Port-2-Point

Future Conditions

January 2017

Port-2-Point Future Analysis Scope

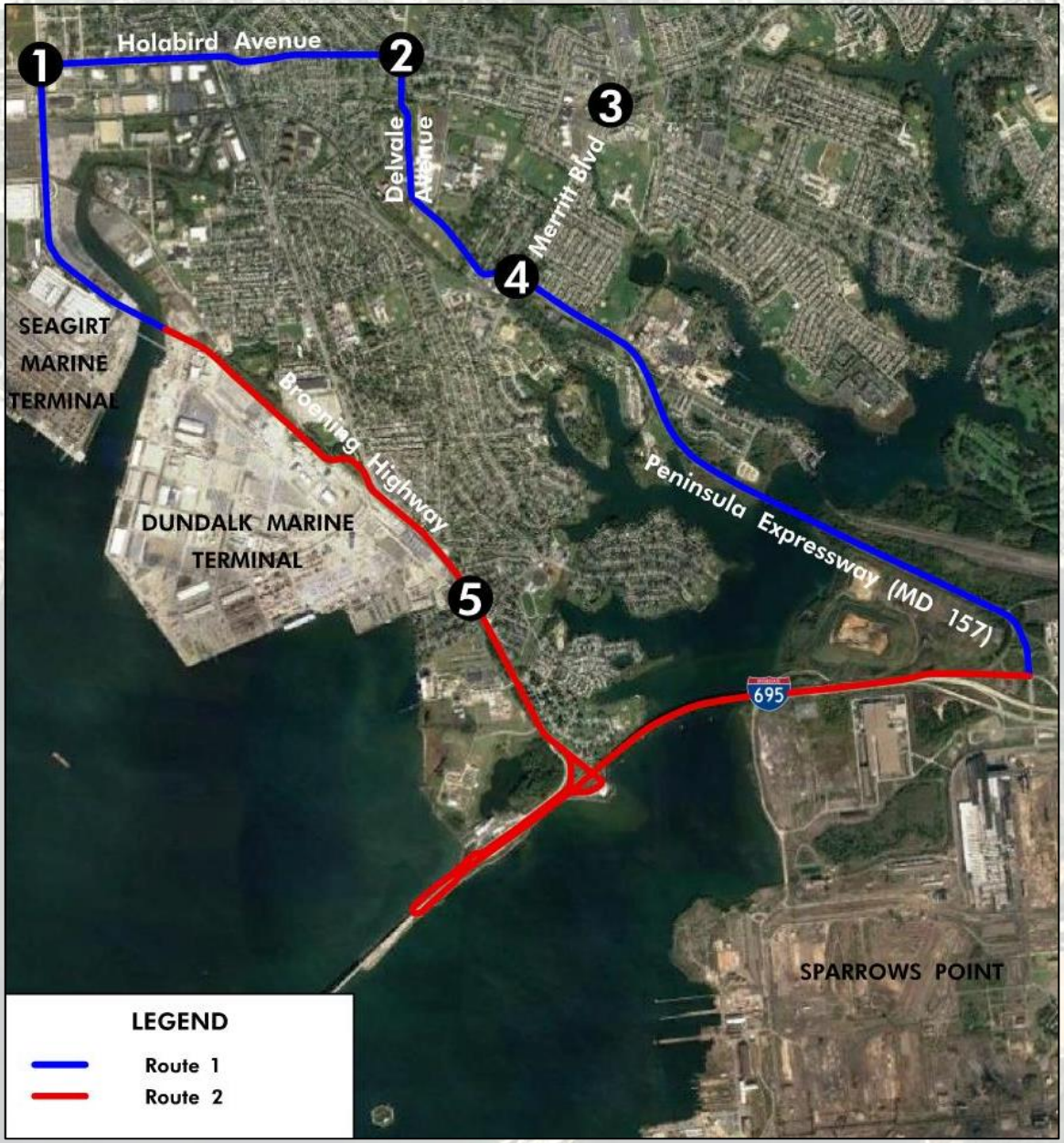
Purpose

- Planned development of the Tradepoint Atlantic facility at Sparrows Point
  - Increase in container truck trips
  - Increase in traffic between Sparrows Point and the Port of Baltimore
- Freight volume is also projected to increase for the Port of Baltimore

