

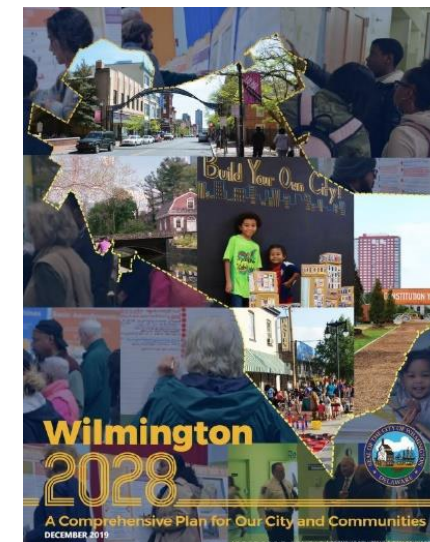
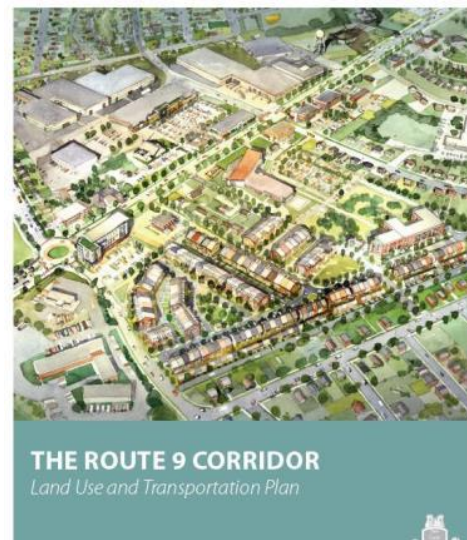
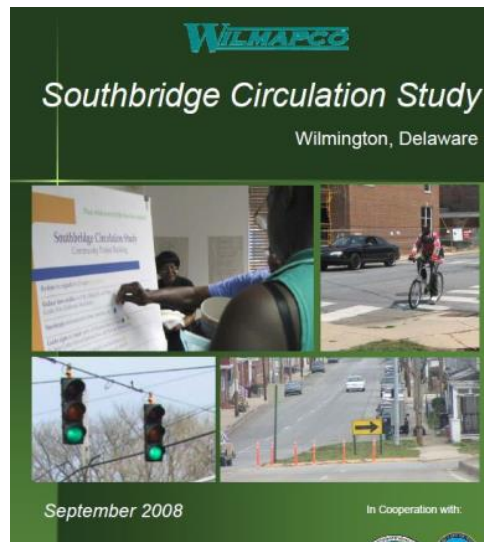
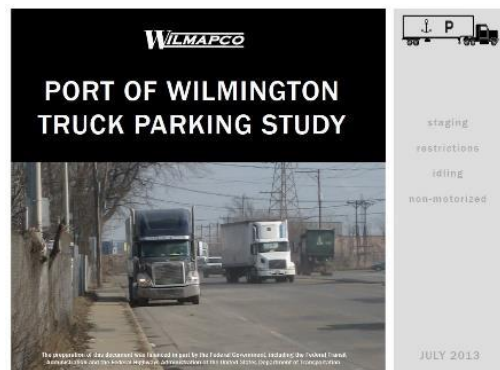
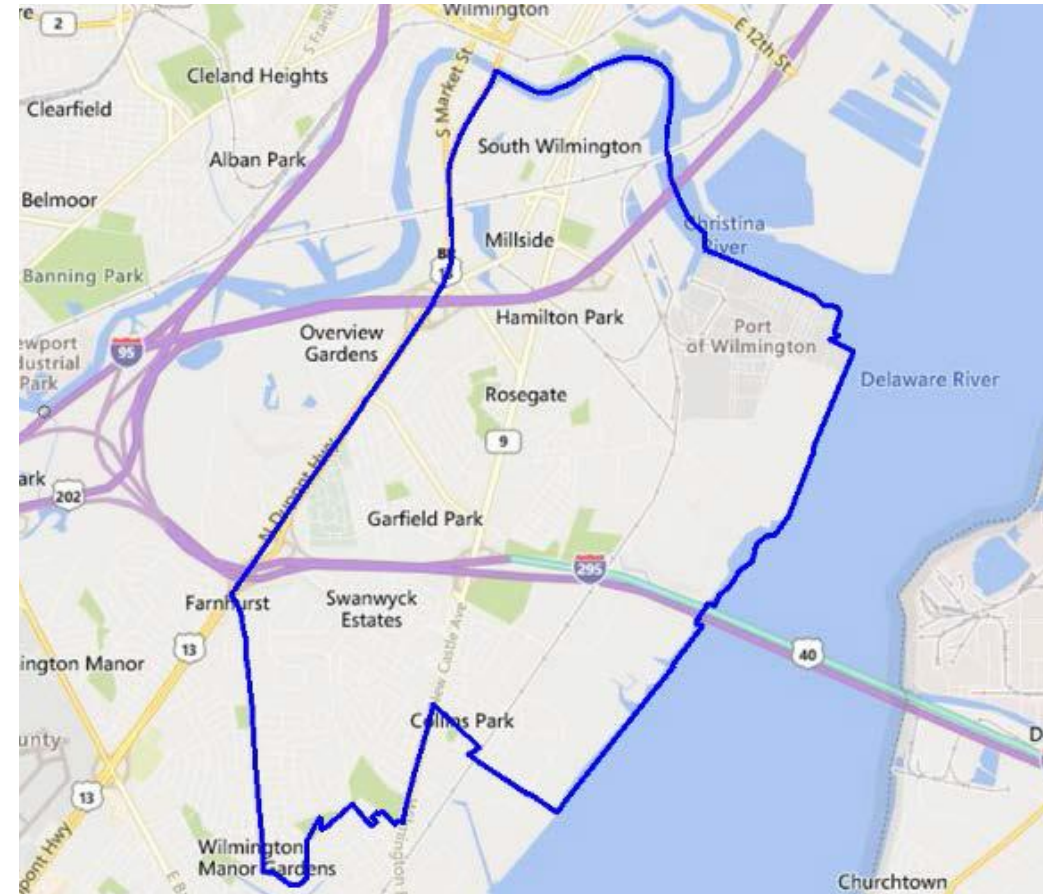
Impact/Benefit Analysis of Truck Access Improvements in the Port of Wilmington Area

