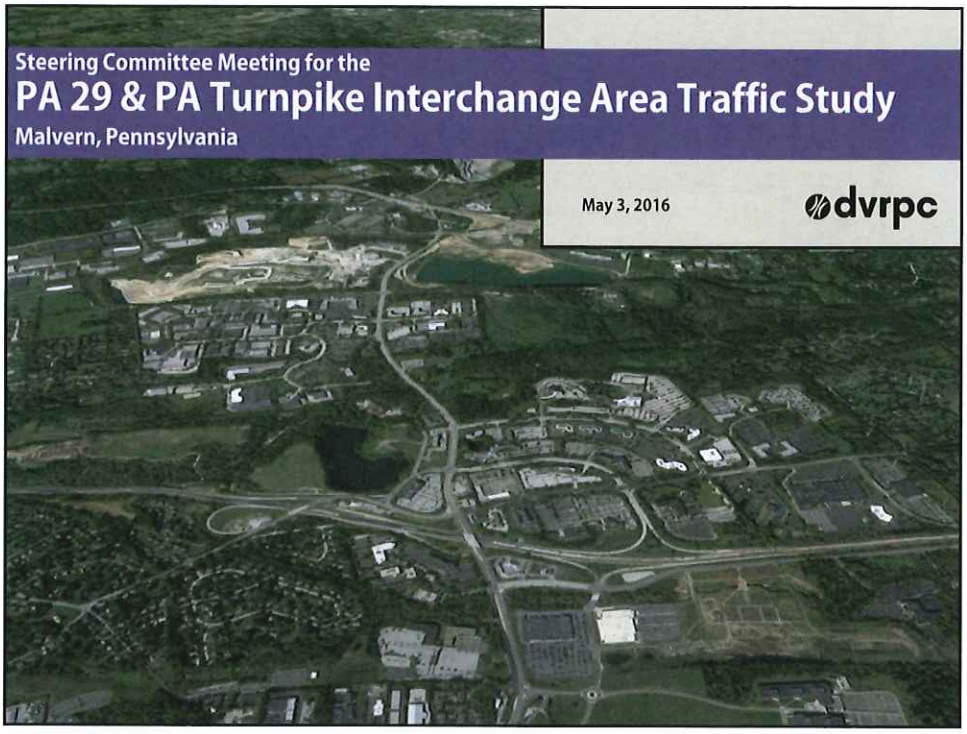
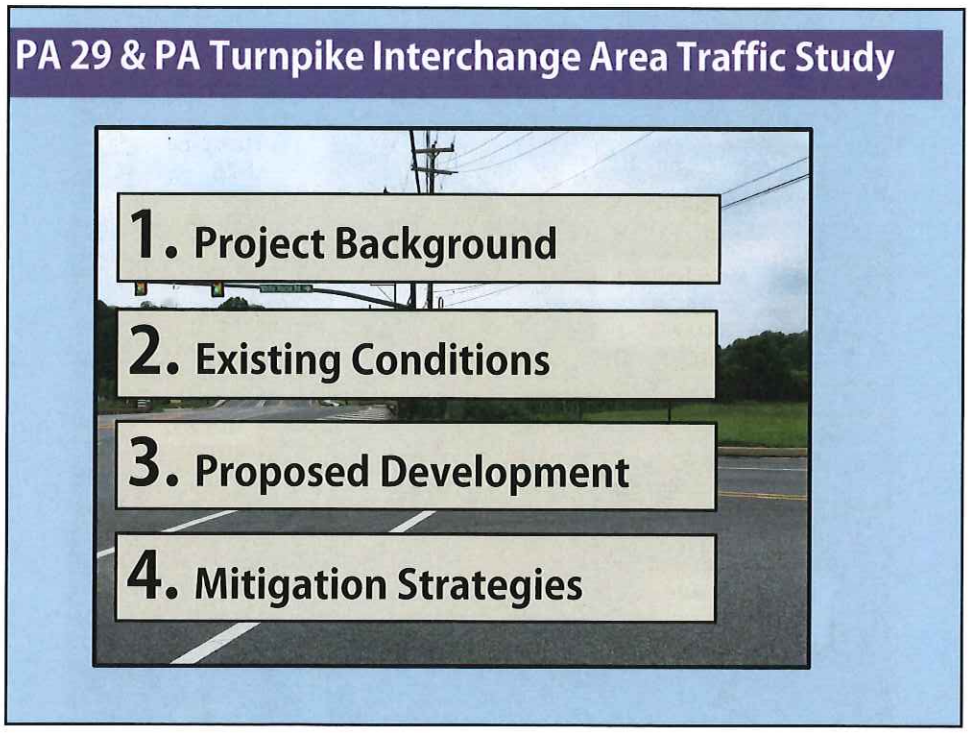

Steering Committee Meeting for the
PA 29 & PA Turnpike Interchange Area Traffic Study
Malvern, Pennsylvania
May 3, 2016
dvrpc


PA 29 & PA Turnpike Interchange Area Traffic Study
1. Project Background
2. Existing Conditions
3. Proposed Development
4. Mitigation Strategies