The Traffic Study Analyzed:

- Future intersection capacity at five intersections along the truck routes
- Where additional freight traffic may have less impact on communities

Port-2-Point Study Area



Existing Conditions Summary

- All roadways and ramps are operating well below estimated acceptable LOS thresholds
- Crossing guards and school children observed at Holabird Avenue at Delvale Avenue
  - Dundalk High School located on Delvale Avenue south of Holabird Avenue
  - Norwood Elementary and Holabird Middle Schools are located on Delvale Avenue just north of Holabird Avenue

Port-2-Point Roadway Volumes

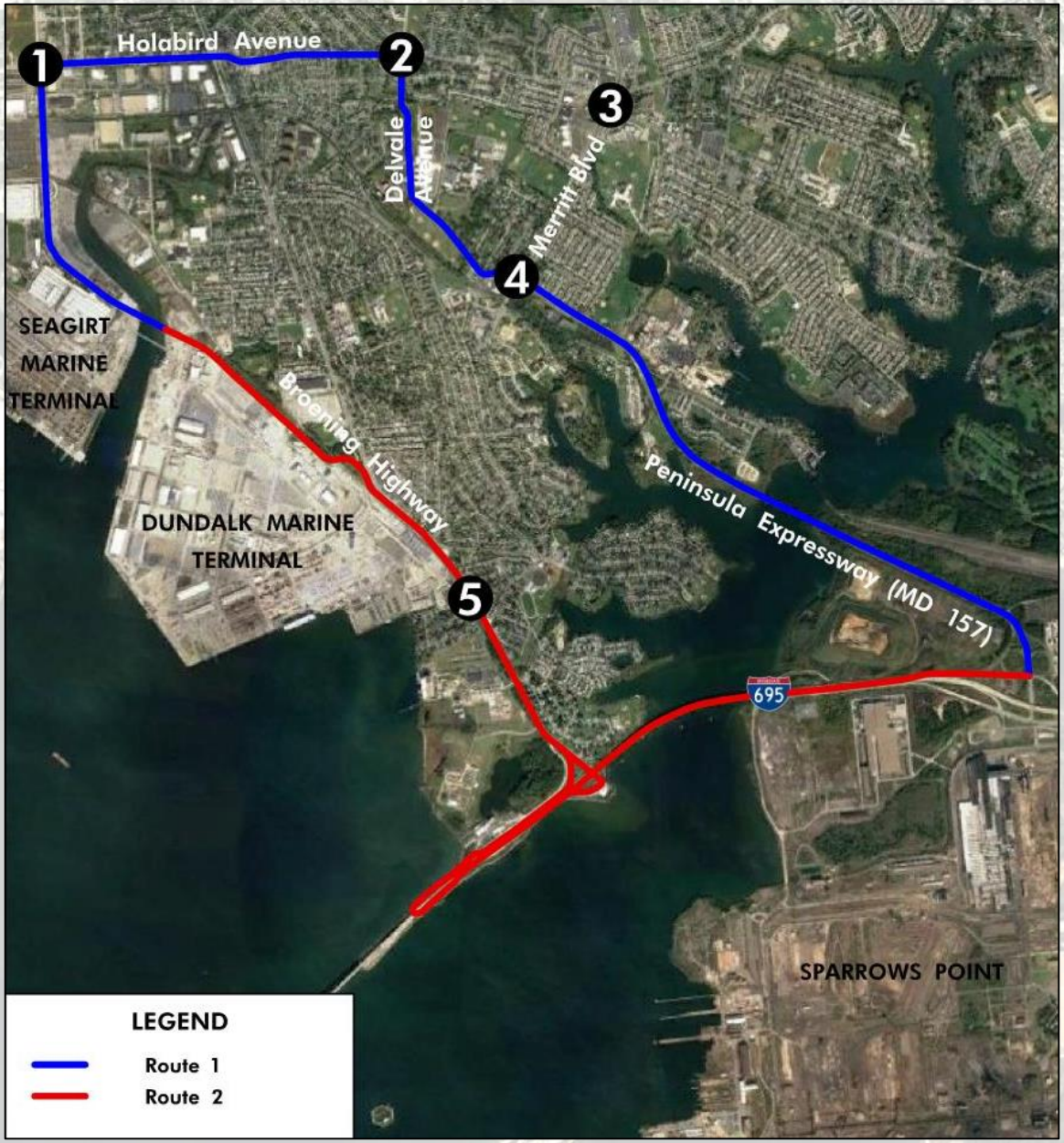
Future Growth

- Growth was based on the BMC forecasting model for 2025
- 1,000 Port to Point (between TPA & Seagirt/Dundalk) trucks per day were assumed
  - Port drayage counts were used to determine an hourly percentage of trucks between 7 AM and 6 PM (110 trucks during each of the truck peak hours)

