Northern Virginia Transportation Authority
The Authority for Transportation in Northern Virginia

PLANNING COORDINATION ADVISORY COMMITTEE
Wednesday, May 24, 2017, 6:30pm
NVTA Office
3040 Williams Drive, Suite 200
Fairfax, Virginia 22031

AGENDA

I. **Call to Order/Welcome** Chairman Buona

Action

II. **Approve Summary Notes of April 26, 2017 Meeting**
Recommended Action: Approval [with abstentions from those who were not present]

Discussion/Information

III. **TransAction: Findings and NVTA Staff Draft Recommendations** Mr. Jasper

IV. **NVTA Update** Ms. Backmon, Executive Director

Adjournment

V. **Adjourn**

Next Meeting:
Wednesday, June 28, 2017
6:30pm NVTA Office

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PLANNING COORDINATION ADVISORY COMMITTEE
Wednesday, April 26, 2017, 6:30 pm
Northern Virginia Transportation Authority
3040 Williams Drive, Suite 200
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SUMMARY NOTES

I. Call to Order/Welcome Chairman Buona

- Supervisor Ralph Buona called the meeting to order at 6:32 pm.
- Attendees:
  - **PCAC Members:** Supervisor Ralph Buona (Loudoun County); Supervisor Ruth Anderson (Prince William County); Council Member Ken Reid (Town of Leesburg); Council Member Pamela Sebesky (City of Manassas); Council Member Jeff Davidson (Town of Herndon); Council Member Preston Banks (City of Manassas Park); Council Member Phil Duncan (City of Falls Church); Supervisor John Foust (Fairfax County)
  - **NVTA Staff:** Monica Backmon (Executive Director); Michael Longhi (Chief Financial Officer); Keith Jasper (Principal, Transportation Planning and Programming); Harun Rashid (Transportation Planner)
  - **Other:** Noel Dominguez (Fairfax County), Robert Brown and Joe Kroboth (Loudoun County), James Davenport (Prince William County)

Action

II. Approve Summary Notes of March 22, 2017, PCAC Meeting

- The March 22, 2017 Planning Coordination Advisory Committee meeting summary was unanimously approved, with abstentions from members (6) not present.

III. Approve Six Year Program Framework Mr. Jasper

- Mr. Jasper stated that the proposed framework for the Six Year Program was presented in detail at the March 22, 2017 meeting, and highlighted the following presentation slides –
  Slide #5 – a linear comparison of proposed NVTA schedule with that of CTB
  Slide #10 – clarify Finance Committee's role in recommending financial principles
  Slide #11 – key milestones of the proposed program
- Supervisor Buona opened up the discussion stating that the Six Year Program will be updated every 2 years, until a new long range plan (TransAction) is adopted, and that

there is a 30-day window to submit resolutions of support from sponsor jurisdictions. Based on the proposed framework schedule, this entails a timeline of January-February of 2018 for all resolutions to be submitted to NVTA. He questioned how this framework is different than the previous ones. Mr. Jasper stated that this is the first time there will be Calls for Regional Projects (CfRP) after TransAction is adopted, but the program is otherwise similar to previous programs in nature.

- Council Member Reid asked for clarifications for – a. do towns need to apply for NVTA project funds via counties, and b. for a particular project, if the Commonwealth's SmartScale rejection carries a negative weight towards NVTA's project scoring formulae. For the question in a, Mr. Jasper stated that a town has both options, to apply independently, or partner with corresponding county. For b, Ms. Backmon explained that NVTA's project selection process is independent from that of SmartScale, and results from the latter will not affect NVTA's scores.
- Council Member Banks questioned how a project is considered to be regional, in the context of TransAction's corridor-level analyses. Mr. Jasper stated that corridors and corridor-segments in TransAction are geographic units of reporting for performance measures.
- Council Member Davidson questioned if this proposed program only considers projects that are in the current TransAction plan, how will a project that originates in the interim years be evaluated? Ms. Backmon stated that there is a mechanism to conduct interim plan amendments when necessary.
- Supervisor Anderson asked if NVTA staff can suggest how member jurisdictions can better co-operate in the proposed program. Mr. Jasper stated that the TransAction planning process had been a collaborative effort from its inception, and there will be considerable efforts to ensure the same level of collaboration during the program phase. Ms. Backmon cited past instances of such collaborations where this level of coordination took place – for example, projects in the Route 28 corridor, and the Route 1 widening project.
- With these discussions, Supervisor Buona motioned to approve the proposed Six Year Program Framework. This motion was unanimously approved.

Discussion/Information

IV. TransAction Preview: Baseline Analysis Mr. Jasper

- Mr. Jasper presented TransAction analyses assumptions, process, and results for the 2040 baseline and draft plan conditions, with four alternate scenario/sensitivity analyses. These materials were covered with the following topics – a. Process: a data-driven analytical approach with a robust public engagement; b. 2040 Baseline Conditions – create the planning horizon year transportation demand and supply conditions with socio-economic forecasts from MWCOG; c. Candidate Regional Projects – in addition to the baseline projects, a pool of projects created with member jurisdictions' inputs to create the draft plan condition; d. Summary of Model Results – present analyses outcomes with various performance measures by the corridors and corridor segments; e. Next Steps – proposed timelines of plan release, public hearing, and adoptions by the Authority.

