II screen.

Phase II: High Level Screen for PA-1 Extended

Criteria	Description	Scoring Key	Score	Rationale
Preliminary Estimated Capital Cost	Preliminary estimation of capital cost	Low=5 Medium=3 High=1	1	The estimated capital cost of PA-1 would exceed \$1 billion.
Construction Impacts	Severity and duration of impacts related to construction activity	Low=5 Medium=3 High=1	1	Impacts to the SEPTA's Subway-Surface Line and the Commuter Tunnel would be unacceptable. Impacts detailed in Appendix technical memo on PA-1 Extended construction impacts
Transportation System Connectivity	Degree to which alternative enhances transportation system connectivity	Poor=1 Fair=3 Good=5	5	Would provide significant system connectivity benefits
Transportation System Integration	Degree to which alternative would integrate into the existing transportation system	Poor=1 Fair=3 Good=5	5	Would fill a large gap in the City's transportation infrastructure
Impact on Non-Vehicular Activity	Degree of accommodation for pedestrian and bicycle facilities	Poor=1 Fair=3 Good=5	5	Would reduce auto tripmaking by adding additional transit connectivity
Consistency with Present Land Use	Degree to which the alternative is consistent with existing land use	Low=1 Medium=3 High=5	5	Investments that improve access to underserved areas are consistent with local land use goals
Consistency with Future Land Use Goals	Degree to which the alternative is consistent with future proposed land use goals as articulated by the City of Philadelphia	Low=1 Medium=3 High=5	5	Investments that improve access to underserved areas are consistent with local land use goals
Adverse Impact on Parklands	Degree of potential impact to parklands and 4(f)	Low=5 Medium=3 High=1	5	No anticipated negative impacts to parklands
FINAL:			32	

Phase II Result: PA-1 Extended is eliminated from additional consideration due to construction impacts and operational issues detailed in technical memo in Appendix.

ALTERNATIVE 2: Modification of PA-1 Extended with the subsurface portion of the proposed line extending from City Hall to 5th Street under Independence Mall, connecting to Franklin Square underground.

Phase I: Fatal Flaw Screen: (P) Pass; (F) Fail; or (U) Undecided: **FAIL**

Phase I Result: The expansion of PA-1 Extended under Franklin Square has been rejected from further consideration because of the unacceptable construction and operational impacts of PA-1 Extended. Potential issues would include underpinning both the existing PATCO Lindenwold Line and SEPTA's Market-Frankford Line, which both operate in the immediate area.

ALTERNATIVE 3: Reorienting the east-west portion of the proposed underground line along Spring Garden street with 9th Street as the north-west connector between Spring Garden and Market Street.

Phase I: Fatal Flaw Screen: (P) Pass; (F) Fail; or (U) Undecided: **FAIL**

Phase I Result: This alternative would not permit any transfer between PATCO customers at either 8th and Market or a re-opened Franklin Square Station. A key aim of the project is to increase Waterfront access for both existing PATCO and SEPTA customers. In addition, the Waterfront portion of all alternatives would provide a station stop at Spring Garden Street and Columbus Boulevard. SEPTA's Route 43 bus provides frequent (15 minute) service along Spring Garden Street which offers access to SEPTA's Broad Street Line, SEPTA's Market-Frankford Line and Columbus Boulevard into Fishtown.

ALTERNATIVE 4: Add a new station on the Market-Frankford Line at 20th Street and extend PATCO from its terminus at 15th/16th and Locust to 20th and Market.

Phase I: Fatal Flaw Screen: (P) Pass; (F) Fail; or (U) Undecided: **FAIL**

Phase I Result: This alternative was considered during the Feasibility Study and did not advance as a result of cost and construction complexity. This concept is not without merit and does warrant further evaluation in a separate planning effort. At the present time this alternative is not being advanced as a component of any build alternative.

ALTERNATIVE 5: Extend service to Navy Yard and Sports Complex.

Phase I: Fatal Flaw Screen: (P) Pass; (F) Fail; or (U) Undecided: **PASS**

Phase I Result: This will advance to the Phase II screen. A goal of the project is to prepare for a future project phase that provides direct transit service from the Waterfront to the Navy Yard and Sports Complex.

Phase II Result: The concept of extending the line to the Navy Yard and Sports Complex should be evaluated but not as part of the minimal operating segment.