March 2022

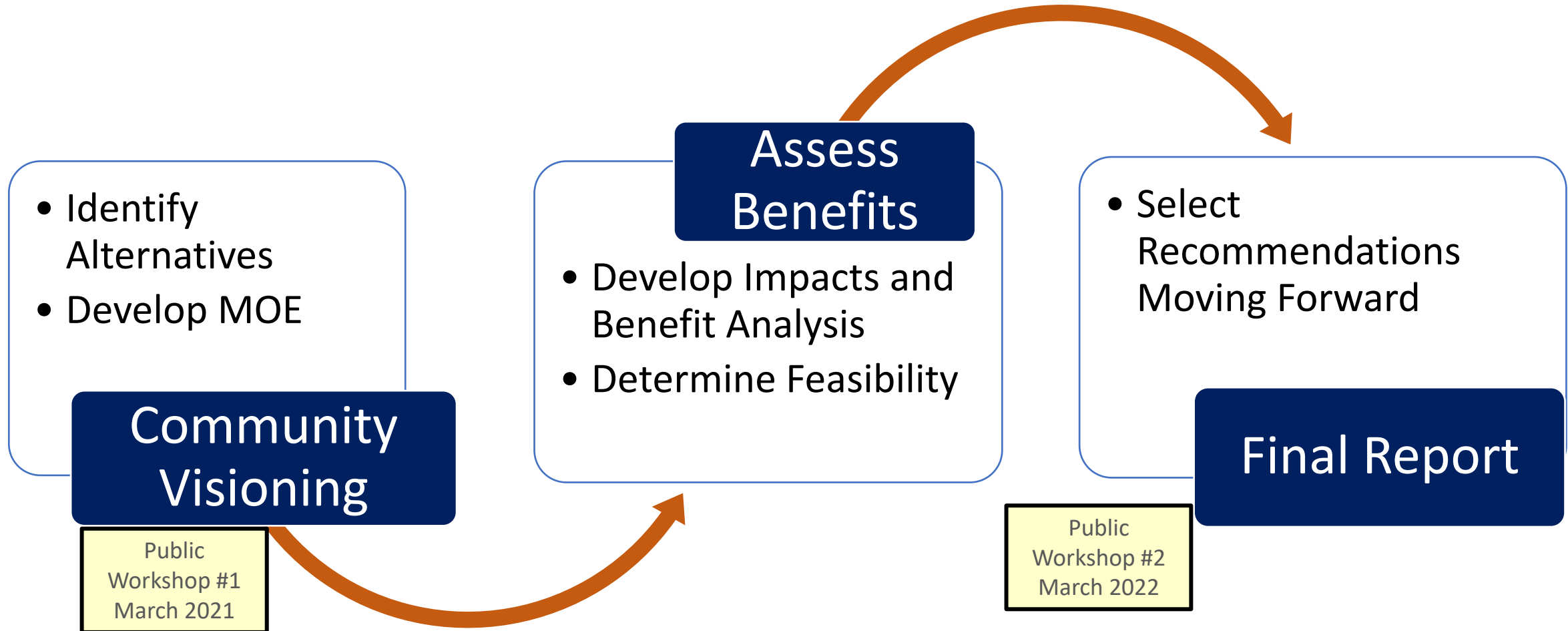


Project Details

- Evaluate and provide further analysis possible improvements in and around the Port of Wilmington area from SR 9 Corridor Master Plan and other plans/studies
- Serve as the technical analysis to analyze these ideas with a land use and transportation model-based approach.
- Capture “what-if” scenarios for which improvement(s) work best from the possible ideas
- Provide cost estimates for these recommended improvements short/long term and low/high-cost options
- Determine feasibility of options and develop recommendations



Work Plan



Alternatives Studied

TRAFFIC OPERATIONAL ANALYSIS

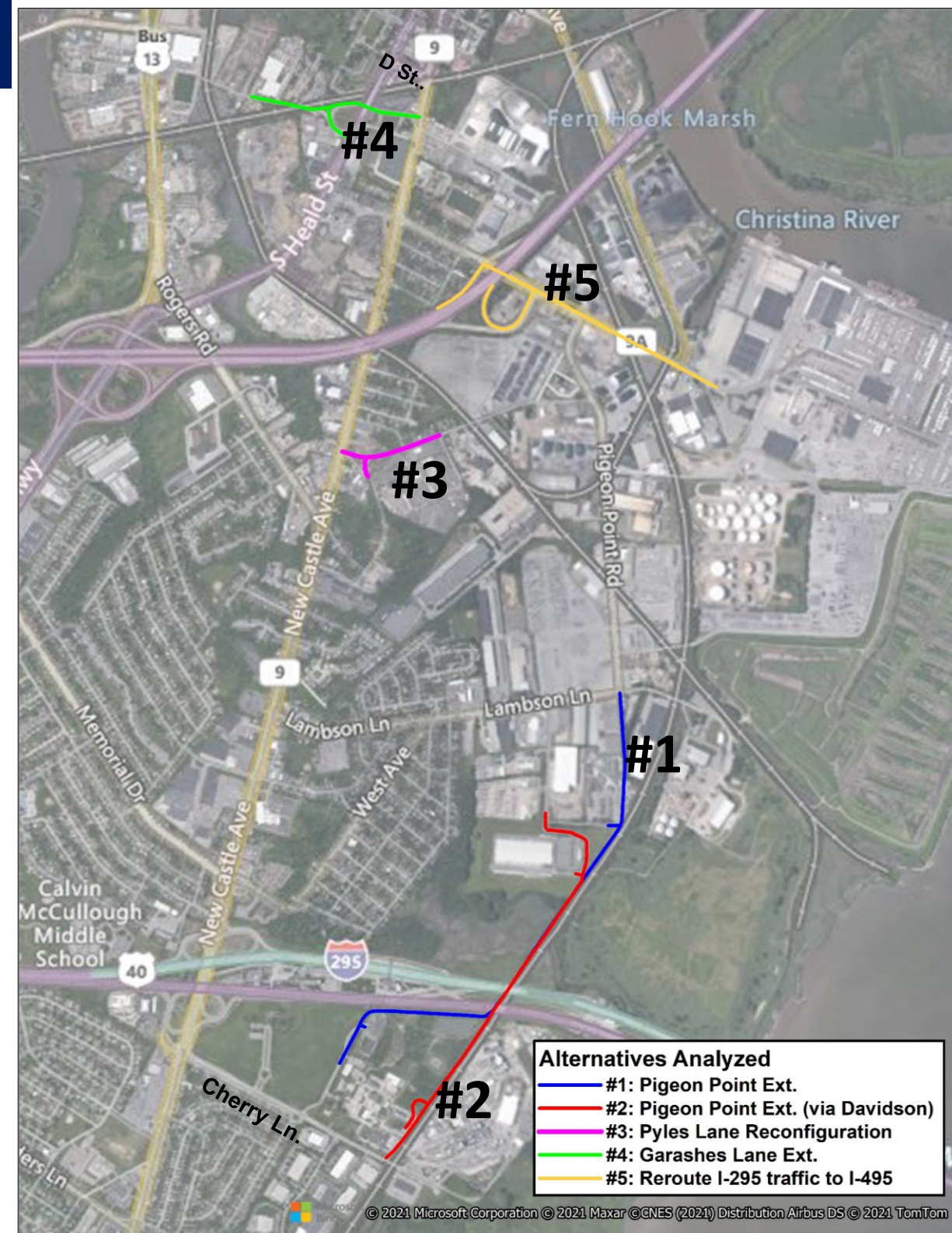
The traffic operational analysis was performed using Synchro 10 traffic analysis software. Six scenarios were analyzed as follows:

1. Existing Conditions to serve as the basis for comparison of the benefits of the alternatives.
2. Alternative 1 – Pigeon Point Option 1.
3. Alternative 2 – Pigeon Point Option 2.
4. Alternative 3 – Pyles Lane Extension.
5. Alternative 4 – Garasches Lane.
6. Alternative 5 – Sign and Reroute All Port I-295 Traffic signed to I-495.

MEASURES OF EFFECTIVENESS & BENEFITS

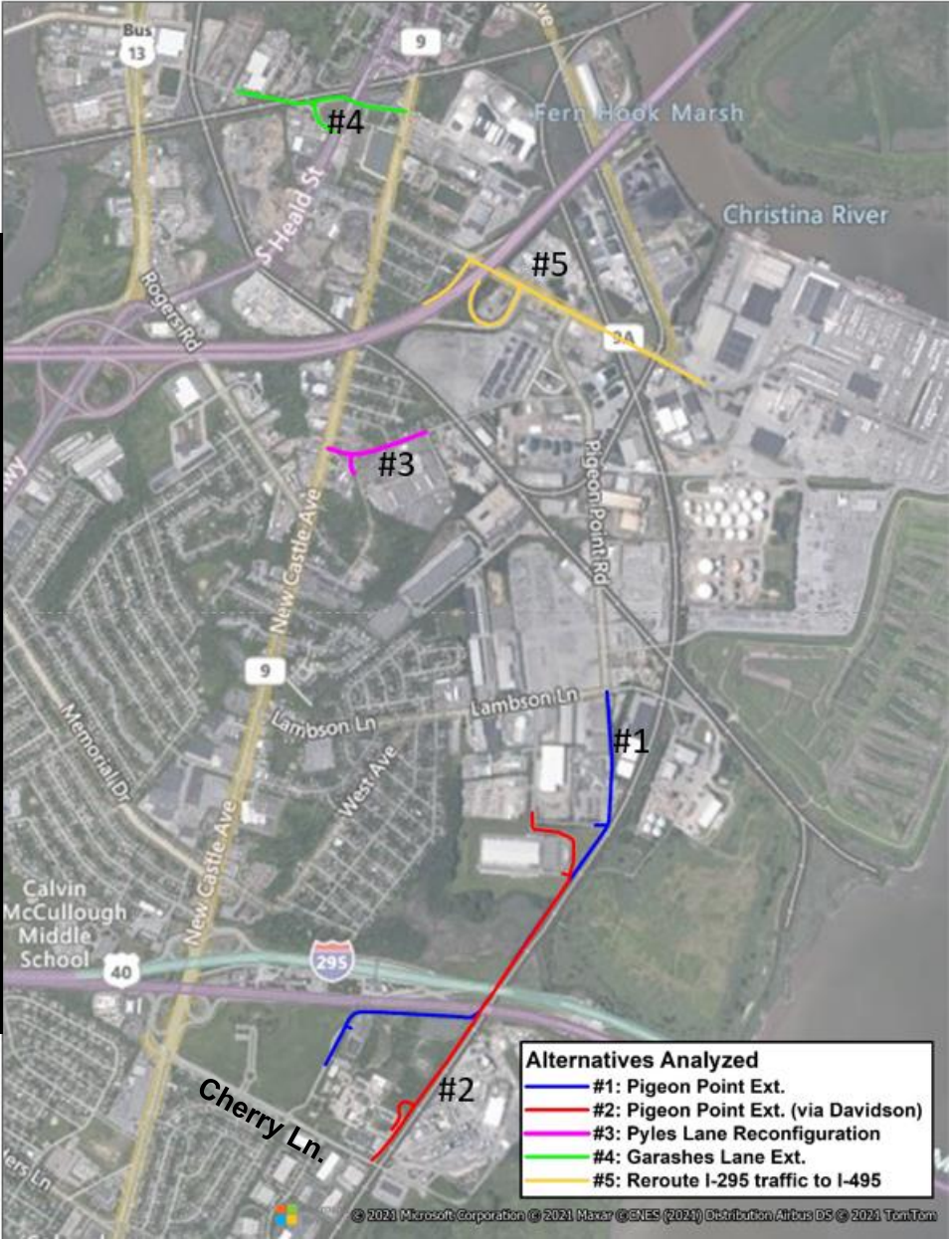
1. Bidirectional Travel Time on New Castle Avenue from D Street to Cherry Lane.
2. A.M. and P.M. peak hour Intersection Level of Service (LOS) for all applicable intersections on New Castle Avenue, Terminal Avenue, and Heald Street (US13).
3. Truck Reduction at intersections on New Castle Avenue and on Terminal Avenue west of the I-495 ramps.
4. Fuel consumption reduction on New Castle Avenue from D Street to Cherry Lane.