Road	Growth Factor	AM			PM		
		Existing Volume	2025 Volume	2025 w/ P2P Trucks	Existing Volume	2025 Volume	2025 w/ P2P Trucks
Broening Highway (North of Authority Drive)	**1.14**	520	595	705	595	685	795
Holabird Avenue (West of Delvale Avenue)	**1.14**	925	1,060	1,170	1,255	1,435	1,545
Delvale Avenue	**1.62**	330	535	645	535	865	975
Peninsula Expressway	**1.62**	410	660	770	570	920	1,030
I-695	**1.14**	2,705	3,095	3,205	2,220	2,535	2,645


All Port-2-Point Traffic to Route 1

Port-2-Point Study Area



Future Intersection LOS and Delay

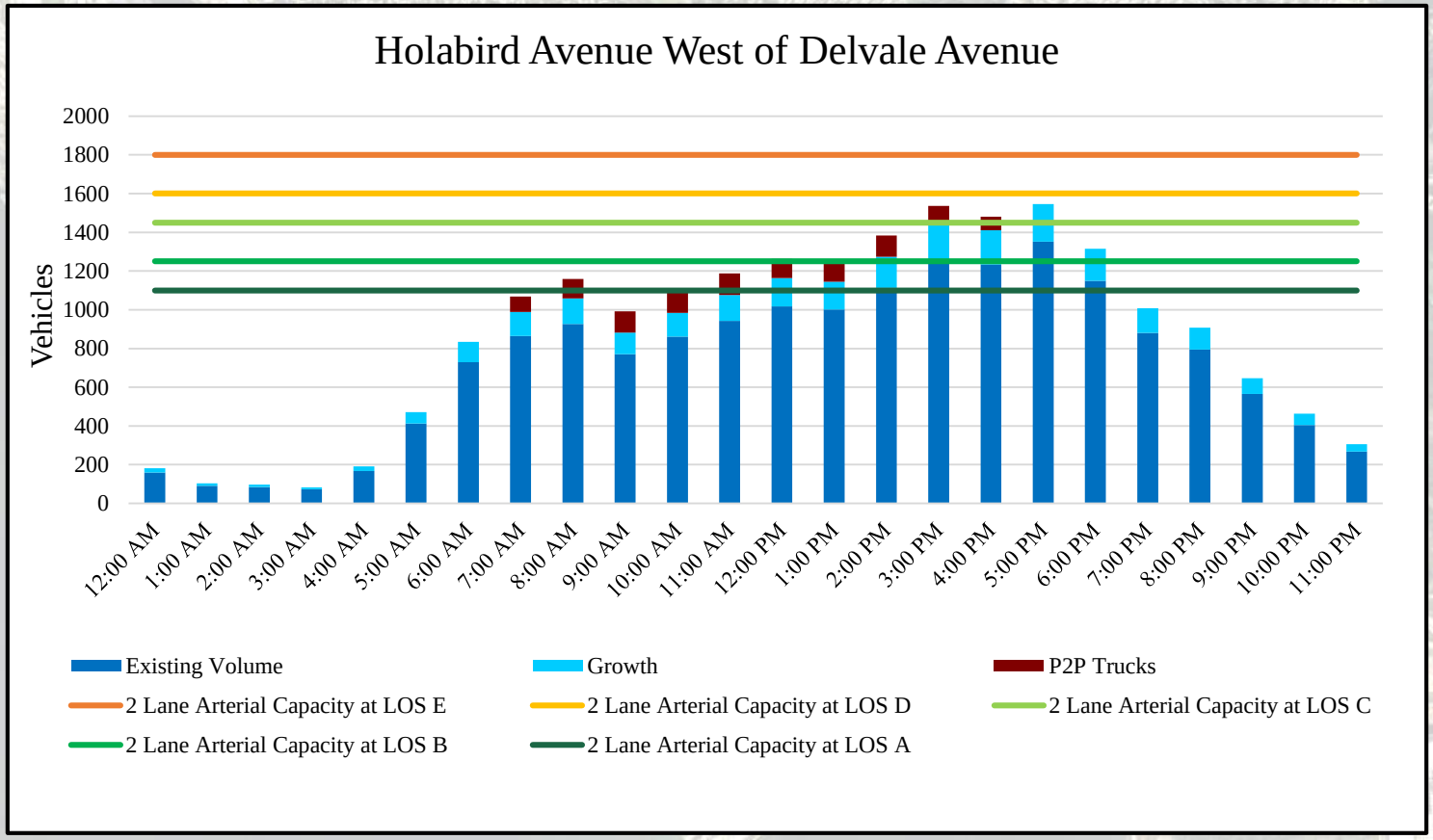
- Holabird Avenue at Delvale Avenue degrades to LOS E during the PM truck peak hour when projected growth and Port to Point trucks are added