Phase III Result: The analysis of the extension of the proposed alternatives to the Navy Yard and Sports Complex warrants additional evaluation in a future study phase. This concept is not advanced as part of the minimal operable segment of the build alternatives.

ALTERNATIVE 6: Extend the existing PATCO Lindenwold Line to 30th Street Station.

Phase I: Fatal Flaw Screen: (P) Pass; (F) Fail; or (U) Undecided: **FAIL**

Phase I Result: This alternative was considered during the Feasibility Study and did not advance as a result of cost and construction complexity.

Phase II: High Level Screen: Extension of Line to Philadelphia Navy Yard and Sports Complex

Criteria	Description	Scoring Key	Score	Rationale
Preliminary Estimated Capital Cost	Preliminary estimation of capital cost	Low=5 Medium=3 High=1	3	The estimated capital cost would be approximately \$800 million for the entire line (or approximately \$400 million for the portion from Pier 70 south to the Navy Yard and Sports Complex).
Construction Impacts	Severity and duration of impacts related to construction activity	Low=5 Medium=3 High=1	3	Unknown
Transportation System Connectivity	Degree to which alternative enhances transportation system connectivity	Poor=1 Fair=3 Good=5	5	Would increase system connectivity by creating a linkage between the Navy Yard, the southern terminus of the Broad Street Line and the Philadelphia Waterfront
Transportation System Integration	Degree to which alternative would integrate into the existing transportation system	Poor=1 Fair=3 Good=5	3	Would integrate into the regional transportation system but travel between the City's urban core and the Sports Complex is already provided by SEPTA's Broad Street Line
Impact on Non-Vehicular Activity	Degree of accommodation for pedestrian and bicycle facilities	Poor=1 Fair=3 Good=5	3	Line would be designed to be consistent with pedestrian and cyclist activities
Consistency with Present Land Use	Degree to which the alternative is consistent with existing land use	Low=1 Medium=3 High=5	1	Land south of Pier 70 is primarily industrial and hosts port-related activities
Consistency with Future Land Use Goals	Degree to which the alternative is consistent with future proposed land use goals as articulated by the City of Philadelphia	Low=1 Medium=3 High=5	3	Future land south of Pier 70 is likely to remain a mix of industrial and port-related uses.
Adverse Impact on Parklands	Degree of potential impact to parklands and 4(f)	Low=5 Medium=3 High=1	5	No anticipated negative impacts to parklands
TOTAL:			26	

Phase III: Short List Screen: Extension of Line to Philadelphia Navy Yard and Sports Complex

Criteria	Description	Rationale
Ridership	Estimated daily ridership for the alternative	Warrants further analysis
Capital Cost	Estimation of the alternative's capital cost	Warrants further analysis but estimated to be \$400 million
Operation and Maintenance Cost (O&M Cost)	Estimation of the alternative's O&M Cost	Warrants further analysis
Adverse Air Quality Impacts	Adverse impact of alternative on regional air quality	None anticipated
Travel Time Savings	AM peak period travel time savings	Warrants further analysis
Peak Period Vehicle Reduction	Estimated number of peak period vehicles to be eliminated by the operation of the alternative	Warrants further analysis
Adverse Impact on Traffic Operations	Degree to which the alternative would negatively impact traffic operations	Warrants further analysis
Cost Effectiveness	Estimation of how the alternative would achieve FTA goals for cost effectiveness	Warrants further analysis
Adverse Impact on Historic or Archaeological Resources	Degree of potential impact on historic or archaeological resources	Warrants further analysis
Implementation Challenges	Judgment based on legislative and public support for alternative as well as lack of jurisdictional obstacles	Warrants further analysis
Other Significant Adverse Impacts	Degree of other significant negative impacts of alternative	Warrants further analysis

ALTERNATIVE 7: Reorient the northern terminus of the proposed line to Girard Avenue instead of Penn Treaty Park and intersect with the Girard Avenue Trolley (SEPTA Route 15).

Phase I: Fatal Flaw Screen: (P) Pass; (F) Fail; or (U) Undecided: **PASS**

Phase I Result: The Feasibility Study identified the northern terminus of the proposed alignment along Columbus Boulevard to be Spring Garden Street. At the outset of the Alternatives Analysis, the northern terminus was expanded to Penn Treaty Park to better serve residential developments north of Spring Garden Street. The relocation of the northern terminus to Penn Treaty Park would also permit the proposed line to serve the future SugarHouse Casino and Fishtown.