The MOE obtained for each alternative was compared to the existing conditions MOE to assess the benefits/disbenefits of each.



Annual Travel Time & Fuel Consumption Reduction for Weekday AM and PM Peak Hours*

Alternative	Annual Travel Time Reduction on New Castle Ave. (Hours)	Benefit Score (5 max.)	Annual Fuel on New Castle Ave. (Gallons)	Benefit Score (5 max.)
Alternative 1	1,820	2.33	3,640	2.92
Pigeon Pt. Option 1	1,820	2.33	3,640	2.92
Alternative 1	1,820	2.33	3,640	2.92
Pigeon Pt. Option 1	1,820	2.33	3,640	2.92
Alternative 3 Pyles Lane	780	1.00	1,560	1.25
Alternative 4	2,860	3.67	4,420	3.54
Garashes Ln.	2,860	3.67	4,420	3.54
Alternative 5	3,900	5.00	6,240	5.00

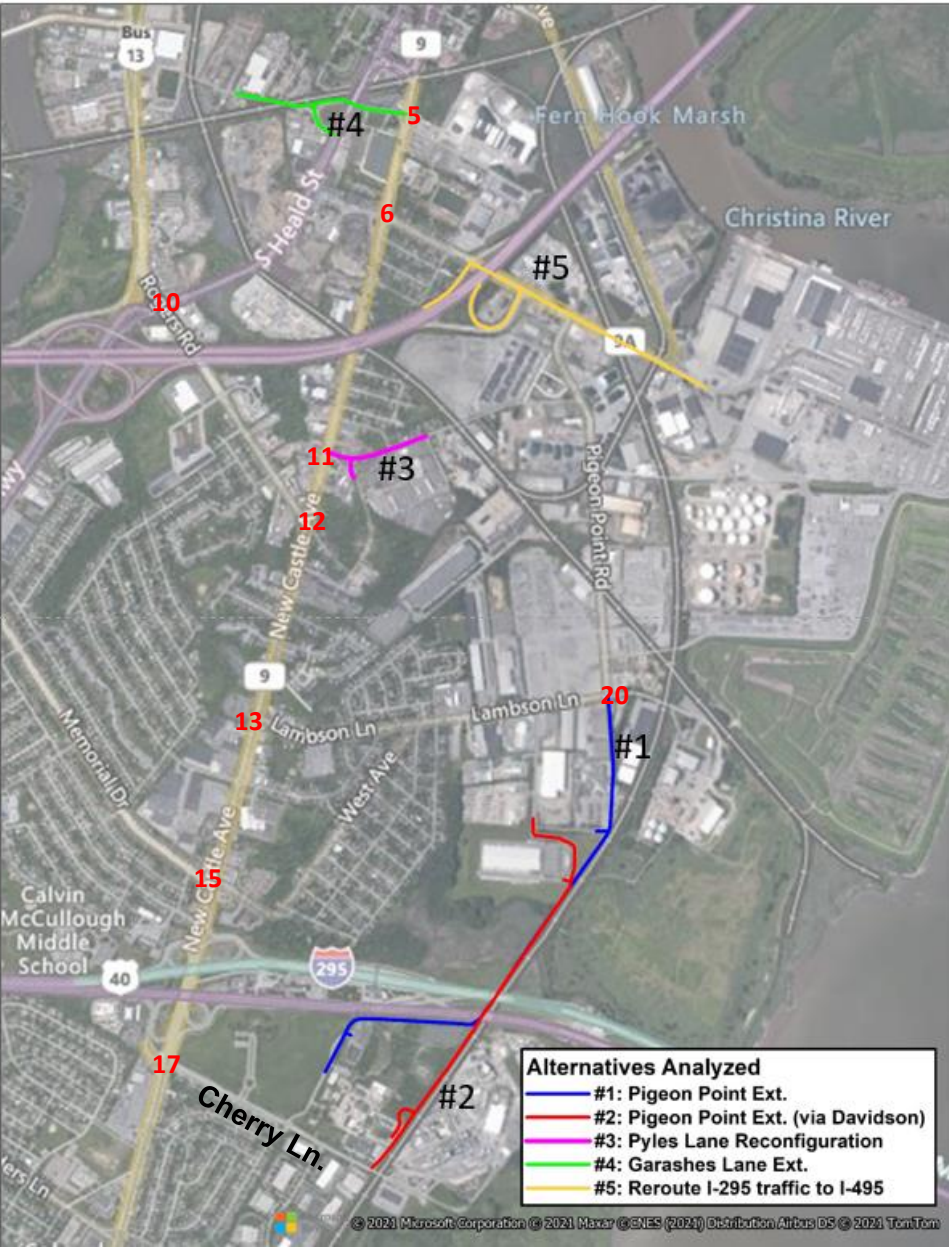


*New Castle Avenue measured from D Street to Cherry Lane. Includes all vehicles

Truck Reduction at intersections on New Castle Avenue and on Terminal Avenue west of the I-495 ramps.