Project Background - Overview

Two Year DVRPC Work Program Project

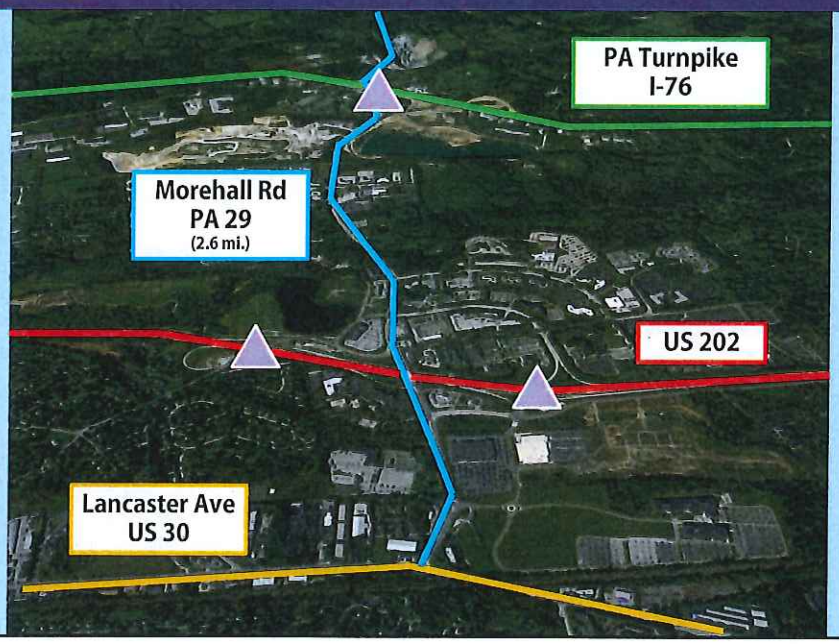
2015 - Broad Area Whitepaper

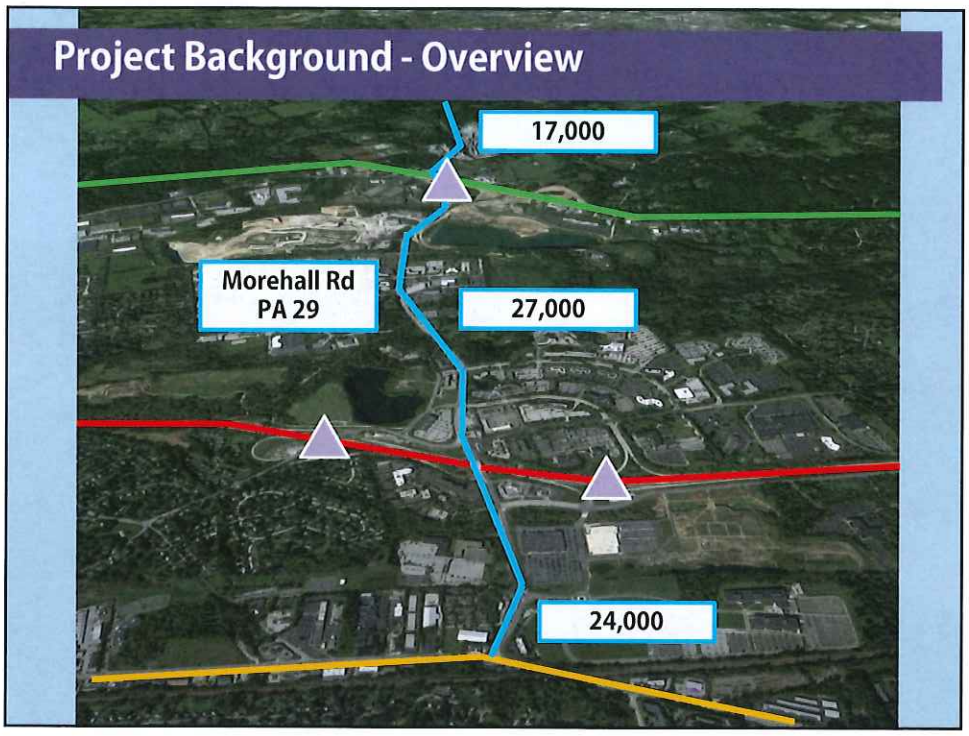
- Land Use & Development
- Transportation Systems & Services
- Traffic Volume Trends
- Programmed & Planned Highway Improvements

2016 - Corridor Development Traffic Study

- 10 Year Build-out Horizon, Complement EWT Comp Plan
- Traffic Counts
- Synchro Traffic Modeling
- Development Description & Traffic Estimation
- Assessment & Recommendations
- Report, Files & Tools

Project Background - Overview




Project Background - Overview
17,000
Morehall Rd
PA 29
27,000
24,000

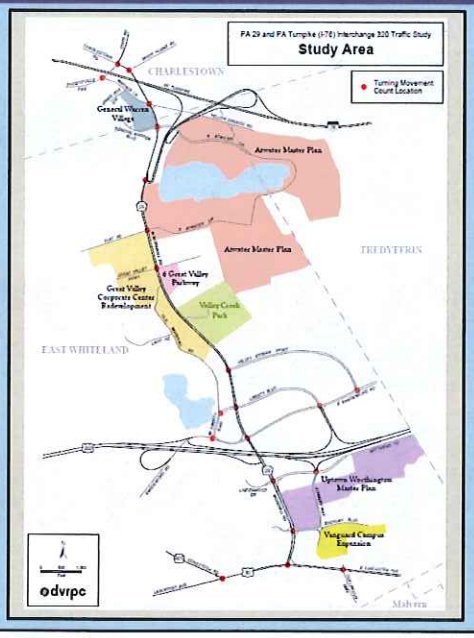
Project Background - Development
Marriott Residence Inn
+ Retail and Restaurant Space
Call: 610-873-5585
FOR LEASE

Project Background - Single Use

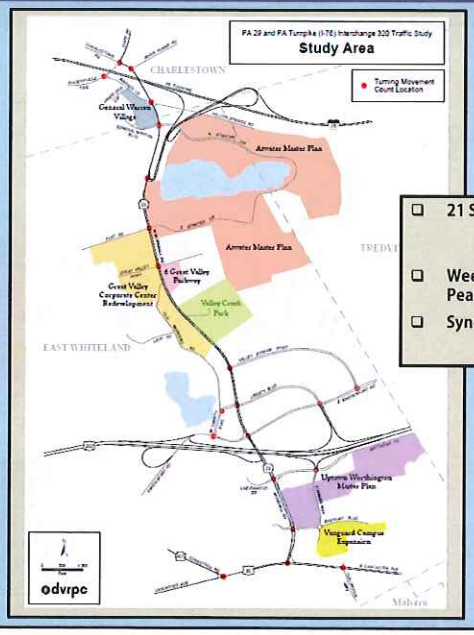
Project Background - Mixed Use

Project Background - Proposed Development

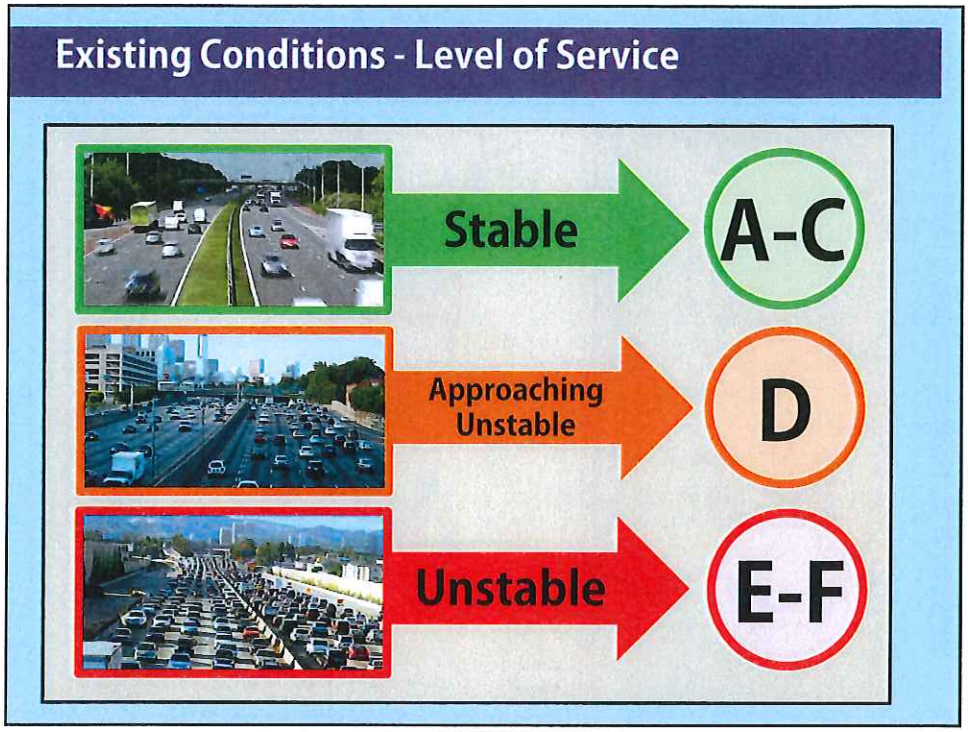
- 6 Developments - New, Completions, Redevelopments, or Expansions
- 600+ Acres
- Office Space
  - 2,300,000 sf - additional
  - 472,000 sf - built and already occupied
- Residential
  - 1,673 units - proposed
- Retail Space
  - 574,000 sf - additional
  - 281,000 sf - built and already operating
- Hotels - 4 proposed