A diversion from Penn Treaty Park to Girard Avenue warrants additional evaluation. The benefits of this modification would include a direct connection to SEPTA’s Market-Frankford Line service at the Girard Station (as opposed to the Spring Garden Station), a direct connection to SEPTA’s Route 15 trolley, and better access to the proposed development at the 400,000-square-foot mixed-use shopping center with 500 residential units underway at Girard Avenue and North Hancock Street in Northern Liberties.

Phase II: High Level Screen: Reorient the northern terminus of the proposed line to Girard Avenue instead of Penn Treaty Park and intersect with the Girard Avenue Trolley (SEPTA Route 15).

Criteria	Description	Scoring Key	Score	Rationale
Preliminary Estimated Capital Cost	Preliminary estimation of capital cost	Low=5 Medium=3 High=1	3	Relocation of the northern terminus from Penn Treaty Park to Girard Avenue is estimated to increase the overall project’s capital costs by \$11 million.
Construction Impacts	Severity and duration of impacts related to construction activity	Low=5 Medium=3 High=1	3	Construction will include modifications to the track bed and stations for the existing Route 15 trolley.
Transportation System Connectivity	Degree to which alternative enhances transportation system connectivity	Poor=1 Fair=3 Good=5	5	Would provide significant additional connectivity to SEPTA services along Girard Avenue (Route 15 trolley and the Girard Avenue stop on the MFL)
Transportation System Integration	Degree to which alternative would integrate into the existing transportation system	Poor=1 Fair=3 Good=5	5	Would provide significant additional integration with SEPTA services along Girard Avenue (Route 15 trolley and the Girard Avenue stop on the MFL)
Impact on Non-Vehicular Activity	Degree of accommodation for pedestrian and bicycle facilities	Poor=1 Fair=3 Good=5	5	Line would be designed to be consistent with pedestrian and cyclist activities
Consistency with Present Land Use	Degree to which the alternative is consistent with existing land use	Low=1 Medium=3 High=5	5	Investments that improve access to underserved areas are consistent with local land use goals
Consistency with Future Land Use Goals	Degree to which the alternative is consistent with future proposed land use goals as articulated by the City of Philadelphia	Low=1 Medium=3 High=5	5	Investments that improve access to underserved areas are consistent with local land use goals
Adverse Impact on Parklands	Degree of potential impact to parklands and 4(f)	Low=5 Medium=3 High=1	5	Moving the northern terminus from Penn Treaty Park to Girard Avenue will minimize a potential negative park impact.
TOTAL:			36	

Phase II Result: The reorientation of the northern terminus from Penn Treaty Park to Girard Avenue warrants advancing to the Phase III High Level Screen.

Phase III: Short List Screen: Reorient the northern terminus of the proposed line to Girard Avenue instead of Penn Treaty Park and intersect with the Girard Avenue Trolley (SEPTA Route 15).

Criteria	Description	Rationale
Ridership	Estimated daily ridership for the alternative	The relocation of the northern terminus from Penn Treaty Park to Girard Avenue is expected to result in a potential ridership boost of approximately 7 percent.
Capital Cost	Estimation of the alternative's capital cost	Relocation of the northern terminus from Penn Treaty Park to Girard Avenue is estimated to increase the overall project's capital costs by \$11 million.
Operation and Maintenance Cost (O&M Cost)	Estimation of the alternative's O&M Cost	
Adverse Air Quality Impacts	Adverse impact of alternative on regional air quality	Will result in increased transit options and transit tripmaking in the region creating positive air quality impacts.
Travel Time Savings	AM peak period travel time savings	Will result in positive travel time savings.
Peak Period Vehicle Reduction	Estimated number of peak period vehicles to be eliminated by the operation of the alternative	Will result in increased transit options and transit tripmaking in the region creating positive air quality impacts.
Adverse Impact on Traffic Operations	Degree to which the alternative would negatively impact traffic operations	Introducing rail transit on Frankford Avenue, where none exists today, and increasing the number of rail vehicles on Girard Avenue should have negative impacts on traffic flow on those roadways.
Cost Effectiveness	Estimation of how the alternative would achieve FTA goals for cost effectiveness	Increase in ridership and increased connectivity to existing transit facilities should offset additional capital and O&M costs
Adverse Impact on Historic or Archaeological Resources	Degree of potential impact on historic or archaeological resources	
Implementation Challenges	Judgment based on legislative and public support for alternative as well as lack of jurisdictional obstacles	Challenge to specify how vehicular traffic and rail will co-exist on Frankford Avenue. Shared use of rail and power between the Route 15 Trolley and the Build Alternative must be addressed.
Other Significant Adverse Impacts	Degree of other significant negative impacts of alternative	Negative impacts on the development proposed at Girard Avenue and North Hancock Street will need to be examined in future phases.