Intersection	Existing				Existing - Optimized				Background				2025 Total Future – Route 1			
	AM		PM		AM		PM		AM		PM		AM		PM	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1. Broening Highway at Holabird Avenue	C	29	C	30	C	29	C	30	C	29	C	31	C	32	D	37
2. Holabird Avenue at Delvale Avenue	B	12	B	18	B	12	B	18	C	23	D	52	C	25	E	68
3. Merritt Boulevard at Holabird Avenue	C	35	E	56	C	35	D	42	D	38	D	52	D	39	D	52
4. Merritt Boulevard at Peninsula Expressway	C	23	C	27	C	23	C	27	C	32	D	43	C	34	D	46

Port-2-Point Route 1 All P2P Traffic – Capacity

Holabird Avenue

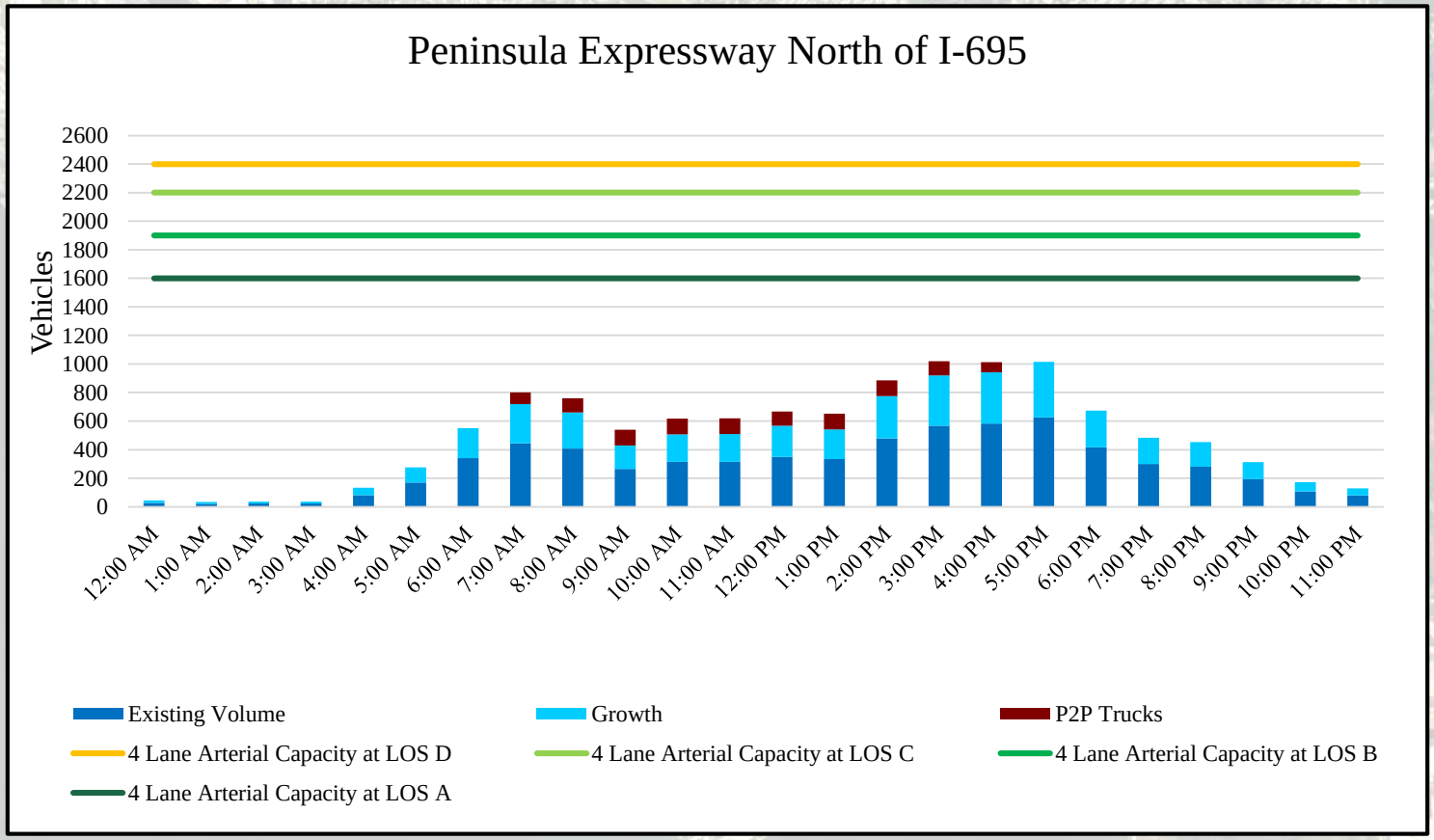
- Schools present north and south of corridor along Delvale Avenue
- Capacity thresholds estimate that the corridor is nearing LOS E during the PM truck peak hour under total future conditions with estimated growth and 1,000 Port to Point trucks per day