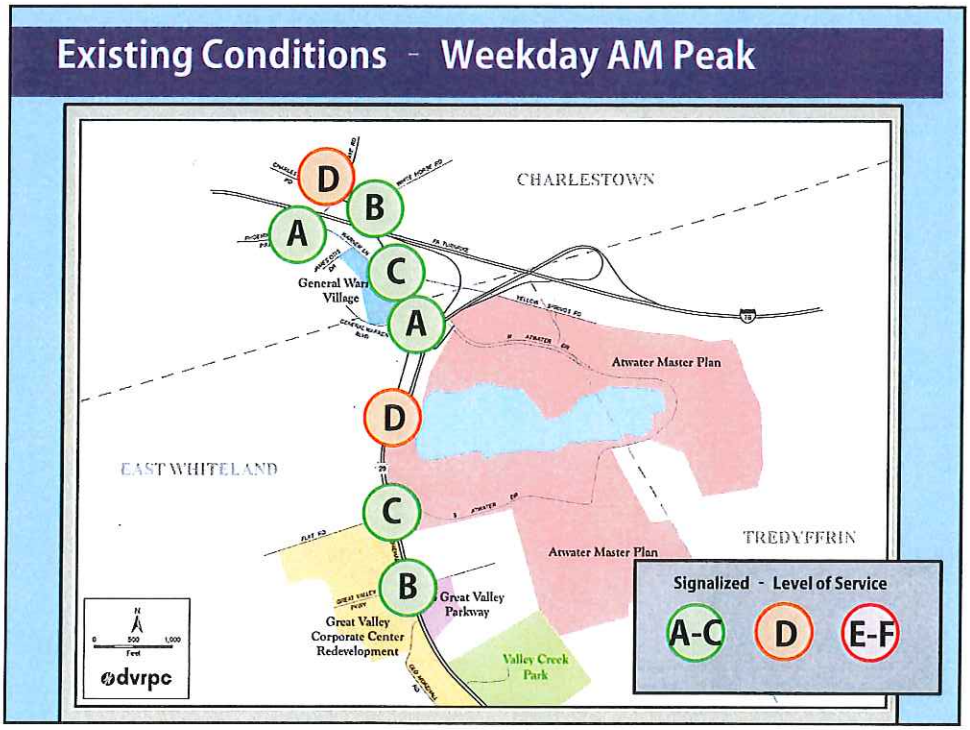


Existing Conditions - 2015 Traffic Volumes

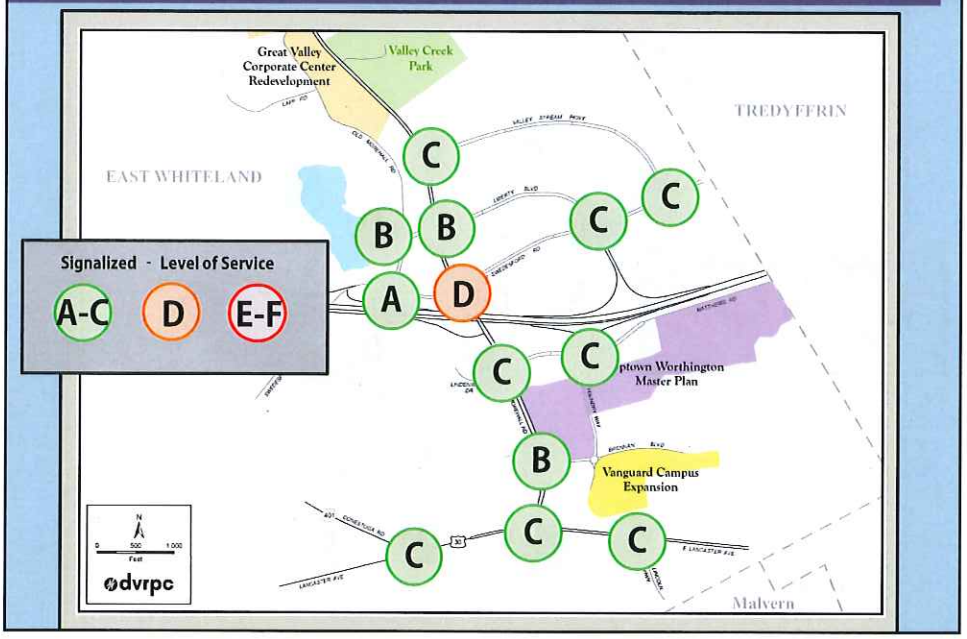


- 21 Signalized Intersections
  TPD - 8
  DVRPC - 13
- Weekday - AM Peak and PM Peak; Saturday - Midday Peak
- Synchro Traffic Models

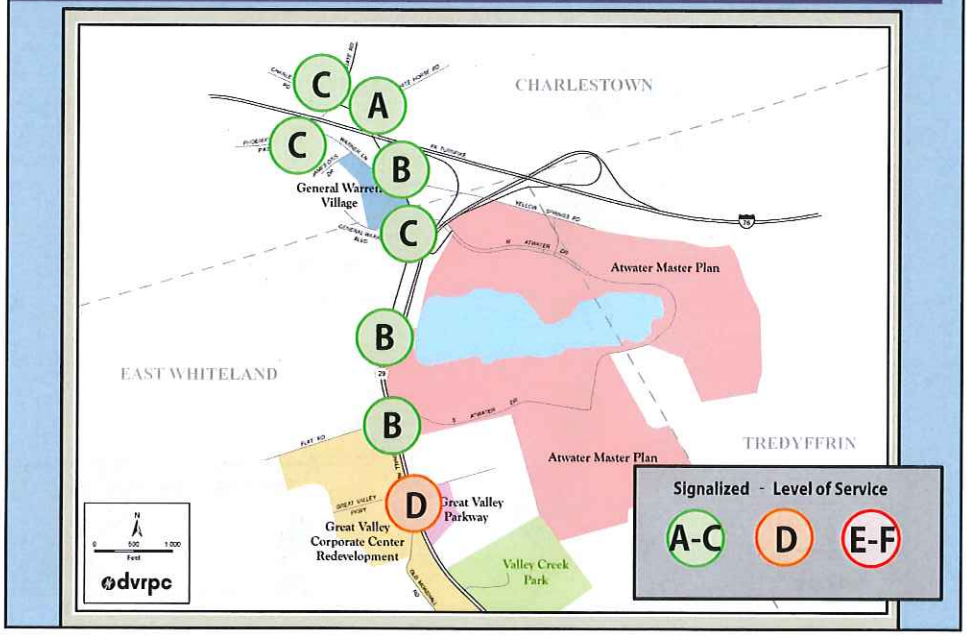

Existing Conditions - Level of Service
Stable
A-C
Approaching Unstable
D
Unstable
E-F