Weekday AM and PM Peak Hours Truck Reduction

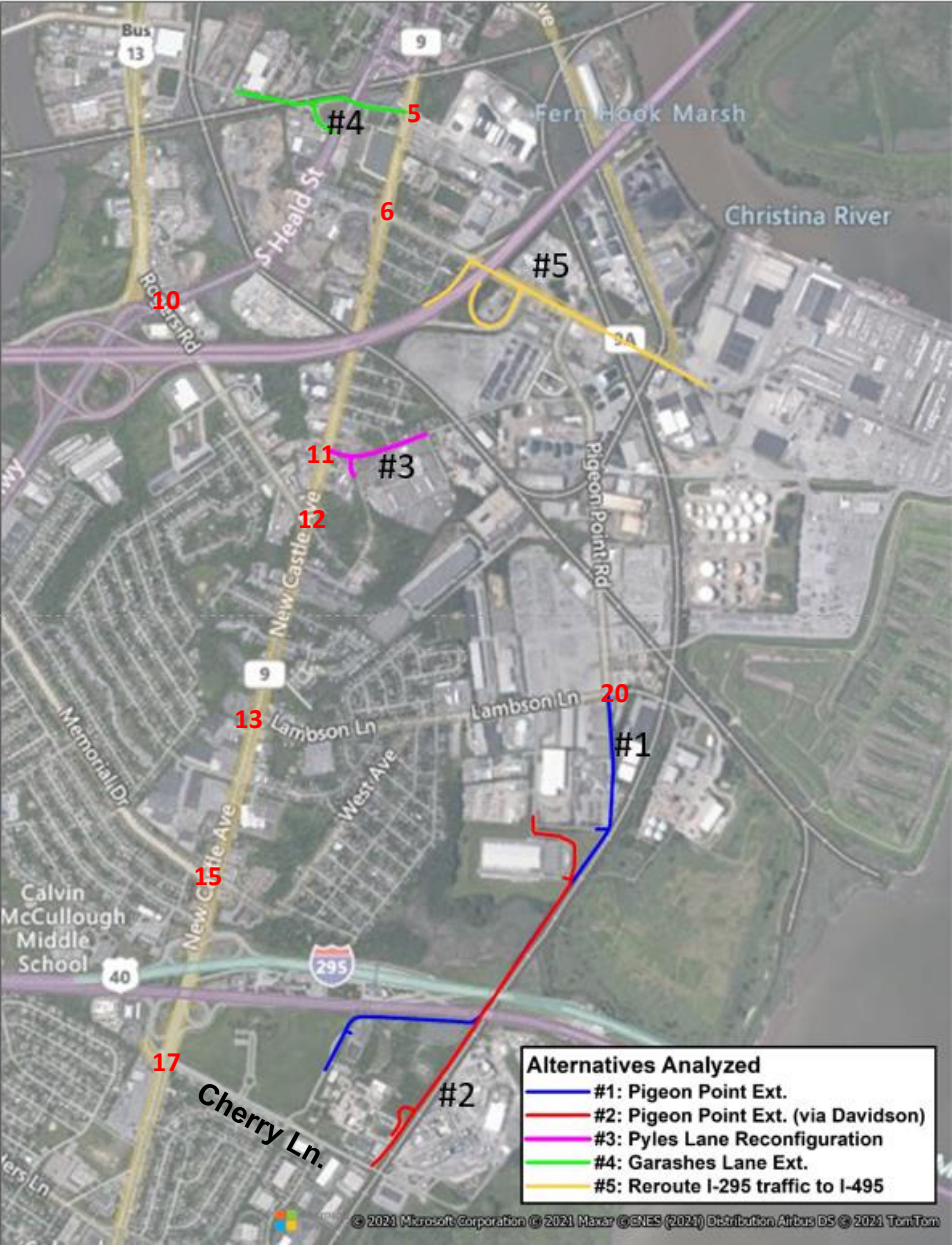
Intersection / Location	Truck Reduction?				
	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
New Castle Ave & D St	NO	NO	NO	NO	NO
New Castle Ave & Connector Rd	NO	NO	NO	NO	NO
New Castle Ave & Garasches Ln	NO	NO	NO	NO	NO
New Castle Ave & Terminal Ave	YES	YES	YES	NO	YES
New Castle Ave & Pyles Ln	YES	YES	YES	YES	YES
New Castle Ave & Old Ferry Rd/ Pyles Ln Extension	YES	YES	NO	YES	YES
New Castle Ave & Rogers Rd	YES	YES	NO	YES	YES
New Castle Ave & Lambson Ln	YES	YES	NO	YES	YES
New Castle Ave & Morehouse Dr	YES	YES	NO	YES	YES
New Castle Ave & Memorial Dr	YES	YES	NO	YES	YES
New Castle Ave & Halcyon Dr	YES	YES	NO	YES	YES
New Castle Ave & Cherry Ln	NO	NO	NO	NO	NO
Terminal Avenue West of I-495 Ramps	YES	YES	YES	NO	YES
New Castle Ave Truck Reduction Locations	9	9	3	7	9
New Castle Ave Benefit Score (12 Maximum)	8.00	8.00	2.00	6.00	8.00
Terminal Ave Benefit Score (1 Maximum)	1.00	1.00	1.00	0.00	1.00



Truck Reduction at intersections on New Castle Avenue
and on Terminal Avenue west of the I-495 ramps.

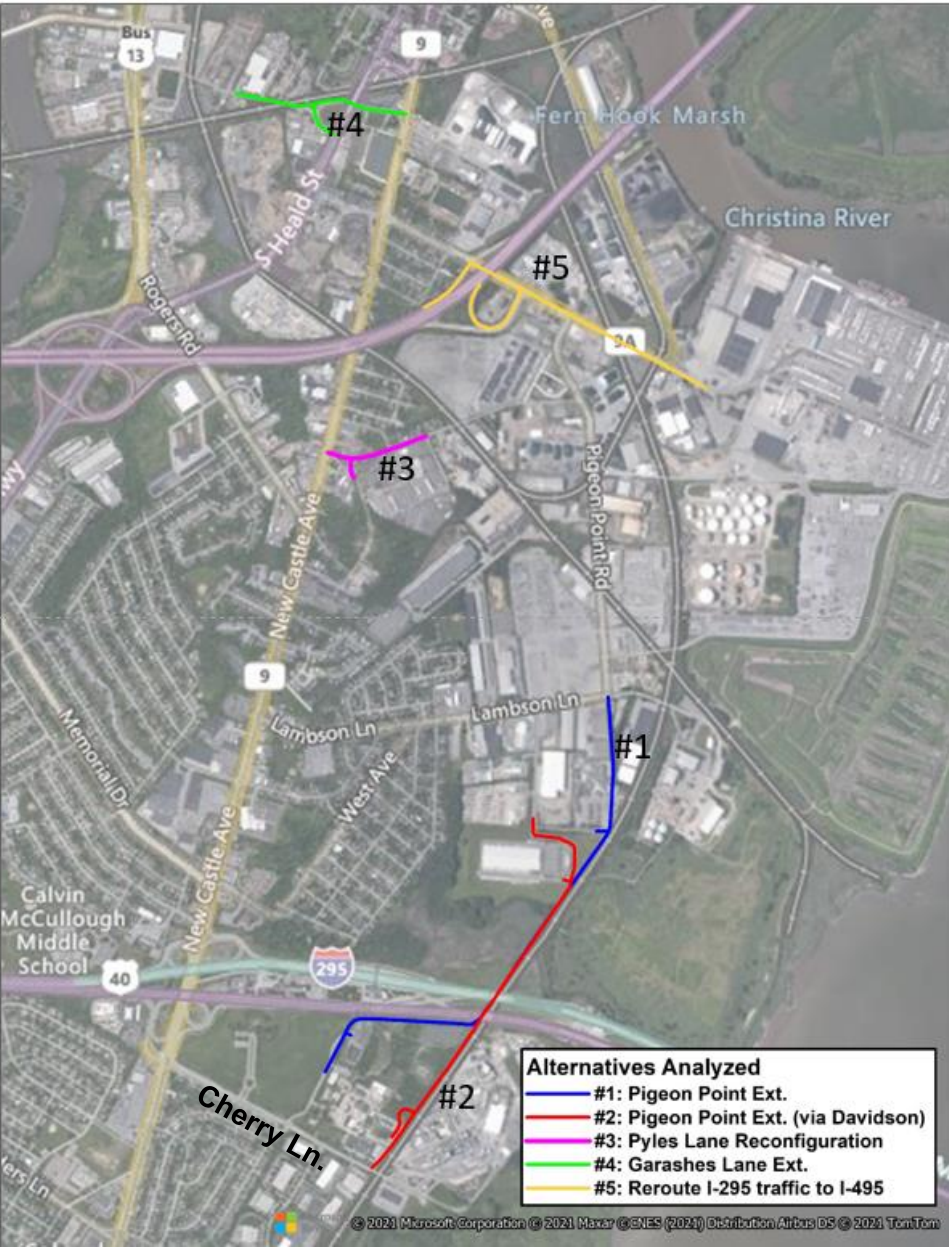
Weekday AM and PM Peak Hours Truck Reduction