Phase III Result: The reorientation of the northern terminus from Penn Treaty Park to Girard Avenue will advance as a core element of the build alternatives to be fully evaluated.

ALTERNATIVE 8: Extend the proposed line to the Art Museum or the Art Museum area.

Phase I: Fatal Flaw Screen: (P) Pass; (F) Fail; or (U) Undecided: **FAIL**

Phase I Result: The extension of the line to the Art Museum area (potentially via the City Branch ROW) is beyond the scope of the current project. This option does warrant evaluation in a separate planning evaluation.

ALTERNATIVE 9: Extend the proposed line north of Penn Treaty Park to Allegheny Avenue.

Phase I: Fatal Flaw Screen: (P) Pass; (F) Fail; or (U) Undecided: **PASS**

Phase I Result: The northern terminus of the line could be extended beyond Fishtown or Northern Liberties to serve points further north.

Phase II: High Level Screen: Extend the proposed line north of Penn Treaty Park to Allegheny Avenue.

Criteria	Description	Scoring Key	Score	Rationale
Preliminary Estimated Capital Cost	Preliminary estimation of capital cost	Low=5 Medium=3 High=1	3	The estimated capital cost would be could exceed \$200 million.
Construction Impacts	Severity and duration of impacts related to construction activity	Low=5 Medium=3 High=1	3	Unknown
Transportation System Connectivity	Degree to which alternative enhances transportation system connectivity	Poor=1 Fair=3 Good=5	3	Would eliminate potential connection to Girard Avenue and the related benefits.
Transportation System Integration	Degree to which alternative would integrate into the existing transportation system	Poor=1 Fair=3 Good=5	3	Would introduce rail service in a corridor already served by both SEPTA buses and SEPTA Market-Frankford Line service. Proximity to SEPTA R7 line could also negatively impact performance.
Impact on Non-Vehicular Activity	Degree of accommodation for pedestrian and bicycle facilities	Poor=1 Fair=3 Good=5	3	Line would be designed to be consistent with pedestrian and cyclist activities
Consistency with Present Land Use	Degree to which the alternative is consistent with existing land use	Low=1 Medium=3 High=5	3	Investments that improve access to underserved areas are consistent with local land use goals
Consistency with Future Land Use Goals	Degree to which the alternative is consistent with future proposed land use goals as articulated by the City of Philadelphia	Low=1 Medium=3 High=5	3	Investments that improve access to underserved areas are consistent with local land use goals
Adverse Impact on Parklands	Degree of potential impact to parklands and 4(f)	Low=5 Medium=3 High=1	3	No anticipated negative impacts to parklands
TOTAL:			23	

Phase II Result: The extension of the proposed line north to Allegheny Avenue warrants additional evaluation in a future phase. This alternative would eliminate the project’s ability to connect with the Market-Frankford Line station on Girard Avenue, degrading the project’s benefits related to connectivity. This concept will not advance to a Phase III screen. The project design will not preclude a future northern extension beyond Frankford Avenue and Columbus Boulevard.

ALTERNATIVE 10: Extend northern terminus of line to Bensalem.

Phase I: Fatal Flaw Screen: (P) Pass; (F) Fail; or (U) Undecided: **FAIL**

Phase I Result: Similar to Alternative 9, the extension of the proposed build alternative beyond Girard Avenue should be evaluated in a future phase. The project design will not preclude a future northern extension beyond Frankford Avenue and Columbus Boulevard.

ALTERNATIVE 11: Extend PA-1 above ground to 8th and Market. (Renamed PA-3).