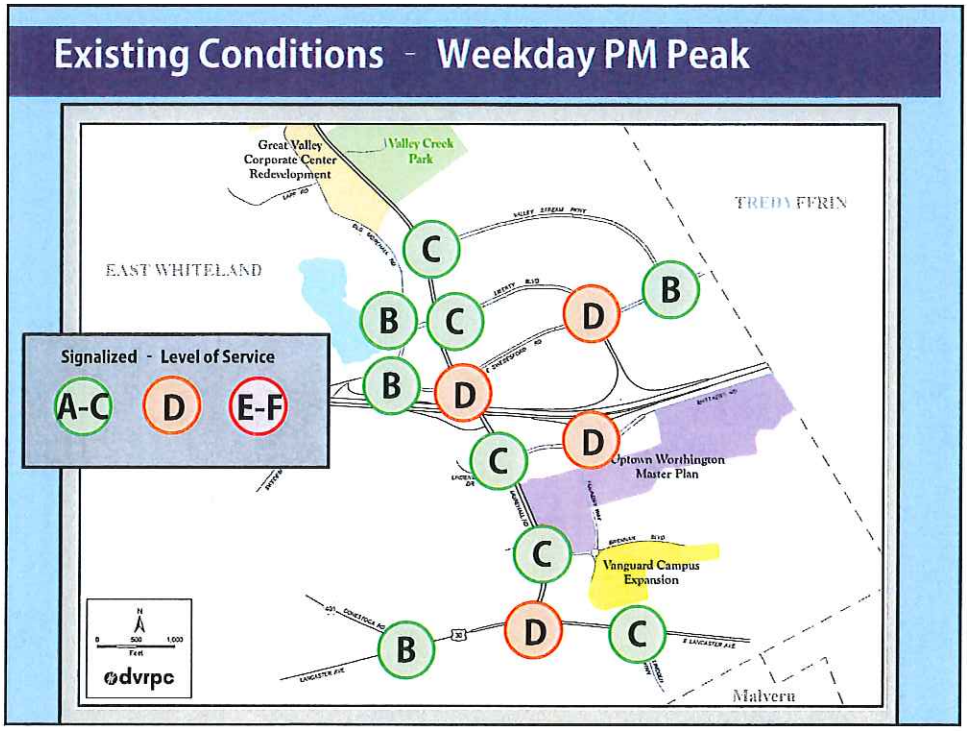

Existing Conditions - Weekday AM Peak
CHARLESTOWN
EAST WHITELAND
TREDYFFRIN
General Warren Village
Atwater Master Plan
Atwater Master Plan
Great Valley Parkway
Great Valley Corporate Center Redevelopment
Valley Creek Park
D
B
A
C
A
D
C
B
Signalized - Level of Service
A-C
D
E-F
dvrpc

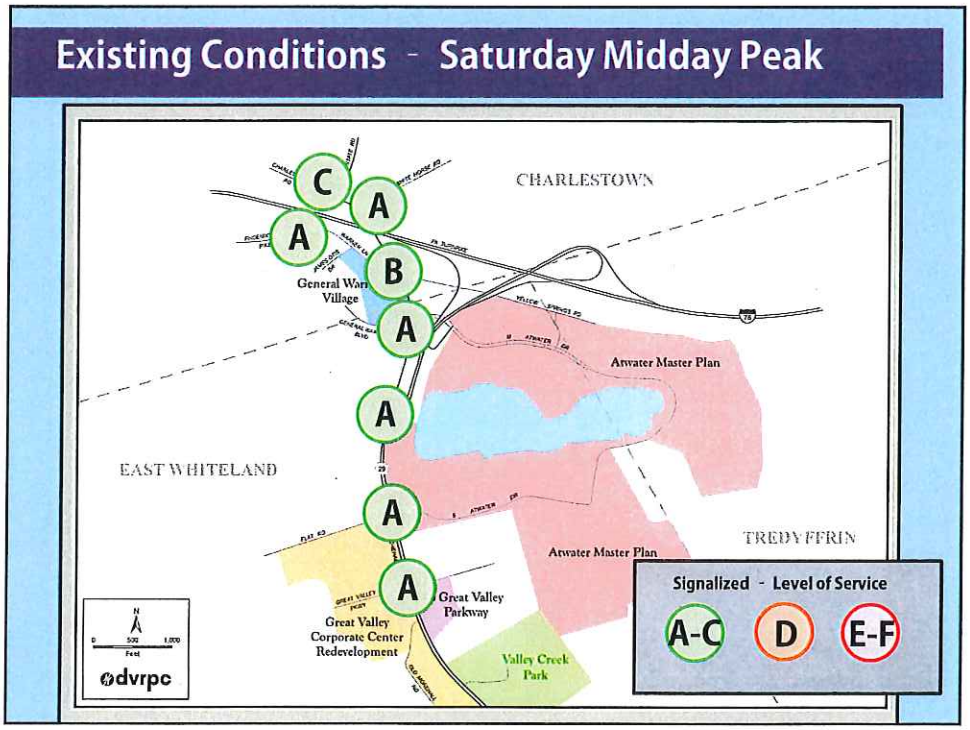
Existing Conditions - Weekday AM Peak



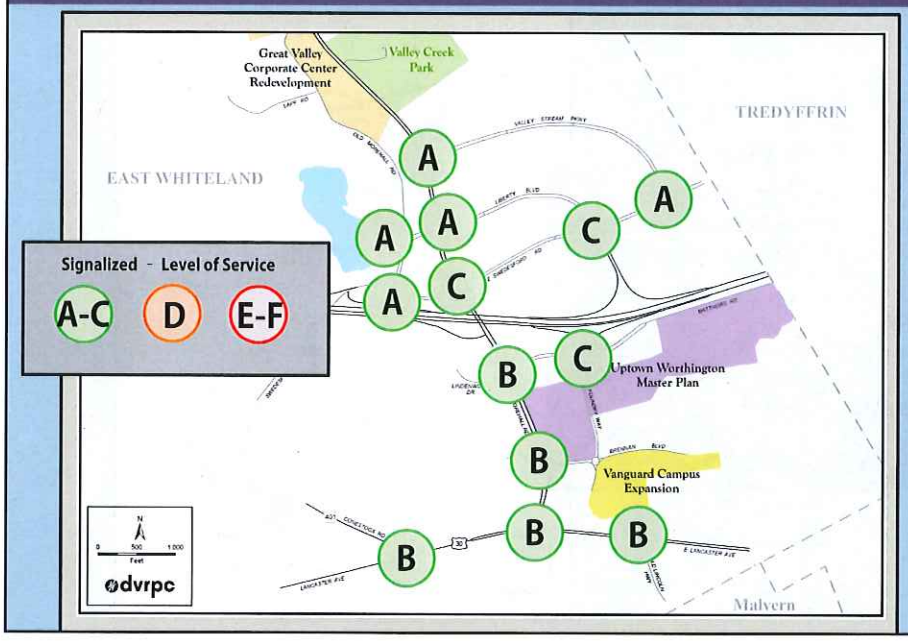
Existing Conditions - Weekday PM Peak




Existing Conditions - Weekday PM Peak
Great Valley Corporate Center Redevelopment
Valley Creek Park
TREDYFFRIN
EAST WHITELAND
Signalized - Level of Service
A-C
D
E-F
Uptown Worthington Master Plan
Vanguard Campus Expansion
Malvern
dvrpc