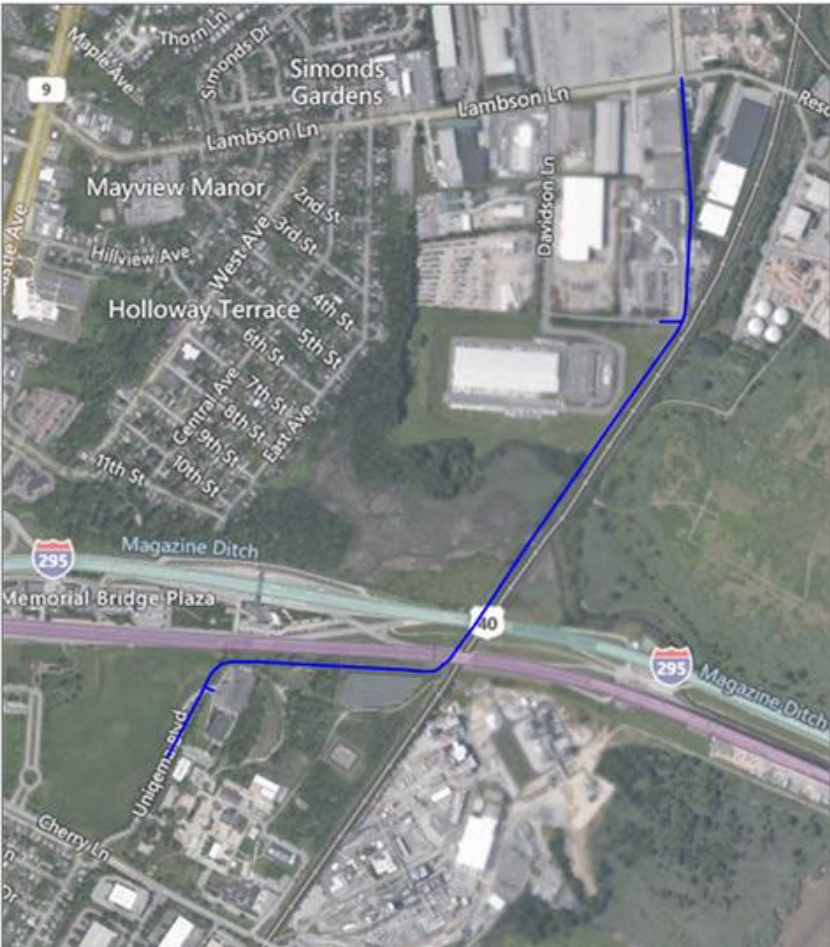
No.		Location	Percent Truck Reduction (-) / Increase									
			Alternative 1 Pigeon Pt. Opt 1		Alternative 2 Pigeon Pt. Opt 2		Alternative 3 Pyles Lane		Alternative 4 Garashes Ln.		Alternative 5 Reroute	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1		New Castle Avenue at The Connector (from S Heald St Exit Ramp)	0%	0%	0%	0%	0%	0%	177%	238%	0%	0%
2		New Castle Avenue at New York Avenue	0%	0%	0%	0%	0%	0%	170%	174%	0%	0%
4		S Heald St at Garasches Lane	0%	0%	0%	0%	0%	0%	340%	297%	0%	0%
5		New Castle Avenue at Garasches Lane	0%	0%	0%	0%	0%	0%	263%	276%	0%	0%
6		New Castle Avenue at Terminal Ave (Signal Permit No. N264)	-60%	-50%	-60%	-50%	-60%	-50%	0%	0%	-60%	-50%
7		Terminal Avenue at SB I-495 Ramps	-28%	-32%	-28%	-32%	-28%	-32%	0%	0%	-19%	-14%
8		Terminal Avenue at NB I-495 Ramps	-17%	-28%	-17%	-28%	-17%	-28%	0%	0%	16%	12%
9		Terminal Avenue at Pigeon Point Road (Signal Permit No. N826)	8%	0%	8%	0%	8%	0%	0%	0%	0%	0%
10		S Heald St at Rogers Road (Signal Permit No. N177)	0%	0%	0%	0%	0%	0%	135%	615%	0%	0%
11		New Castle Avenue at Pyles Lane	-55%	-75%	-55%	-75%	-55%	-75%	-55%	-75%	-55%	-75%
12		New Castle Avenue at Rogers Road (Signal Permit No. N175)	-48%	-66%	-48%	-66%	0%	0%	-48%	-66%	-48%	-66%
13		New Castle Avenue at Lambson Lane (Signal Permit No. N174)	-53%	-68%	-53%	-68%	0%	0%	-53%	-68%	-53%	-68%
14		New Castle Avenue at Moorehouse Dr. (Signal Permit No. N384)	-54%	-68%	-54%	-68%	0%	0%	-54%	-68%	-54%	-68%
15		New Castle Avenue at Memorial Drive (Signal Permit No. N173)	-53%	-67%	-53%	-67%	0%	0%	-53%	-67%	-53%	-67%
16		New Castle Avenue at Halcyon Drive	-59%	-78%	-59%	-78%	0%	0%	-59%	-78%	-59%	-78%
17		New Castle Avenue at Cherry Lane (Signal Permit No. N313)	242%	727%	242%	727%	0%	0%	0%	0%	0%	0%
18		Pigeon Point Road at Pyles Lane	34%	41%	34%	41%	34%	41%	-34%	0%	0%	0%
19		New Castle Avenue at Old Ferry Road	-65%	-74%	-65%	-74%	0%	0%	-65%	-74%	-65%	-74%
20		Pigeon Point Road at Lambson	92%	58%	92%	58%	0%	0%	0%	0%	0%	0%
21		US13 at Ramp to Rogers Rd	0%	0%	0%	0%	0%	0%	336%	262%	0%	0%



Weekday AM and PM Peak Hours Overall Benefit Scores

Scenario	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Travel Time Reduction	2.33	2.33	1.00	3.67	5.00
Truck Reduction on New Castle Ave	8.00	8.00	2.00	6.00	8.00
Truck Reduction on Terminal Ave West of I-495 Ramps	1.00	1.00	1.00	0.00	1.00
A.M. Peak Hour LOS Improvement	1.00	1.00	0.00	1.00	1.00
P.M. Peak Hour LOS Improvement	1.00	1.00	0.00	1.00	1.00
Fuel Consumption Reduction	2.92	2.92	1.25	3.54	5.00
Total Benefit Score	16.25	16.25	5.25	15.21	21.00





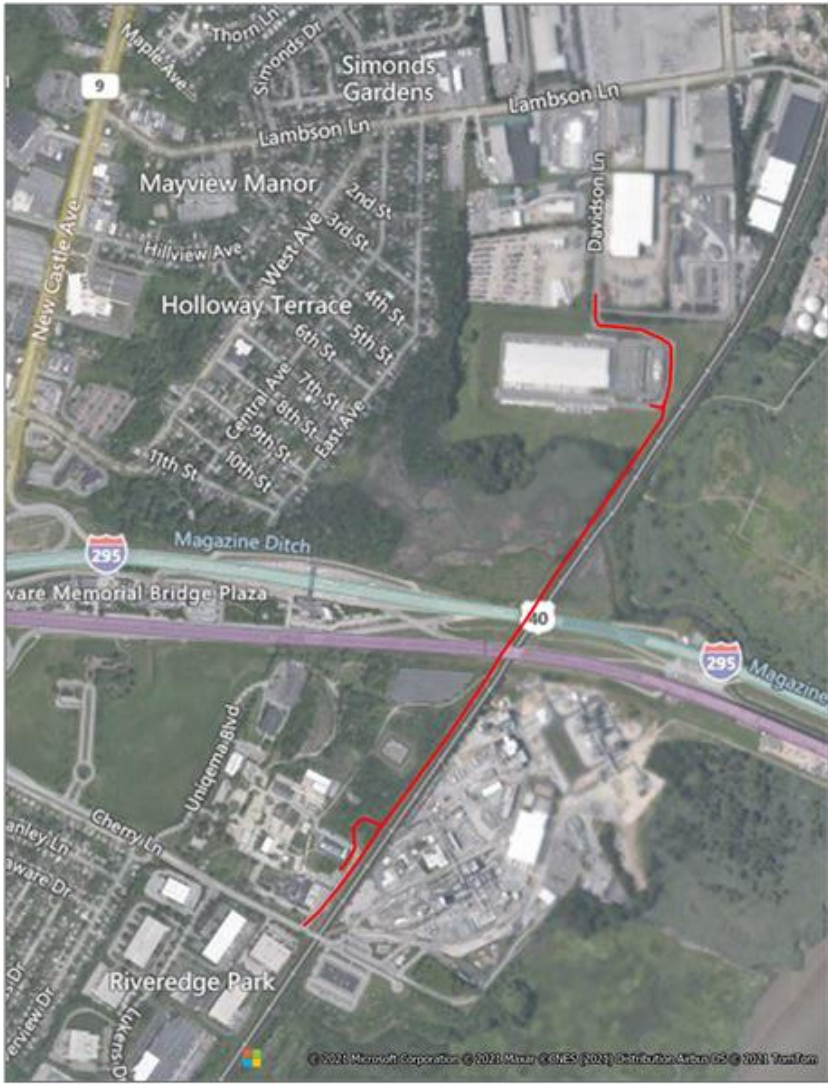
Alternative #1: Pigeon Point Extension to Cherry Ln.