- This was followed by a discussion. Supervisor Foust wanted confirmation that the NVTA will not prescribe land use alternatives to its member jurisdictions, but will provide policy directions. Supervisor Buona confirmed, and Mr. Jasper noted that land use alternatives were considered for sensitivity analyses only. In response to a question from Supervisor Anderson, Mr. Jasper clarified the assumptions between scenarios A (technology) and B (travel behavior). Supervisor Buona then asked what factors caused the performance improvements between the baseline and draft plan conditions. Mr. Jasper stated that the candidate projects are mostly behind the upward graphs, and some part of it are due to the way performance measures were analyzed. Council Member Banks commented that with the huge travel delays forecasted for the baseline condition, there may be a shift in travel behavior to select local alternative roads, with a need to further analyze lower-functional roads in the future plans.

V. NVTA Update Ms. Backmon, Executive Director

- With no major announcements, Ms. Backmon highlighted upcoming TransAction-related activities and their timelines

Adjournment

VI. Adjourn

- The meeting adjourned at 7:57 pm.

NVTA's TransAction

Transportation Action Plan for Northern Virginia

TransAction Preview: Findings and NVTA Staff Recommendations

Planning Coordination Advisory Committee
May 24, 2017

Agenda

- Technical Approach
- Findings: Segment Analysis
  - Draft Plan (2040)
  - Alternate Futures
- NVTA Staff Recommendations

Technical Approach

Current Conditions (2016)	‘No Build’ (2040)	‘No Build’ Alternate Futures (2040)	Draft Plan (2040)
Current population/ employment patterns	MWCOG Round 9.0 forecasts (population/ employment)	Modified from ‘No Build’ for each of four Alternate Futures	Same as ‘No Build’
Current transportation system	Current transportation system plus ‘committed’ projects	Modified from ‘No Build’ for each of four Alternate Futures	Same as ‘No Build’ plus 358 candidate regional projects

NVTA's TransAction

‘No Build’ (2040)

- ‘Committed’ projects include:
  - Projects currently under construction
  - Future projects with full funding
- ‘No Build’ (2040) includes:
  - Metrorail Silver Line Phase II
  - Transform 66
  - I-395 Express Lanes
  - I-95 Express Lanes extension

‘No Build’ (2040): Summary of Findings

- Population and Employment in Northern Virginia are forecast to increase by 24% and 37% respectively, between 2016 and 2040
- Compared to Current Conditions (2016), the ‘No Build’ (2040) conditions will result in:
  - Increase in weekday motorized travel (20%) and similar increase in person miles of travel;
  - Doubling of weekday transit crowding;
  - Tripling in weekday person hours of delay.

Alternate Futures

- Many Alternate Futures are possible
- Four Alternate Futures were tested:
  - Scenario A: Technology makes driving easier
  - Scenario B: Changes in travel behavior
  - Scenario C: Dispersed land use growth
  - Scenario D: Concentrated land use growth
- Scenarios are ‘plausible’ alternate futures, but are neither ‘predicted’ nor ‘preferred’; hybrid scenarios are ‘probable’
- Scenario (sensitivity) analysis provides an understanding of the robustness of TransAction findings and recommendations

Draft Plan (2040)

- TransAction embraces regional transportation solutions that address regional transportation needs
- TransAction is a fiscally unconstrained plan
- Draft Plan includes 358 candidate regional projects that are not fully funded, regardless of whether such projects are eligible for NVTA's regional revenues

Draft Plan (2040)

Total Projects in Draft Plan	Draft Plan Cost Estimate including ROW ($bn)*
358	$44.1

Project Type	Total Projects**	Project Cost FY17 ($M)
Roadway	239	$19,831
Transit	99	$23,293
Non-motorized	51	$3,543
ITS[1] / ICM[2]	15	$1,570
TDM[3]	3	$170