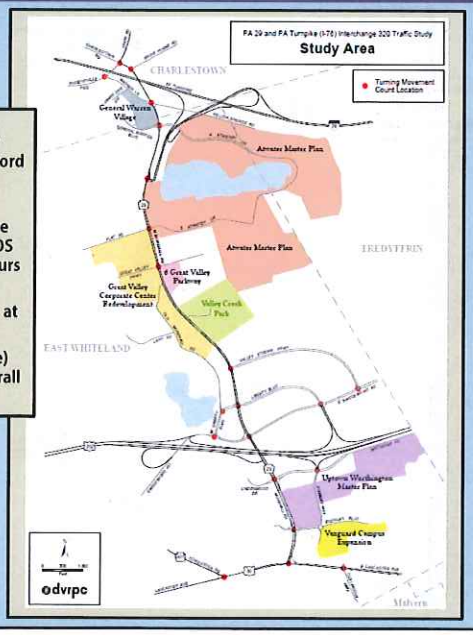

Existing Conditions - Saturday Midday Peak
CHARLESTOWN
General Warren Village
Atwater Master Plan
EAST WHITELAND
TREDYFFRIN
Great Valley Parkway
Great Valley Corporate Center Redevelopment
Valley Creek Park
Signalized - Level of Service
A-C
D
E-F
dvrpc

Existing Conditions - Saturday Midday Peak



Existing Conditions - Summary

- Midday Saturday peak traffic volumes are 60% of weekday peak levels south of Swedesford Road, and 30% north of Swedesford Road
- All study intersections operate at predictable (acceptable) LOS conditions during all peak hours
- Constrained LOS conditions exist at corridor "gateways" at key times
- Revising signal timings (alone) will not appreciably alter overall intersection LOS



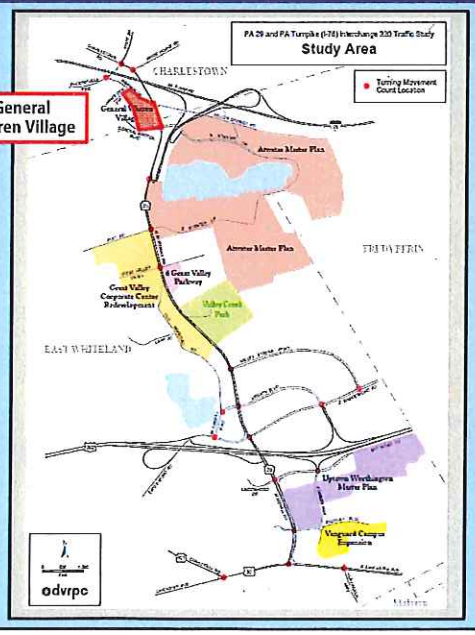
Proposed Development

Proposals

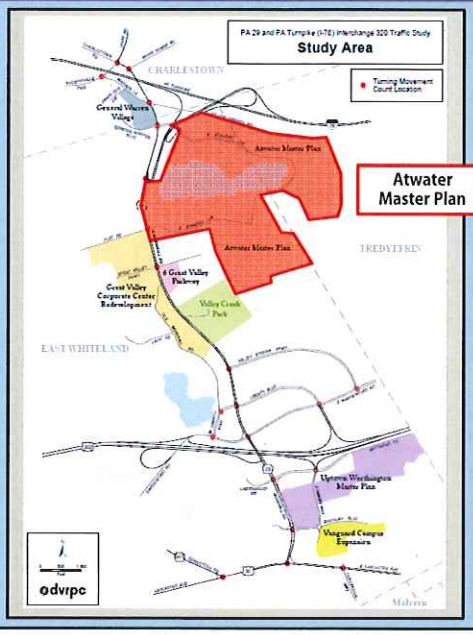
Proposed Development - 1

New integrated, mixed-use development with 14K SF retail, and a 128-room hotel

General Warren Village



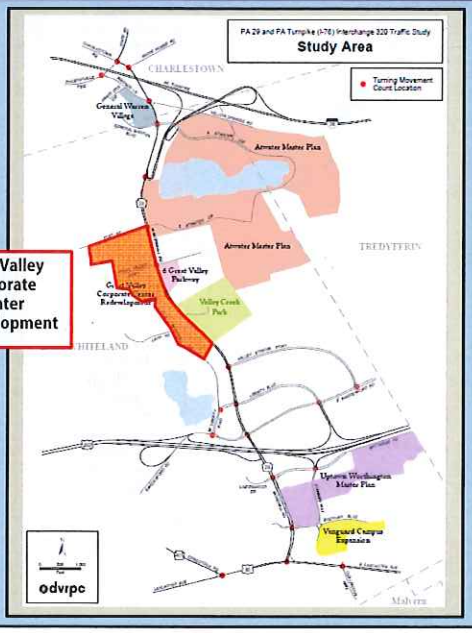
Proposed Development - 2



Atwater Master Plan

Completion of 400-acre, integrated, mixed-use development with 770K SF office, 873 dwelling units, 24K SF retail, and a 130-room hotel

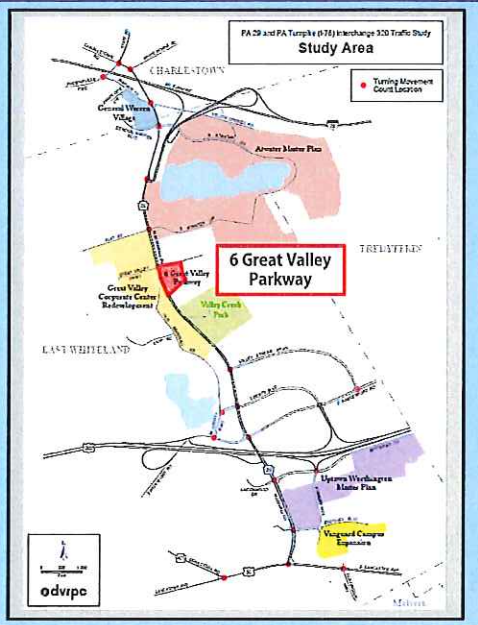
Proposed Development - 3



50-acre redevelopment proposal for an integrated, mixed-use, walkable development with 820K SF office, 800 apartments, 25K SF retail, and a 130-room hotel

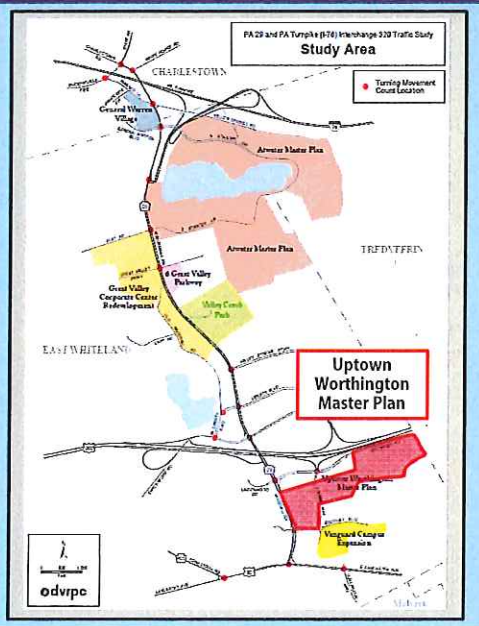
Great Valley Corporate Center Redevelopment