Phase I: Fatal Flaw Screen: (P) Pass; (F) Fail; or (U) Undecided: **PASS**

Phase I Result: This alternative would create an on-street linkage between the eastern portion of Center City’s transit core (8th and Market and Market East) while avoiding the costs and impacts of subsurface construction and minimize impacts to Market Street. This alternative would provide a connection to existing PATCO service at 8th and Market.

Phase II: High Level Screen: Extend PA-1 above ground to 8th and Market.

Criteria	Description	Scoring Key	Score	Rationale
Preliminary Estimated Capital Cost	Preliminary estimation of capital cost	Low=5 Medium=3 High=1	3	The estimated cost would be \$411 million.
Construction Impacts	Severity and duration of impacts related to construction activity	Low=5 Medium=3 High=1	3	The project will result in construction impacts related to the reopening of the PATCO Franklin Square Station as well as on-street impacts to Market Street, Cherry Street, Arch Street and Race Street
Transportation System Connectivity	Degree to which alternative enhances transportation system connectivity	Poor=1 Fair=3 Good=5	3	Would provide a linkage to the Market East station and SEPTA and PATCO services at 8 th and Market. Users of the SEPTA Broad Street Line and the SEPTA Subway-Surface Lines will need to walk five blocks to complete a transfer.
Transportation System Integration	Degree to which alternative would integrate into the existing transportation system	Poor=1 Fair=3 Good=5	5	Would integrate easily into the regional transportation infrastructure absent the anticipated construction impacts
Impact on Non-Vehicular Activity	Degree of accommodation for pedestrian and bicycle facilities	Poor=1 Fair=3 Good=5	5	Line would be designed to be consistent with pedestrian and cyclist activities
Consistency with Present Land Use	Degree to which the alternative is consistent with existing land use	Low=1 Medium=3 High=5	5	Investments that improve access to underserved areas are consistent with local land use goals
Consistency with Future Land Use Goals	Degree to which the alternative is consistent with future proposed land use goals as articulated by the City of Philadelphia	Low=1 Medium=3 High=5	3	City is developing a vision of Market East area and alternative could conflict with elements of that local area plan.
Adverse Impact on Parklands	Degree of potential impact to parklands and 4(f)	Low=5 Medium=3 High=1	5	No anticipated negative impacts to parklands
TOTAL:			32	

Phase II Result: The benefits of this alternative result in it advancing to the Phase III screen.

Phase III: Short List Screen: Extend PA-1 above ground to 8th and Market.

Criteria	Description	Rationale
Ridership	Estimated daily ridership for the alternative	Estimated daily ridership for this alternative is 8,800.
Capital Cost	Estimation of the alternative’s capital cost	Estimated capital cost for this alternative is \$411 million.
Operation and Maintenance Cost (O&M Cost)	Estimation of the alternative’s O&M Cost	Estimated O&M costs for this alternative are \$16.6 million.
Adverse Air Quality Impacts	Adverse impact of alternative on regional air quality	Will result in increased transit options and transit tripmaking in the region creating positive air quality impacts.
Travel Time Savings	AM peak period travel time savings	Will result in approximately 1,600 hours of daily travel time savings.
Peak Period Vehicle Reduction	Estimated number of peak period vehicles to be eliminated by the operation of the alternative	Will result in increased transit options and transit tripmaking in the region creating positive air quality impacts.
Adverse Impact on Traffic Operations	Degree to which the alternative would negatively impact traffic operations	Would create circumstances of join roadway and trolley operations on 8 th Street, 7 th Street, Market Street and Race Street in Center City including a left-hand turn from Market Street onto 7 th Street, which is illegal for passenger vehicles and buses.
Cost Effectiveness	Estimation of how the alternative would achieve FTA goals for cost effectiveness	
Adverse Impact on Historic or Archaeological Resources	Degree of potential impact on historic or archaeological resources	
Implementation Challenges	Judgment based on legislative and public support for alternative as well as lack of jurisdictional obstacles	Vehicular impacts will need to be addressed in future phases.
Other Significant Adverse Impacts	Degree of other significant negative impacts of alternative	City is developing a vision of Market East area and alternative could conflict with elements of that local area plan.

Phase III Result: The benefits and presumed costs of this alternative result warrants additional evaluation of this project as one of the build alternatives. This alternative is explicitly supported by the City of Philadelphia.