*Cost estimates are for entire projects, regardless of potential funding sources

**Projects can be categorized as multiple types

[1] ITS: Intelligent Transportation Systems

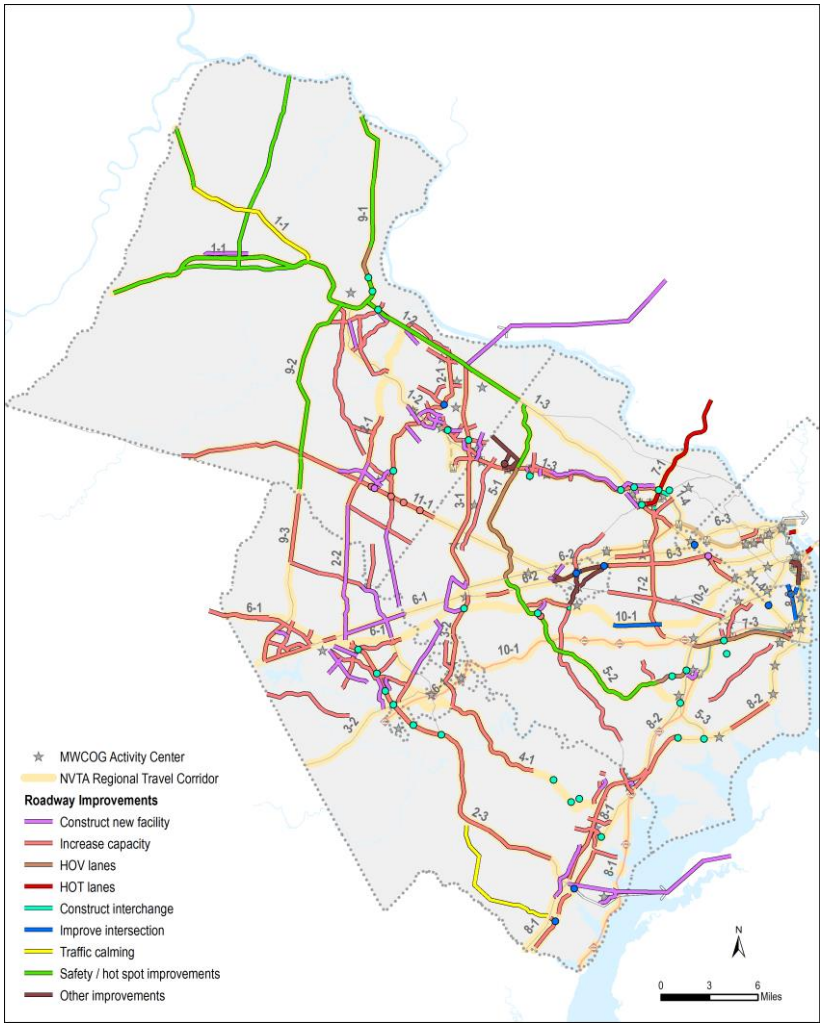
[2] ICM: Integrated Corridor Management

[3] TDM: Transportation Demand Management

Draft Plan (2040)

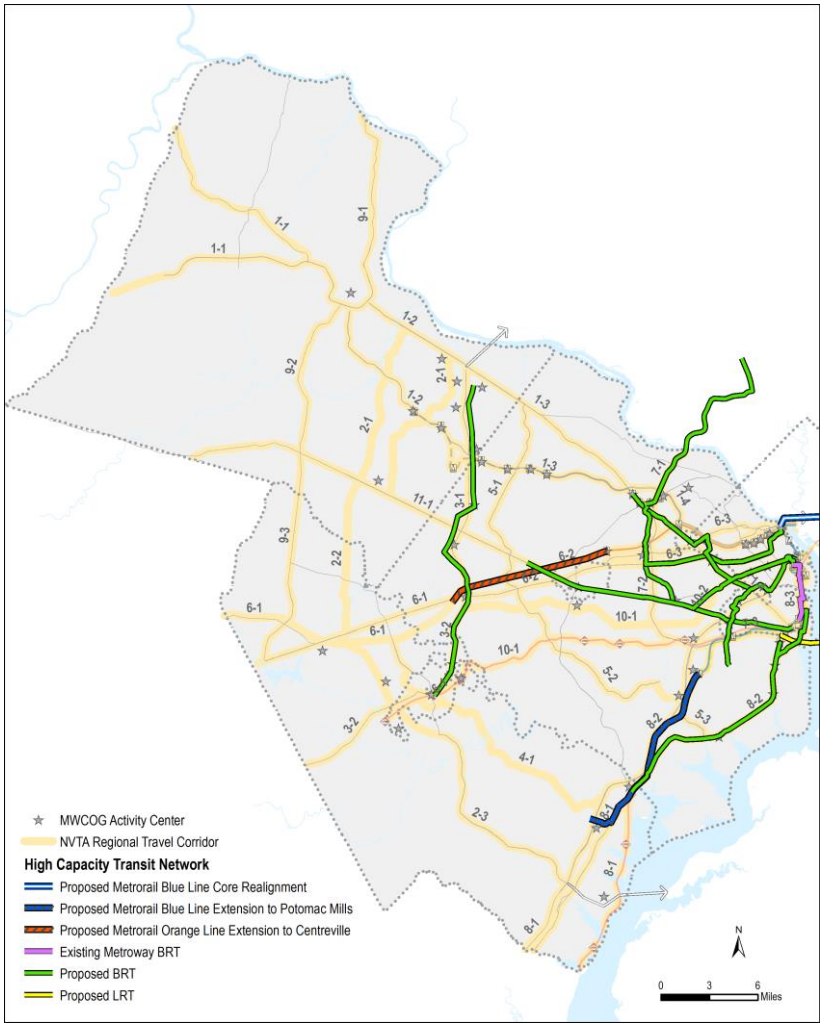
- Approximately half of the Draft Plan cost estimate associated with 35 ‘Mega’ projects (cost estimate > $0.25 billion)
  - Metrorail expansions include new Blue Line alignment under the Potomac near Rosslyn, extensions to Centreville and Potomac Mills, additional rolling stock, and station improvements
  - VRE enhancements include rail capacity improvements for the Manassas and Fredericksburg Lines, and between Alexandria and DC (including Long Bridge) in support of service expansion
  - New highway crossings over the Potomac River north and south of the Beltway
  - Highway capacity improvements on I-95, US-1, Route 123, Route 234, Route 286, and Seven Corners
  - BRT and/or LRT services along or near US-1, Route 28, Route 7, Merrifield/Tysons, and I-495 Wilson Bridge