Construction Cost	\$20,700,000
Righ-of Way Impacts	\$1,000,000
Design Costs	\$3,500,000
Total Costs	\$25,200,000



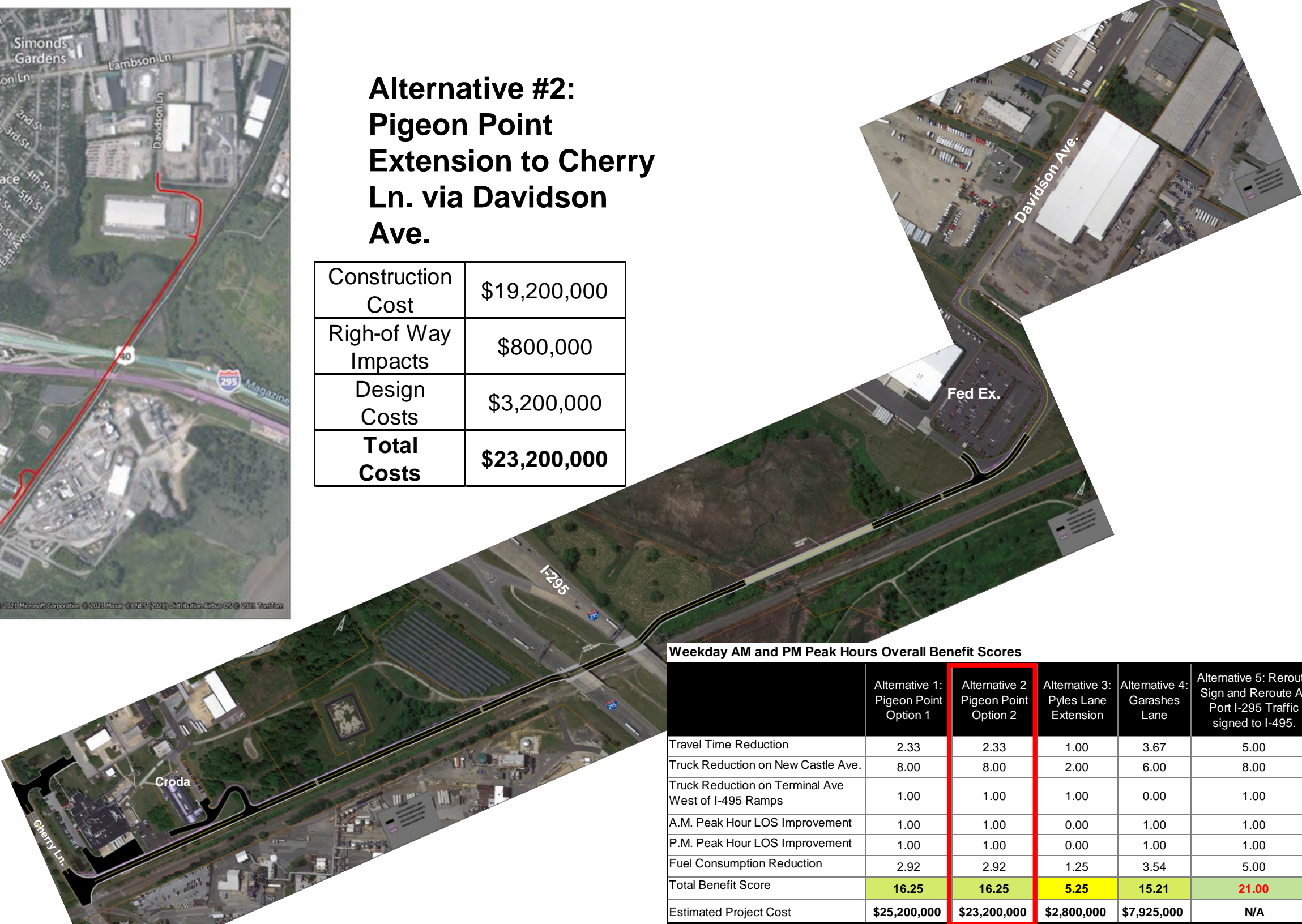
Weekday AM and PM Peak Hours Overall Benefit Scores

	Alternative 1: Pigeon Point Option 1	Alternative 2 Pigeon Point Option 2	Alternative 3: Pyles Lane Extension	Alternative 4: Garashes Lane	Alternative 5: Reroute Sign and Reroute All Port I-295 Traffic signed to I-495.
Travel Time Reduction	2.33	2.33	1.00	3.67	5.00
Truck Reduction on New Castle Ave.	8.00	8.00	2.00	6.00	8.00
Truck Reduction on Terminal Ave West of I-495 Ramps	1.00	1.00	1.00	0.00	1.00
A.M. Peak Hour LOS Improvement	1.00	1.00	0.00	1.00	1.00
P.M. Peak Hour LOS Improvement	1.00	1.00	0.00	1.00	1.00
Fuel Consumption Reduction	2.92	2.92	1.25	3.54	5.00
Total Benefit Score	16.25	16.25	5.25	15.21	21.00
Estimated Project Cost	\$25,200,000	\$23,200,000	\$2,800,000	\$7,925,000	N/A



Alternative #2: Pigeon Point Extension to Cherry Ln. via Davidson Ave.

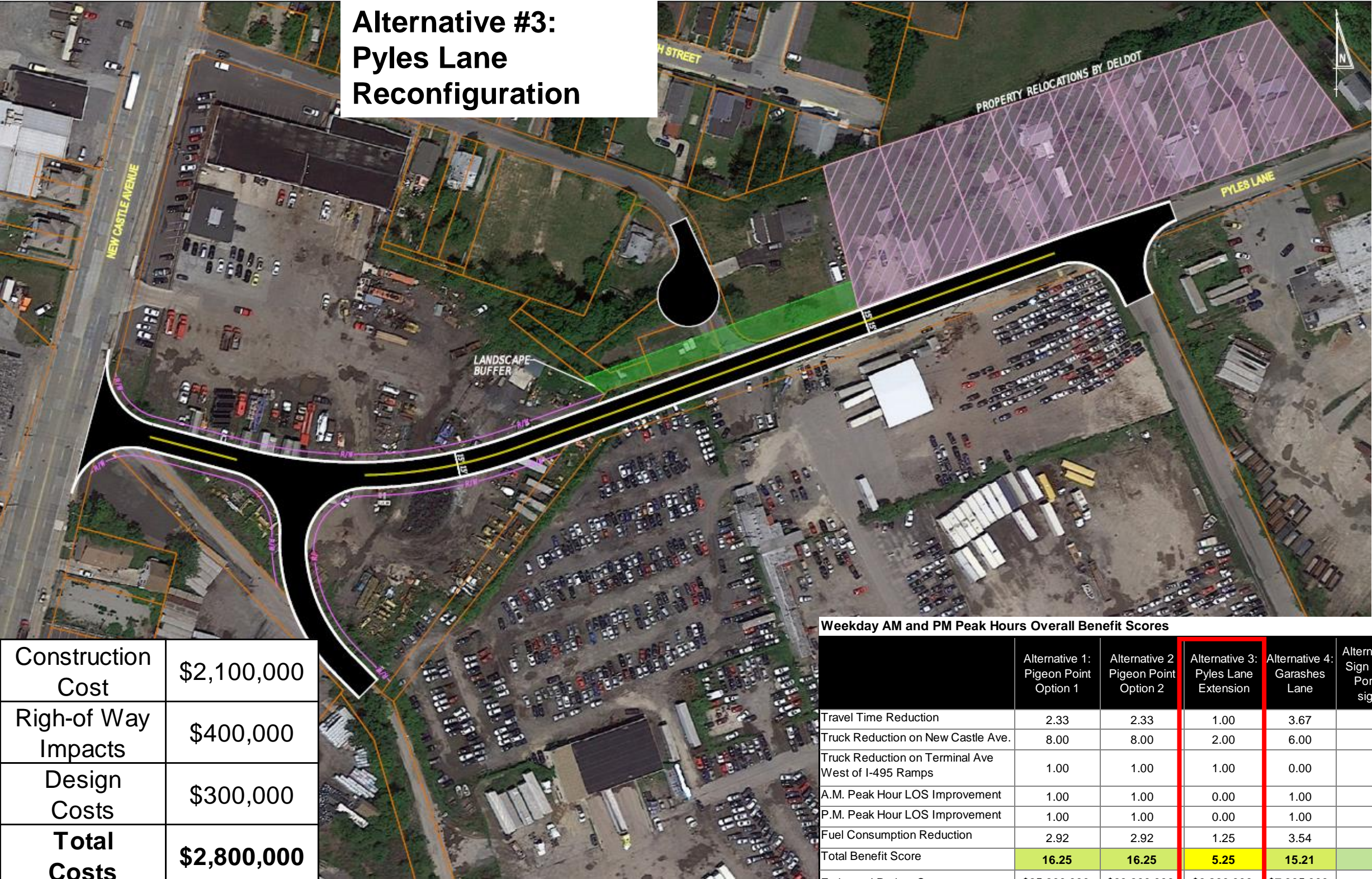
Construction Cost	\$19,200,000
Righ-of Way Impacts	\$800,000
Design Costs	\$3,200,000
Total Costs	\$23,200,000