Proposed Development - 4



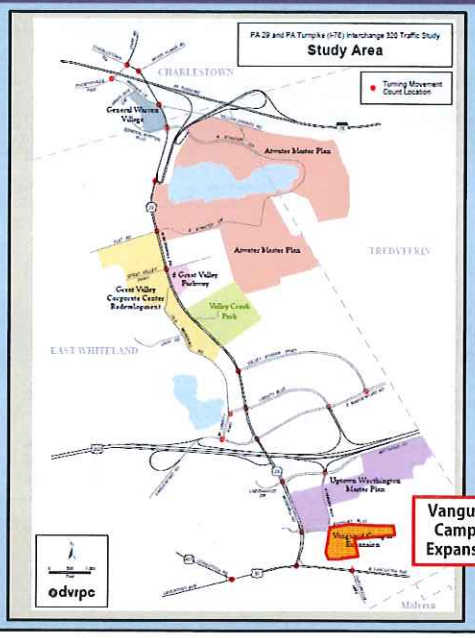
New single-use development with 120K SF office

Proposed Development - 5



Completion of 100-acre, integrated, mixed-use, walkable development with 220K SF office, 752 apartments, 450K SF retail including a 15-screen theater / bistro, and a 152-suite hotel

Proposed Development - 6

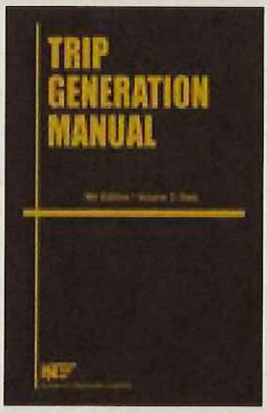


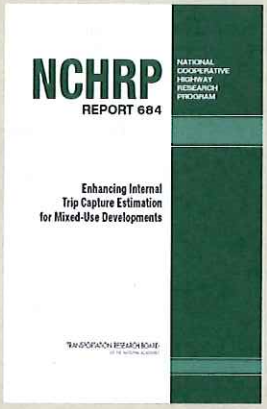
Vanguard Campus Expansion

40-acre campus expansion adding 370K SF office

Proposed Development - Estimating Traffic

Trip Generation





Proposed Development - Trip Generation

Trip Generation Summary

References	Weekday TOTAL	A.M. Peak Hour IN	A.M. Peak Hour OUT	A.M. Peak Hour TOTAL	P.M. Peak Hour IN	P.M. Peak Hour OUT	P.M. Peak Hour TOTAL	Saturday TOTAL
Total Potential Vehicular Trips - All developments and components at full-build-out, generated as individual and isolated uses.	106,578	5,138	2,325	7,463	3,994	6,157	10,151	105,930
Total External Vehicular Trips - All developments at full build-out. Trip generation discounted for trip interchanges between on-site uses where appropriate.		4,687	1,871	6,558	3,248	5,413	8,661	
Total Remaining External Vehicular Trips - Excludes built and occupied components.		3,602	1,532	5,134	2,226	3,960	6,186	
By Use:								
Office		2,644	325	2,969	431	2,280	2,711	
Residential		205	742	947	670	393	1,063	
Retail		753	465	1,218	1,125	1,287	2,412	

Proposed Development - Trip Generation

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Proposed Development - Traffic Assignment

Trip Distribution (driveway turns, area traffic patterns) **Traffic Assignment** (grand)

to / from the		Land Use: Office	Land Use: Residential	Land Use: Retail	AM Peak Total: In	AM Peak Total: Out	PM Peak Total: In	PM Peak Total: Out
North		40%	9%	14%	1,182	262	390	1,128
via:	Charlestown Rd	18%	3%	5%	520	104	154	487
	PA 29	15%	4%	6%	450	106	159	435
	White Horse Rd	7%	2%	3%	212	52	77	206
East		30%	58%	40%	1,214	714	968	1,427
via:	Yellow Springs Rd	1%	2%	1%	38	23	29	44
	Pennsylvania Turnpike	9%	7%	4%	283	100	131	284
	Swedesford	3%	15%	6%	155	149	181	205
	US 202	11%	20%	11%	415	236	305	471
	Lancaster	6%	14%	18%	323	207	322	424
South		10%	8%	12%	371	148	232	414
via:	Old Lincoln Highway	10%	8%	12%	371	148	232	414
West		20%	25%	34%	836	409	636	992
via:	Lancaster	8%	12%	20%	387	208	340	487
	Swedesford	2%	1%	2%	70	23	38	75
	US 202	5%	5%	7%	195	86	134	224
	Phoenixville Pike	5%	7%	5%	184	92	125	206
Total		100%	100%	100%	3,603	1,533	2,226	3,961

Proposed Development - Traffic Assignment

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	White Horse Rd	7%	2%			52	77	206
East		30%	58%			714	968	1,427
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	Pennsylvania Turnpike	9%	7%	4%	283	100	131	284
	Swedesford	3%	15%	6%	155	149	181	205
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	US 202	5%	5%			86	134	224
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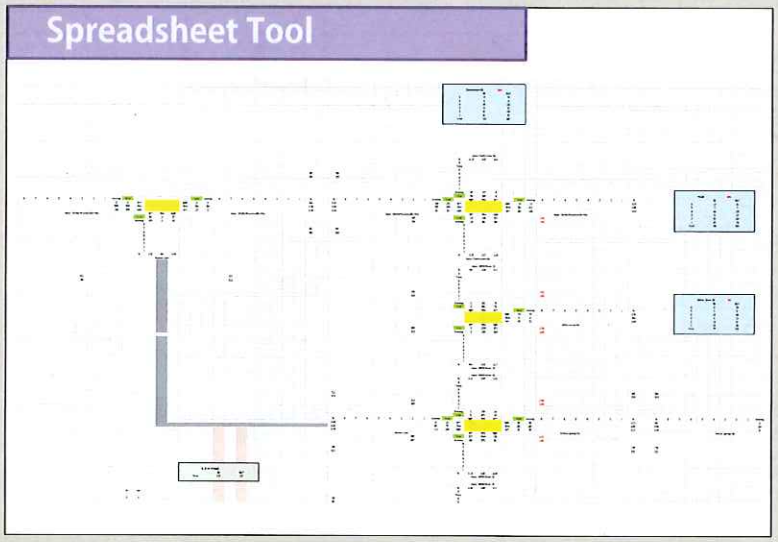
Total		100%	100%	100%	3,603	1,533	2,226	3,961

About 45% of office traffic— to/from the corridor's north end

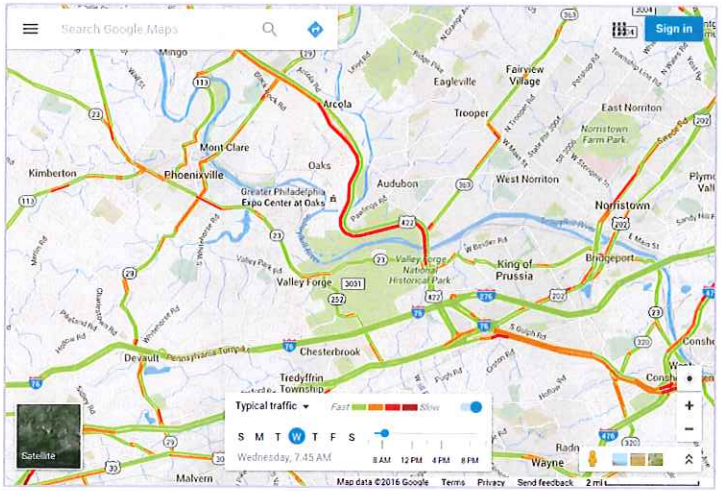
About 25% of office traffic— to/from the corridor's south end