Draft Plan: Roadway Projects



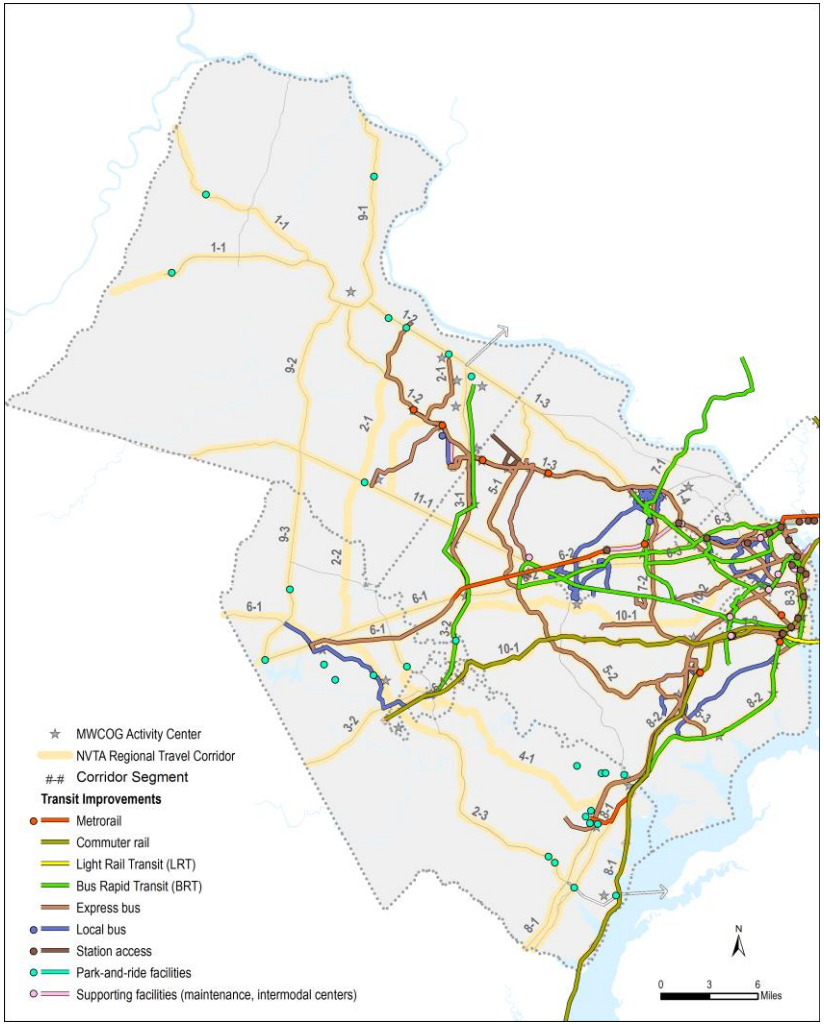
NVTA's TransAction

Draft Plan: High Capacity Transit Projects



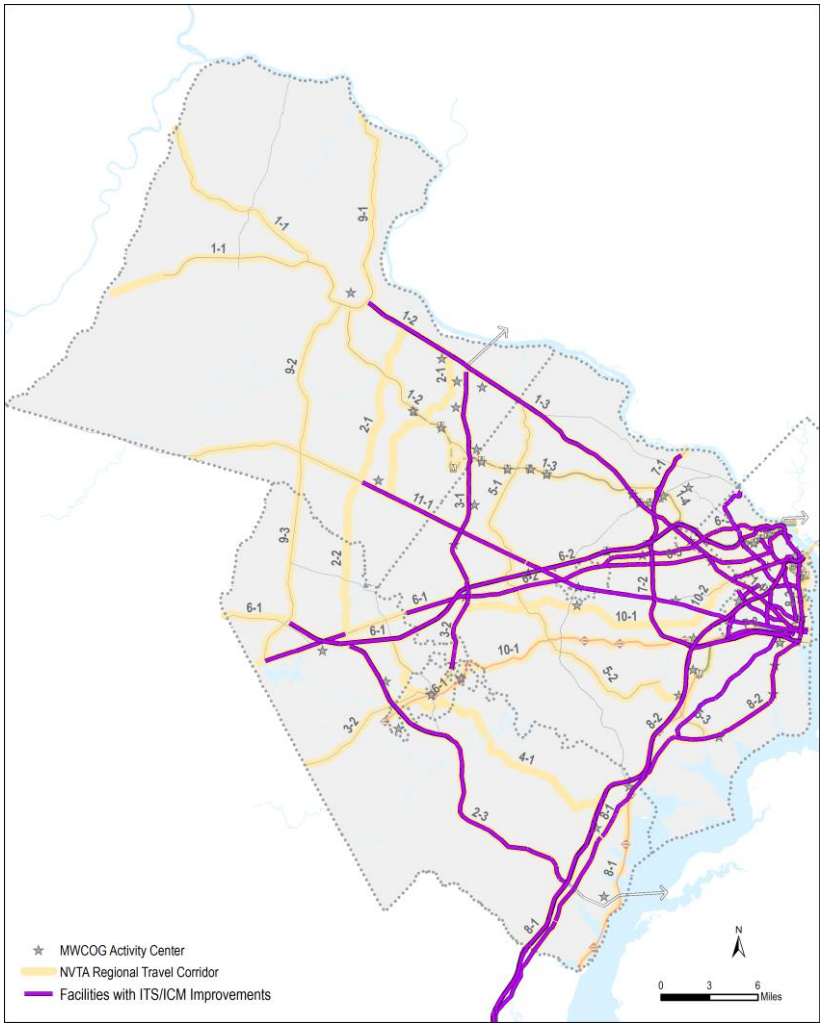
NVTA's TransAction

Draft Plan: Transit Projects



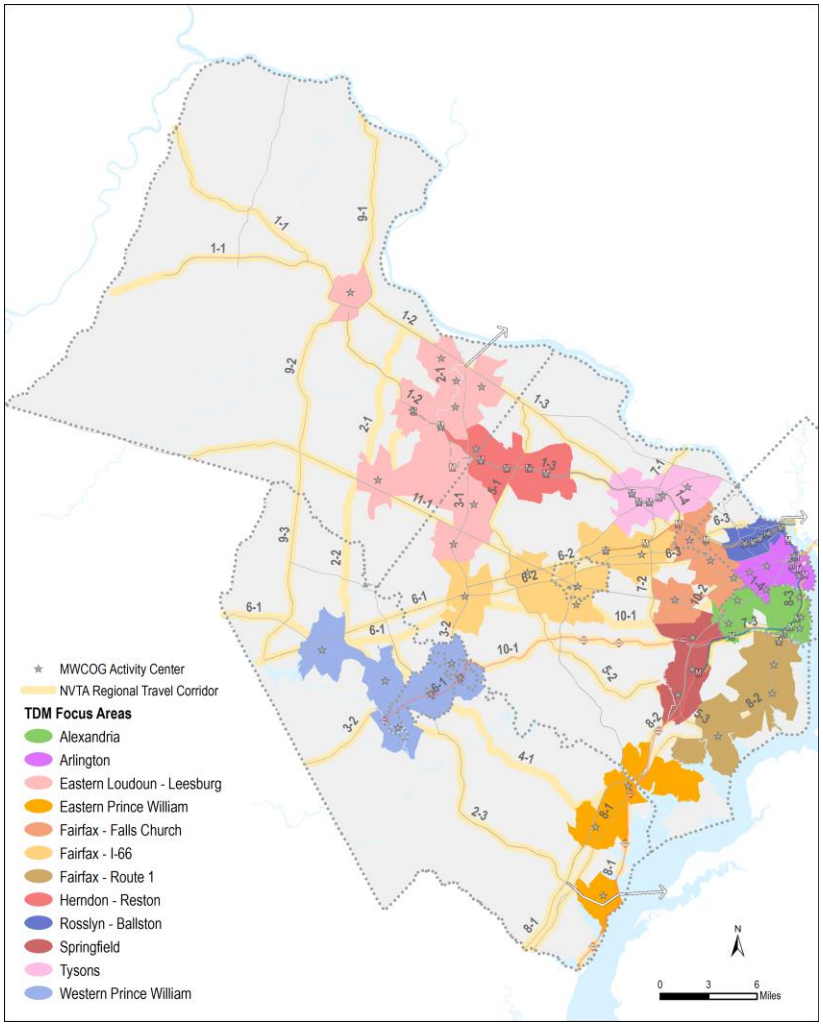