Weekday AM and PM Peak Hours Overall Benefit Scores

	Alternative 1: Pigeon Point Option 1	Alternative 2 Pigeon Point Option 2	Alternative 3: Pyles Lane Extension	Alternative 4: Garashes Lane	Alternative 5: Reroute Sign and Reroute All Port I-295 Traffic signed to I-495.
Travel Time Reduction	2.33	2.33	1.00	3.67	5.00
Truck Reduction on New Castle Ave.	8.00	8.00	2.00	6.00	8.00
Truck Reduction on Terminal Ave West of I-495 Ramps	1.00	1.00	1.00	0.00	1.00
A.M. Peak Hour LOS Improvement	1.00	1.00	0.00	1.00	1.00
P.M. Peak Hour LOS Improvement	1.00	1.00	0.00	1.00	1.00
Fuel Consumption Reduction	2.92	2.92	1.25	3.54	5.00
Total Benefit Score	16.25	16.25	5.25	15.21	21.00
Estimated Project Cost	\$25,200,000	\$23,200,000	\$2,800,000	\$7,925,000	N/A

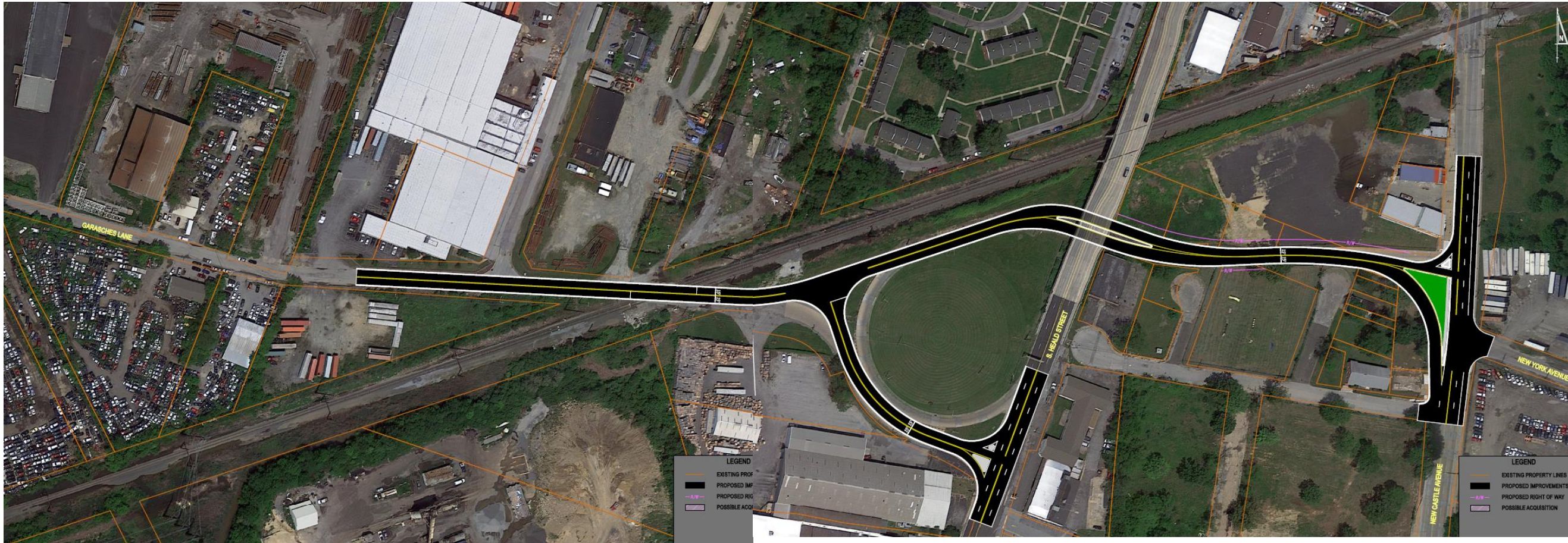
Alternative #3:
Pyles Lane
Reconfiguration



Construction Cost	\$2,100,000
Righ-of Way Impacts	\$400,000
Design Costs	\$300,000
Total Costs	\$2,800,000

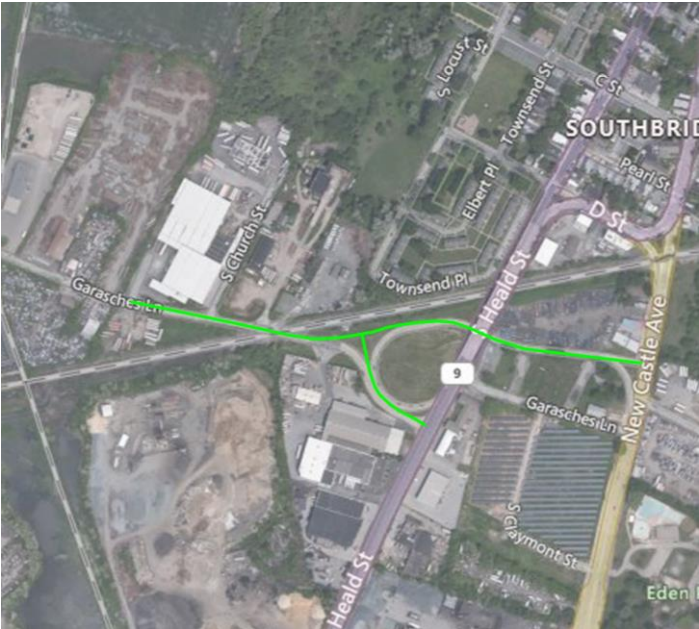
Weekday AM and PM Peak Hours Overall Benefit Scores

	Alternative 1: Pigeon Point Option 1	Alternative 2 Pigeon Point Option 2	Alternative 3: Pyles Lane Extension	Alternative 4: Garashes Lane	Alternative 5: Reroute Sign and Reroute All Port I-295 Traffic signed to I-495.
Travel Time Reduction	2.33	2.33	1.00	3.67	5.00
Truck Reduction on New Castle Ave.	8.00	8.00	2.00	6.00	8.00
Truck Reduction on Terminal Ave West of I-495 Ramps	1.00	1.00	1.00	0.00	1.00
A.M. Peak Hour LOS Improvement	1.00	1.00	0.00	1.00	1.00
P.M. Peak Hour LOS Improvement	1.00	1.00	0.00	1.00	1.00
Fuel Consumption Reduction	2.92	2.92	1.25	3.54	5.00
Total Benefit Score	16.25	16.25	5.25	15.21	21.00
Estimated Project Cost	\$25,200,000	\$23,200,000	\$2,800,000	\$7,925,000	N/A