Proposed Development - Traffic Assignment

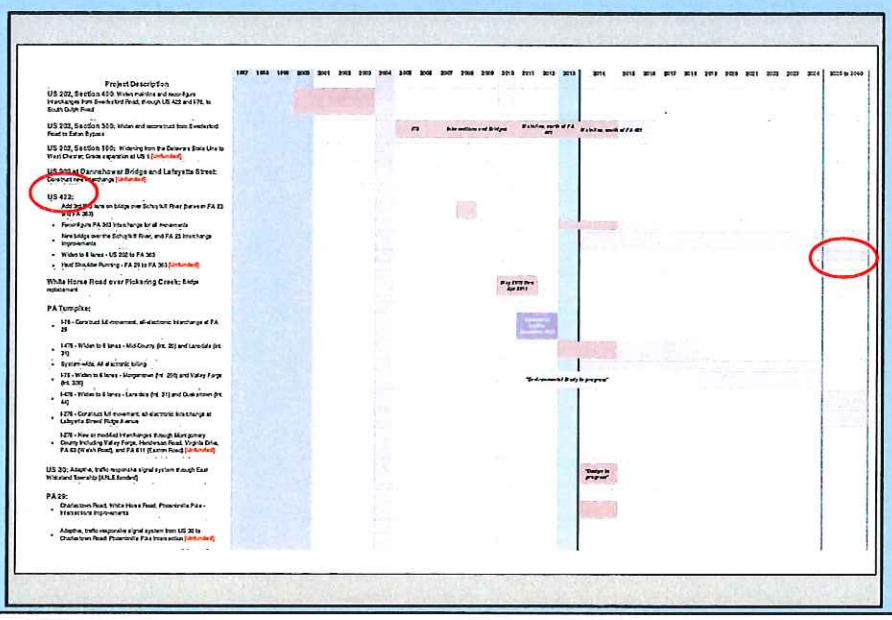
Spreadsheet Tool



Proposed Development - Traffic Assignment



Proposed Development - Traffic Assignment



Project Description

US 202, Section 400: Widen median and reconfigure interchange from Swedesford Road, through US 422 and I-76, to South Gulph Road

US 202, Section 300: Widen and reconstruct from Swedesford Road to Exton Bypass

US 202, Section 100: Widening from the Delaware State Line to West Chester; Grade separation at US 1 [Unfunded]

US 30 at Dannehower Bridge and Lafayette Street: Construct interchange [Unfunded]

US 422:

- Add 3rd lane on bridge over Schuylkill River (between PA 23 and PA 363)
- Reconfigure PA 363 interchange for all movements
- New bridge over the Schuylkill River, and PA 23 interchange improvements
- Widen to 6 lanes - US 202 to PA 363
- Hard Shoulder Running - PA 29 to PA 363 [Unfunded]

White Horse Road over Pickering Creek: Bridge replacement

PA Turnpike:

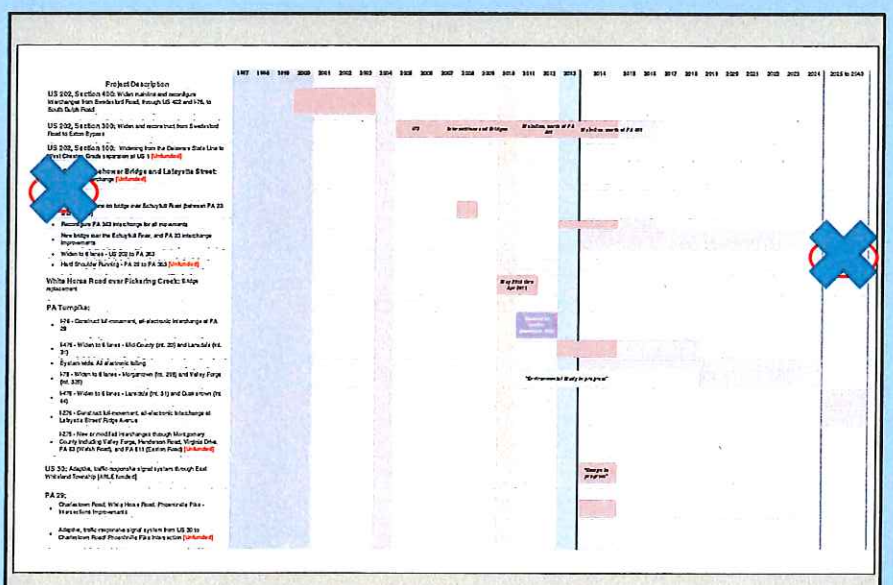
- I-76 - Construct full movement, all-electronic interchange at PA 29
- I-476 - Widen to 6 lanes - Mid County (Rt. 30) and Lansdale (Rt. 31)
- System-wide: All electronic tolling
- I-76 - Widen to 6 lanes - Morgantown (Rt. 205) and Valley Forge (Rt. 320)
- I-476 - Widen to 6 lanes - Lansdale (Rt. 31) and Quakertown (Rt. 63)
- I-276 - Construct full movement, all-electronic interchange at Lafayette Street/ Ridge Avenue
- I-276 - New or modified interchanges through Montgomery County including Valley Forge, Henderson Road, Virginia Drive, PA 63 (Welsh Road), and PA 611 (Easton Road) [Unfunded]

US 30: Adaptive, traffic responsive signal system through East Whiteland Township [NULE funded]

PA 29:

- Charlestown Road, White Horse Road, Phoenixville Pike - Intersection improvements
- Adaptive, traffic responsive signal system from US 30 to Charlestown Road/ Phoenixville Pike Intersection [Unfunded]

Proposed Development - Traffic Assignment



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- I-276 - New or modified interchanges through Montgomery County including Valley Forge, Henderson Road, Virginia Drive, PA 63 (Welsh Road), and PA 611 (Easton Road) [Unfunded]

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PA 29:

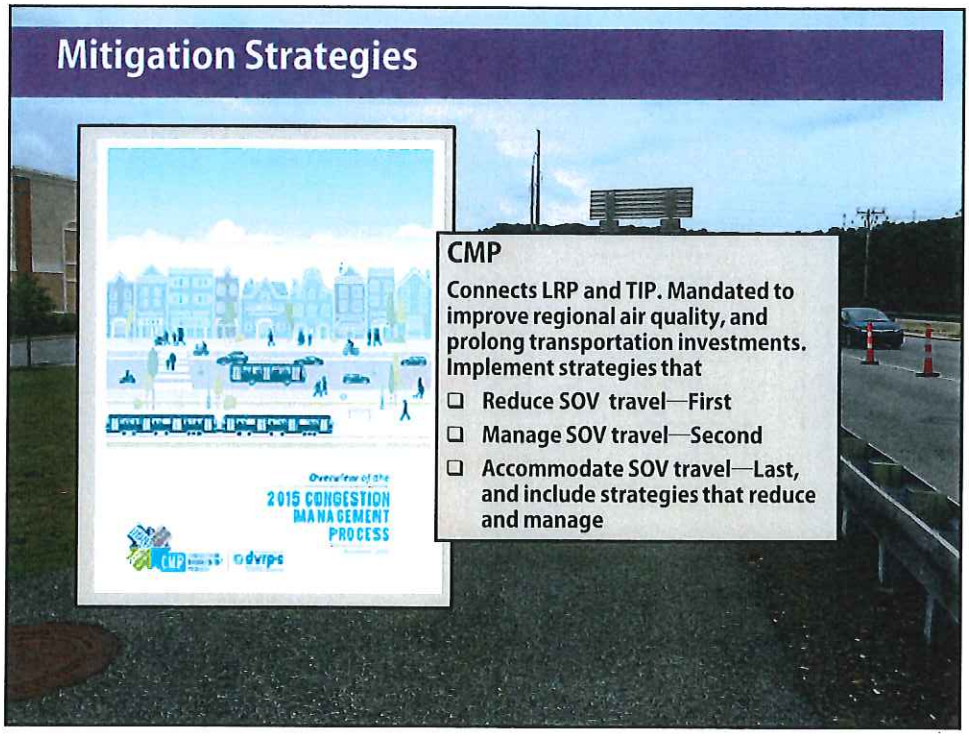
- Charlestown Road, White Horse Road, Phoenixville Pike - Intersection improvements
- Adaptive, traffic responsive signal system from US 30 to Charlestown Road/ Phoenixville Pike Intersection [Unfunded]