NVTA's TransAction

Draft Plan: ITS/ICM Projects



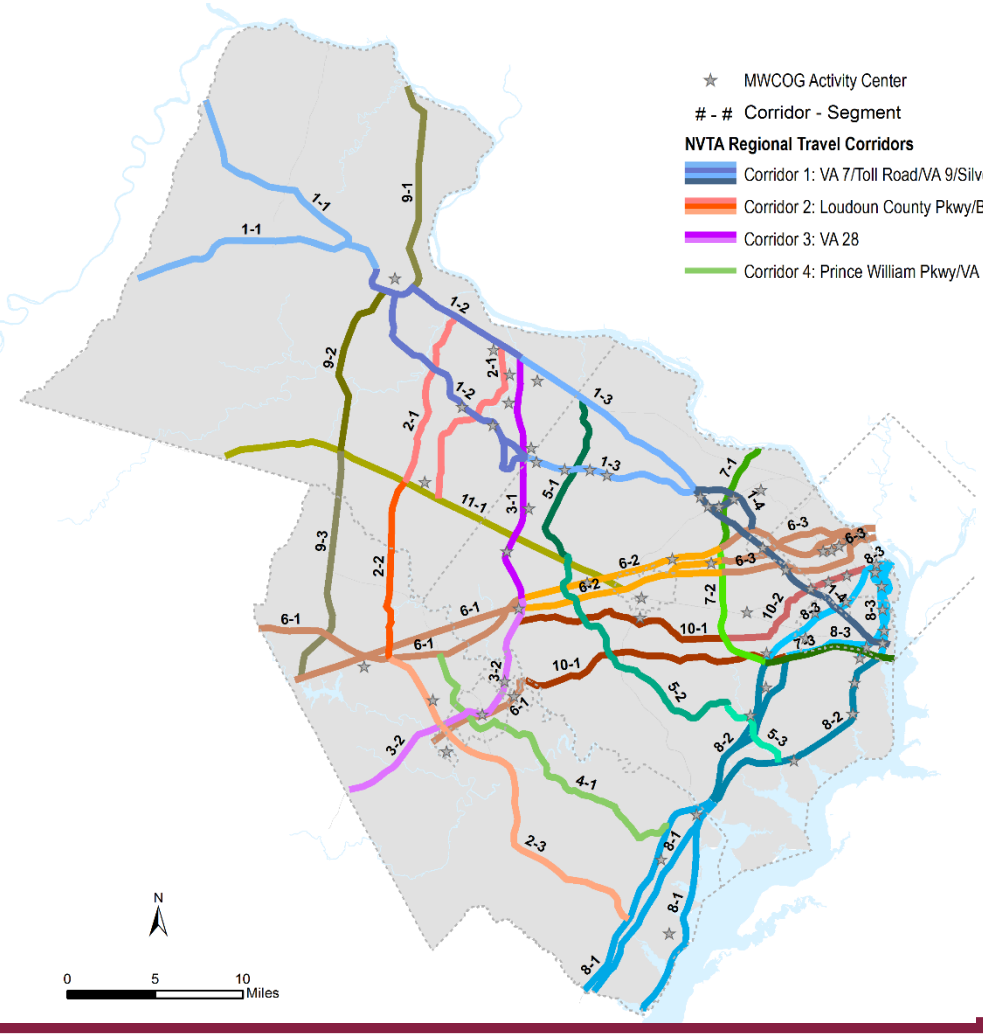
NVTA's TransAction

Draft Plan: TDM Focus Areas



NVTA's TransAction

Corridors and Segments



Focus on improving travel conditions on 11 multi-modal corridors, divided into 28 corridor segments