Route 1 All P2P Traffic – Capacity

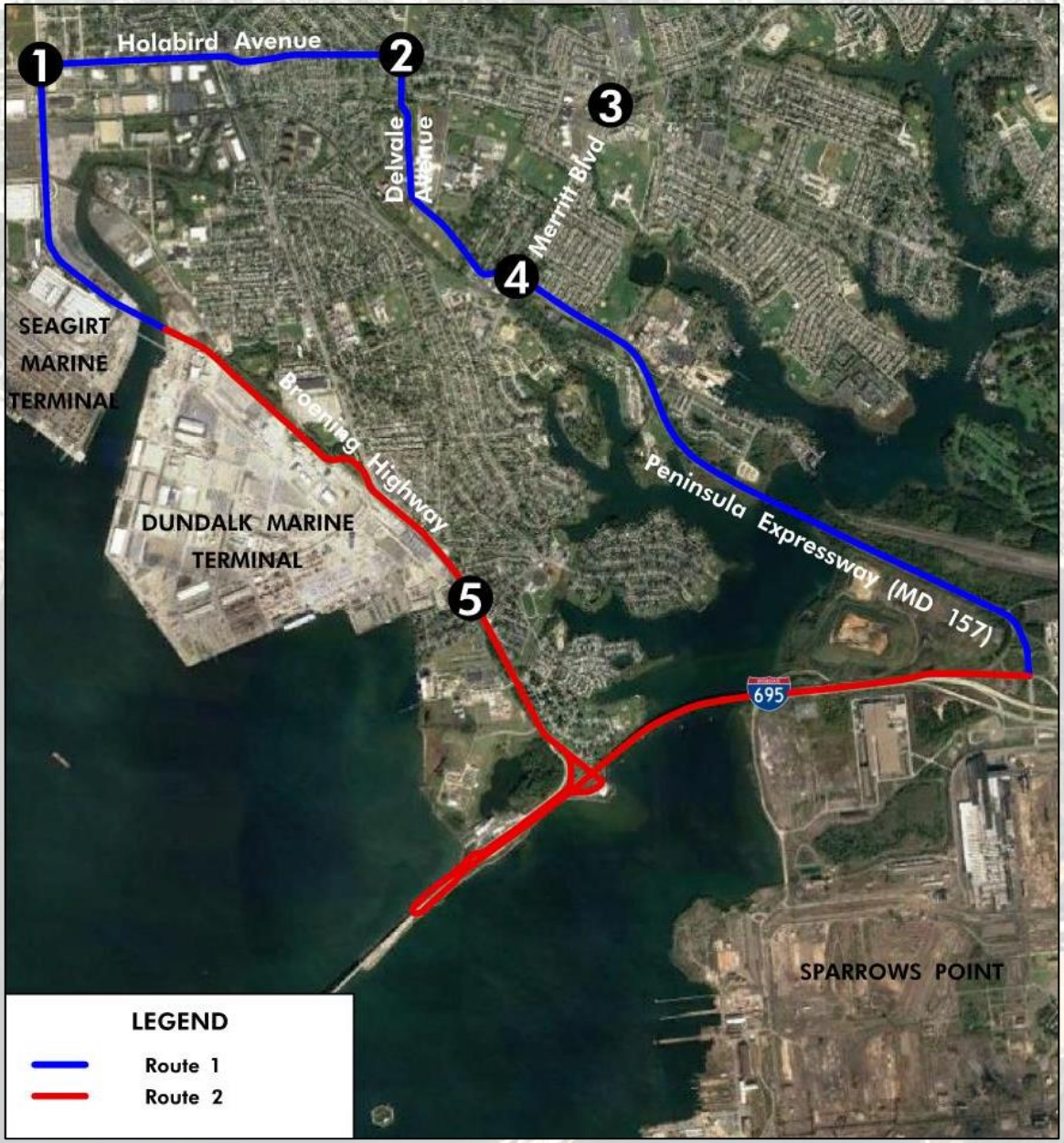
Peninsula Expressway

- Significant additional capacity available




All Port-2-Point Traffic to Route 2

Port-2-Point Study Area



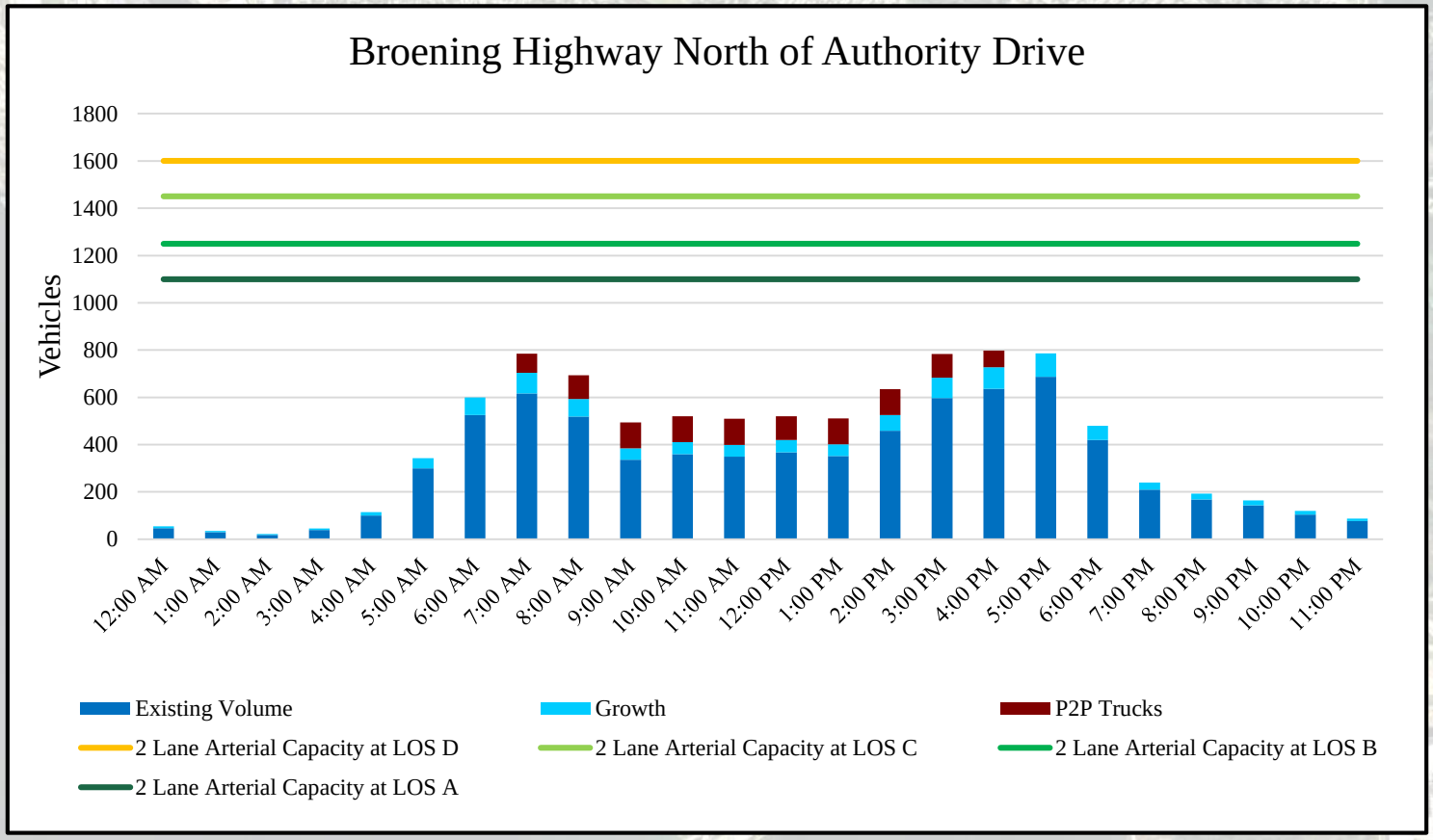
Future Intersection LOS and Delay