Level of Service Comparison

Signalized Intersection LOS Summary - Existing and After Development (Draft, 4/28/2016)

		EXISTING CONDITIONS			AFTER DEVELOPMENT	
#	Intersection	AM Peak Hour	PM Peak Hour	Saturday Peak Hour	AM Peak Hour	PM Peak Hour
1	Warner & Phoenixville	A	C	A	B	D
2	PA 29 & Phoenixville / Charlestown	D	C	C	F	E
3	PA 29 & Whitehorse	B	A	A	F	F
4	PA 29 & Yellow Springs / Warner	C	B	B	F	F
5	PA 29 & N. Atwater / Gen. Warren	A	C	A	F	F
6	PA 29 & PA Turnpike Ramps / Quarry	D	B	A	F	F
7	PA 29 & S. Atwater / Flat	C	B	A	F	F
8	PA 29 & Great Valley	B	D	A	F	F
9	*PA 29 & Lapp (extended) / Valley Cr. Park*				*F*	*F*
10	PA 29 & Valley Stream	C	C	A	F	F
11	PA 29 & Liberty	B	C	A	E	F
12	PA 29 & Swedesford	D	D	C	F	F
13	PA 29 & Matthews / Lindenwood	C	C	B	E	F
14	PA 29 & Brennan / Wyeth	B	C	B	D	F
15	US 30 & PA 29 / Driveway	C	D	B	F	F
16	US 30 & PA 401 (Conestoga) / Driveway	C	B	B	C	C
17	US 30 & Old Lincoln / Driveway	C	C	B	D	F
18	Liberty & Old Morehall / Driveway	B	B	A	B	B
19	Swedesford & W. Liberty	A	B	A	A	D
20	Swedesford & US 202 Ramps / E. Liberty	C	D	C	C	D
21	Swedesford & Valley Stream / Driveway	C	B	A	C	D
22	Matthews & US 202 Ramps / Founders	C	D	C	C	E

Mitigation Strategies


Mitigation Strategies
2015 CONGESTION MANAGEMENT PROCESS
CMP
Connects LRP and TIP. Mandated to improve regional air quality, and prolong transportation investments. Implement strategies that
Reduce SOV travel—First
Manage SOV travel—Second
Accommodate SOV travel—Last, and include strategies that reduce and manage

Mitigation Strategies - Land Use Planning
Integrated mixed-use developments reduce vehicular trips
Integrated circulation networks forestall congestion, and reduce trip length

Mitigation Strategies
Take Advantage of Existing Infrastructure

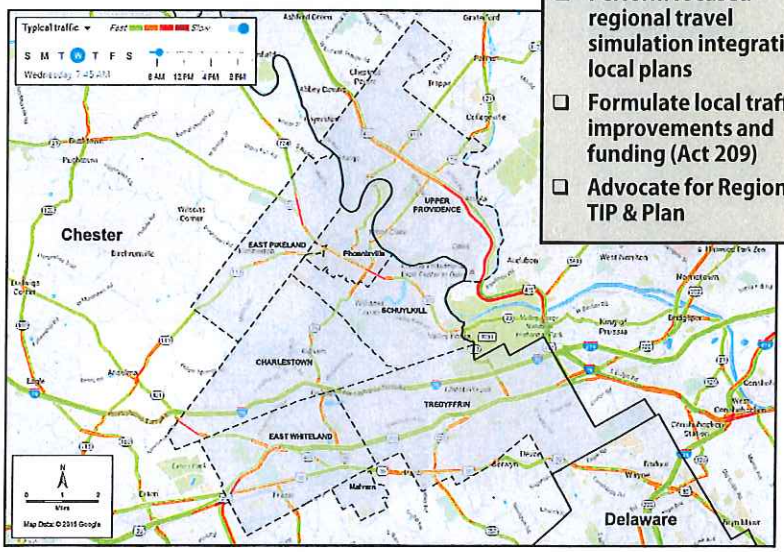
Mitigation Strategies - Community Planning
Infrastructure Walking and Biking
GREAT VALLEY / ROUTE 29 MULTIMODAL STUDY
TMACC
Implement trails and connected sidewalks network
Integrate roadway networks

Mitigation Strategies - Transportation Planning

Ridesharing and Transit

- Continue corridor-specific SR 0202, Section 300 CMS Commitments (with TMACC & SEPTA)
- Build Park-and-Ride Lot at PA Turnpike Interchange (offset SOV travel elsewhere in the region)

Mitigation Strategies - Transportation Planning



- Perform focused regional travel simulation integrating local plans
- Formulate local traffic improvements and funding (Act 209)
- Advocate for Regional TIP & Plan

Mitigation Strategies - Transportation Planning

Geometric Improvements

Signal Timing

Conclusions

1. Existing traffic-operational constraints
2. Substantial additional traffic foreseen
3. Major degradation in traffic LOS will require programmatic action, and physical and operational improvements
4. Use / Expand prepared models & tools to monitor traffic conditions, and fine-tune development descriptions
5. Regional perspective needed
   - ❑ Long-term plan for the corridor should account for externalities — regional growth and transportation improvements
   - ❑ Integrate contemplated plans & updates:
     - Downtown US 30 - a community arterial for East Whiteland
     - Phoenixville Area Intermodal Transportation Study
6. Prepare Act 209 Traffic Impact Study & Capital Plan

Next Steps

1. Model AM & PM Peak After Development Traffic Volumes with Committed Improvements

- ❑ Include identified physical improvements at the signalized intersections (in addition to Lapp Road Extension, and northbound right-turn lane at Great Valley Parkway)

2. Contrast Peak Hour LOS Changes

- ❑ Indication of Future Needs

3. Identify Recommendations

- ❑ Mitigation Strategies, Programs, and Actions

4. Provide Deliverables (on CD)

- ❑ Summary Report
- ❑ Synchro Models, Live Files & Tools - Monitoring & Refinement
- ❑ Resources - Literature & Traffic Counts

Thank you.

Thoughts?
Comments?
Questions?

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For copies of these materials, please visit:
www.dvrpc.org/Corridors/pdf/2016-05-03_PA_29_Update_Meeting.pdf