NVTA's TransAction

Role of Performance Measures

- Performance Measures
  - Performance of the plan evaluated at multiple levels (regional, corridor, corridor segment)
  - Evaluation uses 15 measures, including all seven HB 599 (2012) measures; each measure weighted 5 or 10 percent
  - Integrates HB 599 process into TransAction
- Benefit/Cost Analysis
  - TransAction includes a ‘planning level’ BCA, using project cost estimates and encompassing all performance measures

Approved Performance Measures and Weightings

Vision

In the 21st century, Northern Virginia will develop and sustain a multimodal transportation system that enhances quality of life and supports economic growth. Investments in the system will provide effective transportation benefits, promote areas of concentrated growth, manage both demand and capacity, and employ the best technology, joining rail, roadway, bus, air, water, pedestrian, and bicycle facilities into an interconnected network that is fiscally sustainable.

Goals	Objectives		Measures						FY2017 HB599 weightings	TA Sub-Cmtee	TAC	PCAC	Mean	PPC
Goal 1: Enhance quality of life and economic strength of Northern Virginia through transportation	1.1	Reduce congestion and crowding experienced by travelers in the region	1.1.1	Total Person Hours of Delay (HB599)	❶		③		9.1	10	10	9	9.7	10
			1.1.2	Transit Crowding (HB599)	❶	②			5.2	5	6	5	5.3	5
			1.1.3	Person Hours of Congested Travel in Automobiles (HB599)	❶		③		6.9	5	8	7	6.7	5
			1.1.4	Person Hours of Congested Travel in Transit Vehicles (HB599)	❶		③		5.3	5	7	5	5.7	5
	1.2	Improve Travel Time Reliability	1.2.1	Congestion Severity: Maximum Travel Time Ratio	❶	②				2	2	9	4.3	5
			1.2.2	Congestion Duration (HB599)	❶	②	③		12.6	8	15	9	10.7	10
	1.3	Increase access to jobs, employees, markets, and destinations	1.3.1	Percent of jobs/population within 1/2 mile of high frequency and/or high performance transit	❶					5	7	3	5.0	5
			1.3.2	Access to Jobs within 45 mins by auto or within 60 mins by transit (HB599)	❶				4.3	10	5	3	6.0	5
	1.4	Improve connections among and within areas of concentrated growth	1.4.1	Average travel time per motorized trip between Regional Activity Centers	❶					5	5	2	4.0	5
			1.4.2	Walkable/bikeable environment within a Regional Activity Center	❶		③			5	5	3	4.3	5
										60	70	55	61.7	60
Goal 2: Enable optimal use of the transportation network and leverage the existing network	2.1	Improve the safety of transportation network	2.1.1	Safety of the transportation system	①	❷				5	5	10	6.7	5
	2.2	Increase integration between modes and systems	2.2.1	First and last mile connections	①	❷				13	8	6	9.0	10
	2.3	Provide more route and mode options to expand travel choices and improve resiliency of the system	2.3.1	Share of travel by non-SOV modes	①	❷	③			15	5	7	9.0	10
	2.4	Sustain and improve operation of the regional system	2.4.1	Person hours of travel caused by 10% increase in PM peak hour demand (HB599)		❷			1.6	2	2	2	2.0	5
										35	20	25	26.7	30
Goal 3: Reduce negative impacts of transportation on communities and the environment	3.1	Reduce transportation-related emissions	3.1.1	Vehicle miles traveled (VMT) by speed			❸			5	10	20	11.7	10
										5	10	20	11.7	10
								HB599 Measures	45	45	53	40	46	45
								Other Measures	55	55	47	60	54	55
								Total	100	100	100	100	100	100

Notes

❶❷❸ indicate primary goal supported by each measure
①②③ indicate other goals supported by each measure

Measures 1.4.2, 2.1.1, and 2.2.1 are qualitative measures. All others are quantitative measures.