- Broening Highway at Maryland Avenue has available capacity under 2025 total future conditions

Intersection	Existing				Existing - Optimized				Background				2025 Total Future – Route 2			
	AM		PM		AM		PM		AM		PM		AM		PM	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
5. Broening Highway at Maryland Avenue	A	8	A	9	A	8	A	9	A	8	A	9	A	8	A	10

Broening Highway

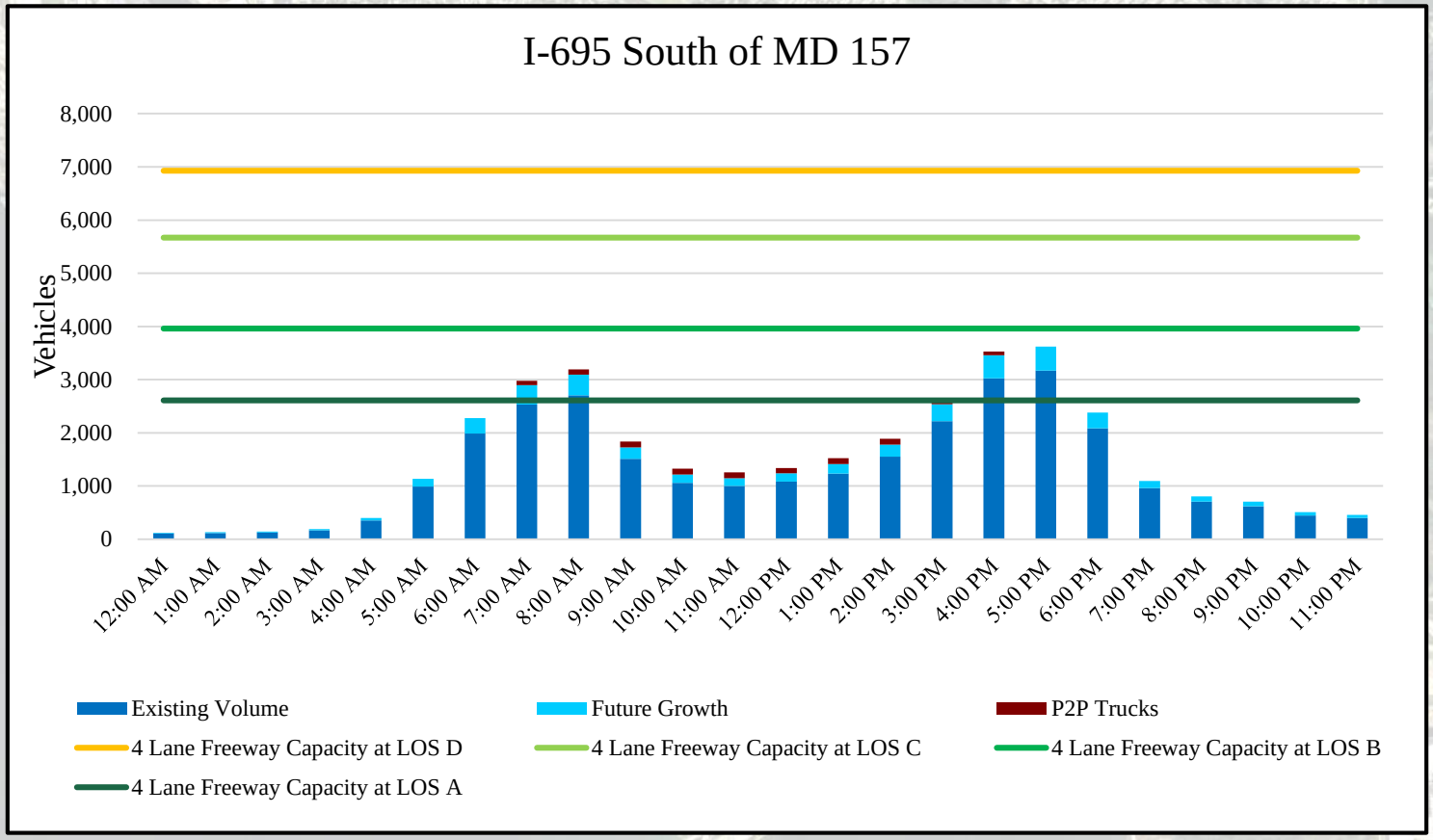
- Sound barrier walls along the east side south of Belclare Road separate the road from residential areas
- Primarily adjacent to industrial land uses