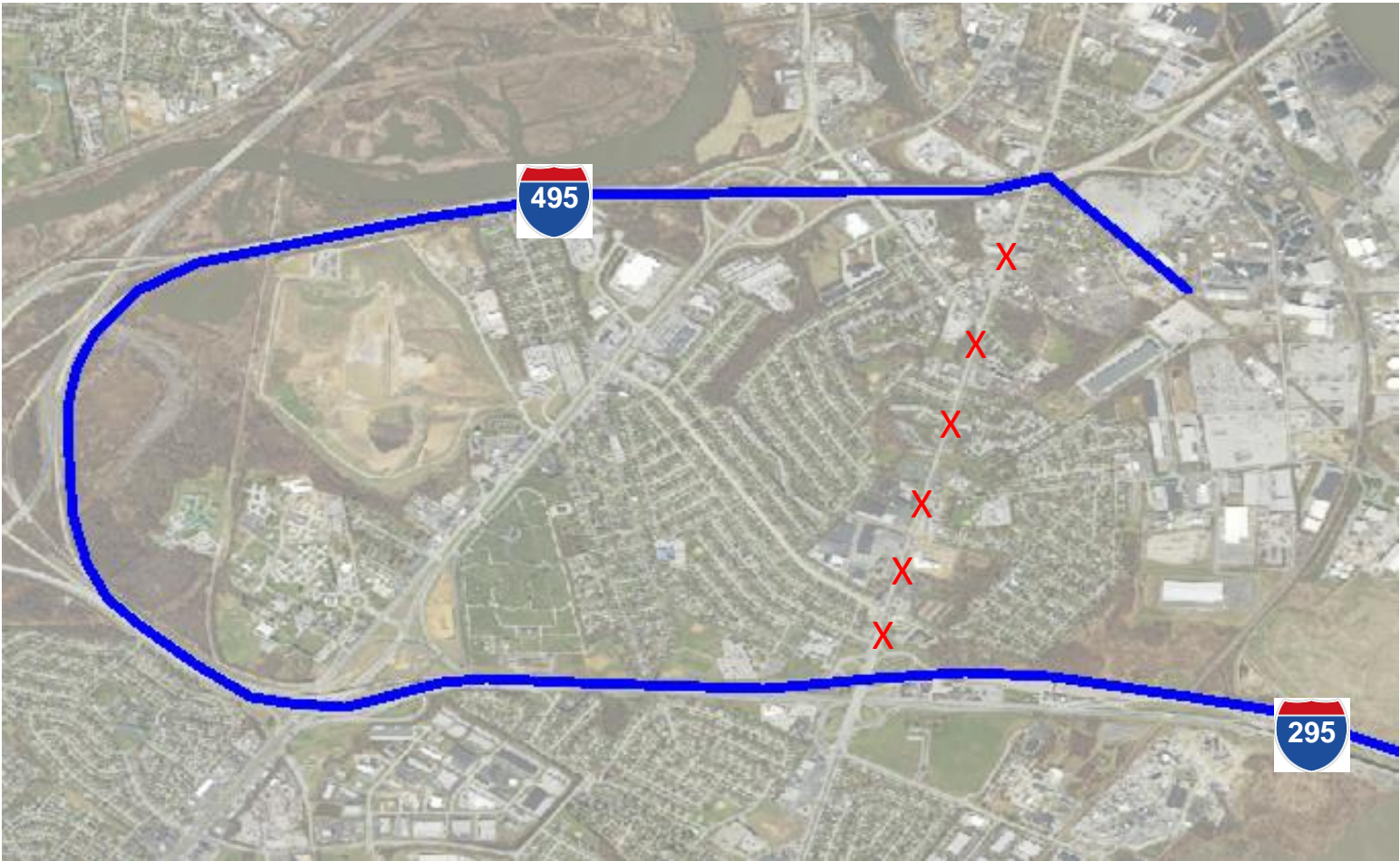
Alternative #4: Garashes Lane Extension

Construction Cost	\$7,000,000
Righ-of Way Impacts	\$200,000
Design Costs	\$725,000
Total Costs	\$7,925,000



Weekday AM and PM Peak Hours Overall Benefit Scores

	Alternative 1: Pigeon Point Option 1	Alternative 2 Pigeon Point Option 2	Alternative 3: Pyles Lane Extension	Alternative 4: Garashes Lane	Alternative 5: Reroute Sign and Reroute All Port I-295 Traffic signed to I-495.
Travel Time Reduction	2.33	2.33	1.00	3.67	5.00
Truck Reduction on New Castle Ave.	8.00	8.00	2.00	6.00	8.00
Truck Reduction on Terminal Ave West of I-495 Ramps	1.00	1.00	1.00	0.00	1.00
A.M. Peak Hour LOS Improvement	1.00	1.00	0.00	1.00	1.00
P.M. Peak Hour LOS Improvement	1.00	1.00	0.00	1.00	1.00
Fuel Consumption Reduction	2.92	2.92	1.25	3.54	5.00
Total Benefit Score	16.25	16.25	5.25	15.21	21.00
Estimated Project Cost	\$25,200,000	\$23,200,000	\$2,800,000	\$7,925,000	N/A



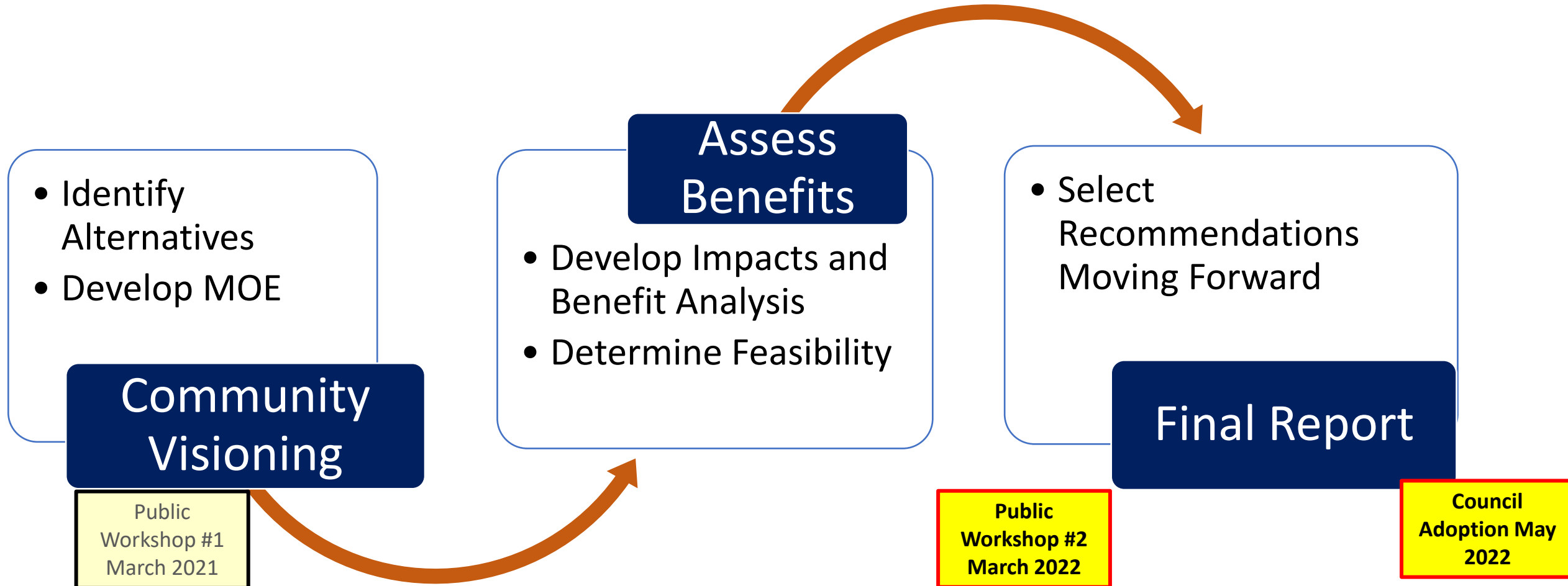
Alternative #5:
Rerouting of Trucks
via I-295/I-495

Construction Cost	N/A
Righ-of Way Impacts	N/A
Design Costs	N/A
Total Costs	N/A

Weekday AM and PM Peak Hours Overall Benefit Scores

	Alternative 1: Pigeon Point Option 1	Alternative 2 Pigeon Point Option 2	Alternative 3: Pyles Lane Extension	Alternative 4: Garashes Lane	Alternative 5: Reroute Sign and Reroute All Port I-295 Traffic signed to I-495.
Travel Time Reduction	2.33	2.33	1.00	3.67	5.00
Truck Reduction on New Castle Ave.	8.00	8.00	2.00	6.00	8.00
Truck Reduction on Terminal Ave West of I-495 Ramps	1.00	1.00	1.00	0.00	1.00
A.M. Peak Hour LOS Improvement	1.00	1.00	0.00	1.00	1.00
P.M. Peak Hour LOS Improvement	1.00	1.00	0.00	1.00	1.00
Fuel Consumption Reduction	2.92	2.92	1.25	3.54	5.00
Total Benefit Score	16.25	16.25	5.25	15.21	21.00
Estimated Project Cost	\$25,200,000	\$23,200,000	\$2,800,000	\$7,925,000	N/A

Next Steps





www.wilmapco.org/port_analysis/

**Thank
You!**