NVTA's TransAction

Reminders

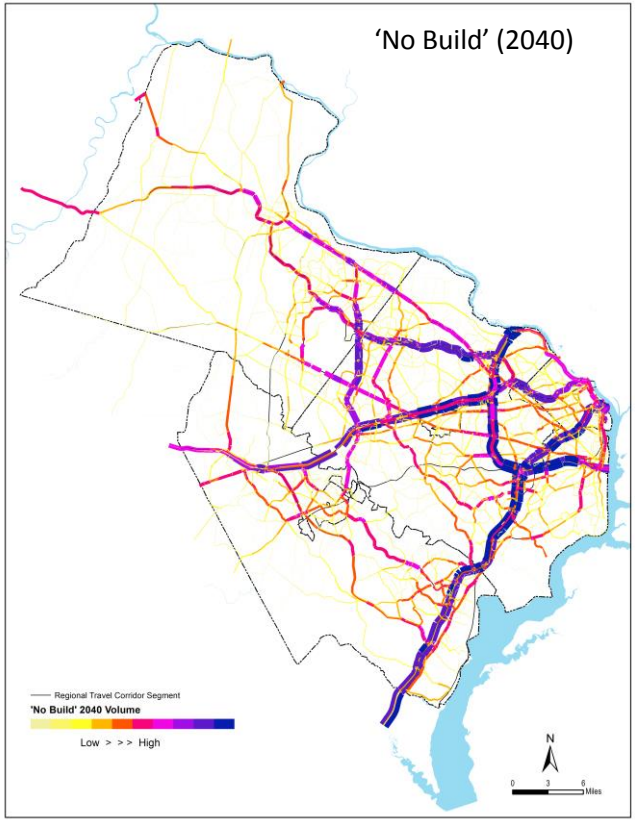
- TransAction is a multi-modal long range regional transportation plan; it does not seek to evaluate or optimize individual projects
- TransAction focuses on ‘bigger picture’ relative changes, rather than microscopic details
- Analytical approach addresses recurring congestion

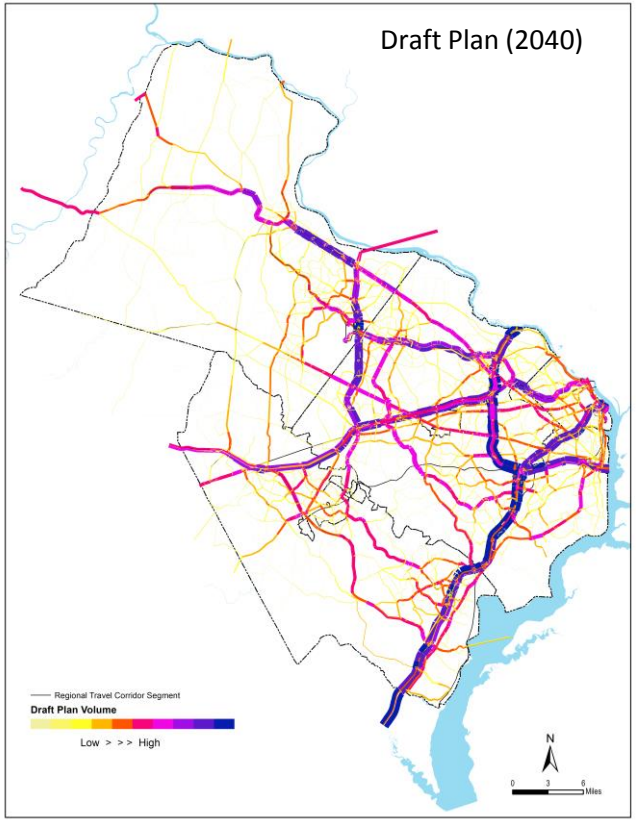
Findings: Selected Measures

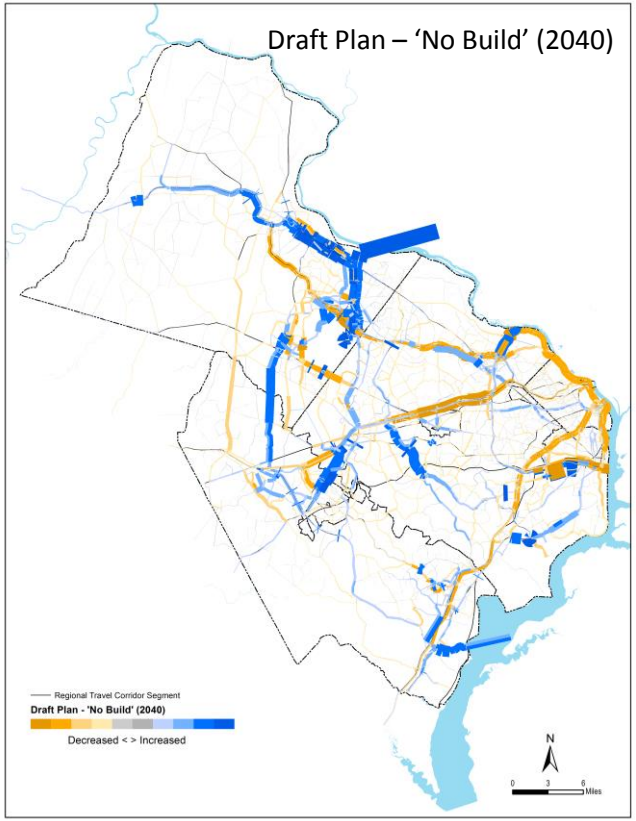
Measures (Weekday)	Current Conditions (2016)	'No Build' (2040)	Draft Plan (2040)	% Change
Motorized Trips	8,737,000	10,462,000	10,565,000	1.0%
Auto Trips	7,862,000	9,432,000	9,442,000	0.1%
Transit Trips	876,000	1,030,000	1,122,000	9.0%
Transit Share	10.0%	9.8%	10.6%	8.2%
Transit Boardings	1,002,000	1,359,000	1,551,000	14.1%
Miles of Travel	104,839k	125,379k	124,869k	-0.4%
Hours of Travel	3,298,000	5,811,000	4,446,000	-23.5%
Hours of Delay	1,007,000	3,030,000	1,704,000	-43.8%
Transit Crowding	10,800	20,100	7,200	-64.4%