Route 2 All P2P Traffic – Capacity

I-695 South of MD 157

- Significant additional capacity available



Port-2-Point I-695 Turnaround

- Service Road 3 is used due to the partial interchange at I-695 and Broening Highway
  - Interchange does not support movements from:
    - SB Broening to EB I-695
    - WB I-695 to NB Broening
- MDTA Study concluded approximately 400-450 trucks per hour can use the turnaround without creating significant queuing at the toll plaza

- April 2016 counts indicate 9 AM peak hour vehicles and 14 PM peak hour vehicles use turnaround
- 110 AM and 110 PM Peak Hour **Port to Point trucks could be supported by the I-695 turnaround and toll plaza**


Split Port-2-Point Traffic 50-50

Future Intersection LOS and Delay

- Port to Point trucks split evenly between Routes 1 and 2

Intersection	Existing				Existing - Optimized				Background				50-50 Split			
	AM		PM		AM		PM		AM		PM		AM		PM	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1. Broening Highway at Holabird Avenue	C	29	C	30	C	29	C	30	C	29	C	31	C	31	C	34
2. Holabird Avenue at Delvale Avenue	B	12	B	18	B	12	B	18	C	23	D	52	C	23	D	54
3. Merritt Boulevard at Holabird Avenue	C	35	E	56	C	35	D	42	D	38	D	52	D	38	D	52
4. Merritt Boulevard at Peninsula Expressway	C	23	C	27	C	23	C	27	C	32	D	43	C	33	D	45
5. Broening Highway at Maryland Avenue	A	8	A	9	A	8	A	9	A	8	A	9	A	8	A	9

Conclusions

Future Intersection LOS and Delay

- While Holabird Avenue at Delvale Avenue degrades to LOS E during the PM peak hour when all Port to Point traffic is added to Route 1, splitting P2P traffic between Routes 1 and 2 allows Holabird Avenue at Delvale Avenue to operate at LOS D

Intersection	Background				Route 1 100% of P2P				Route 2 100% of P2P				Routes 1 & 2 50-50 P2P Split			
	AM		PM		AM		PM		AM		PM		AM		PM	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1. Broening Highway at Holabird Avenue	C	29	C	31	C	32	D	37	C	29	C	31	C	31	C	34
2. Holabird Avenue at Delvale Avenue	C	23	D	52	C	25	E	68	C	23	D	52	C	23	D	54
3. Merritt Boulevard at Holabird Avenue	D	38	D	52	D	39	D	51	D	38	D	52	D	38	D	52
4. Merritt Boulevard at Peninsula Expressway	C	32	D	43	C	34	D	46	C	32	D	43	C	33	D	45
5. Broening Highway at Maryland Avenue	A	8	A	9	A	8	A	9	A	8	A	10	A	8	A	9