Impact on Weekday Vehicle Volumes

Draft Plan (2040) compared to ‘No Build’ (2040)



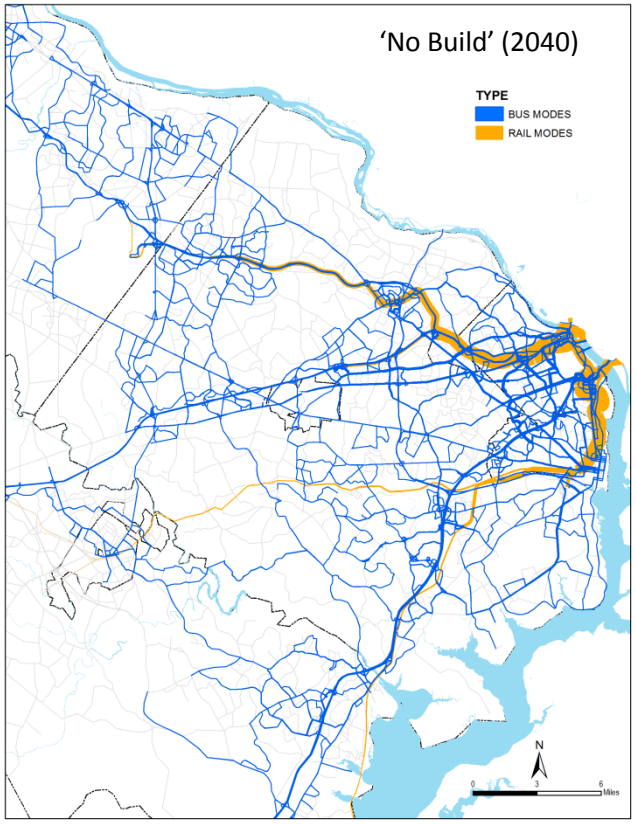


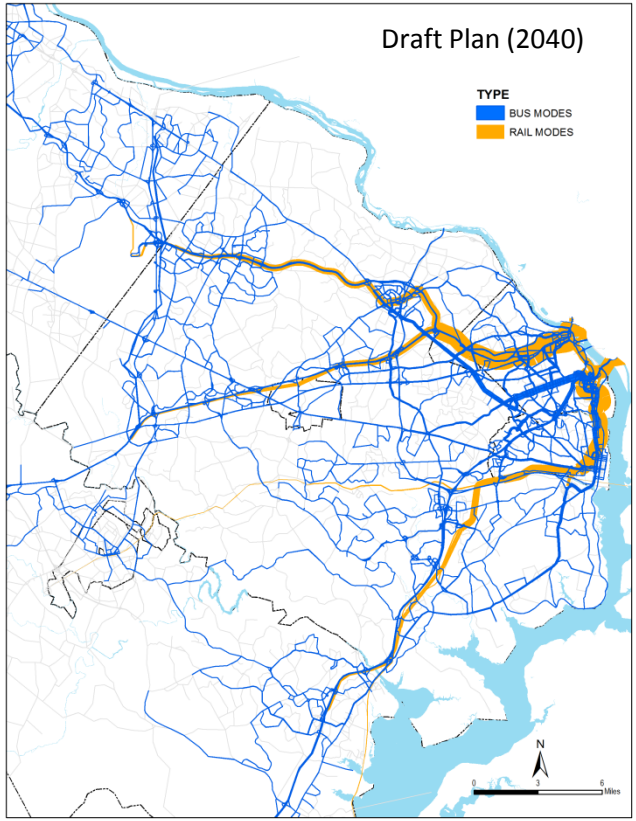


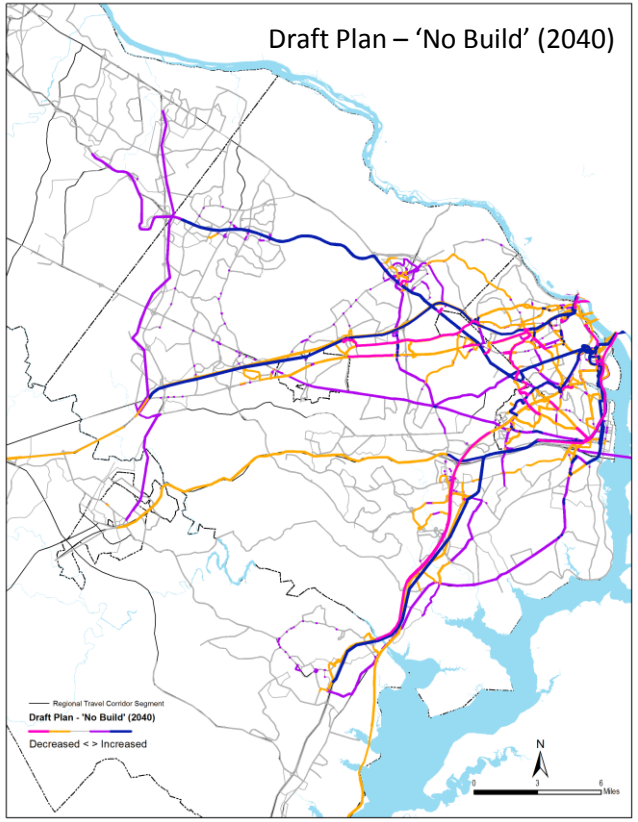
NVTA's TransAction

Impact on Weekday Transit Ridership

Draft Plan (2040) compared to 'No Build' (2040)





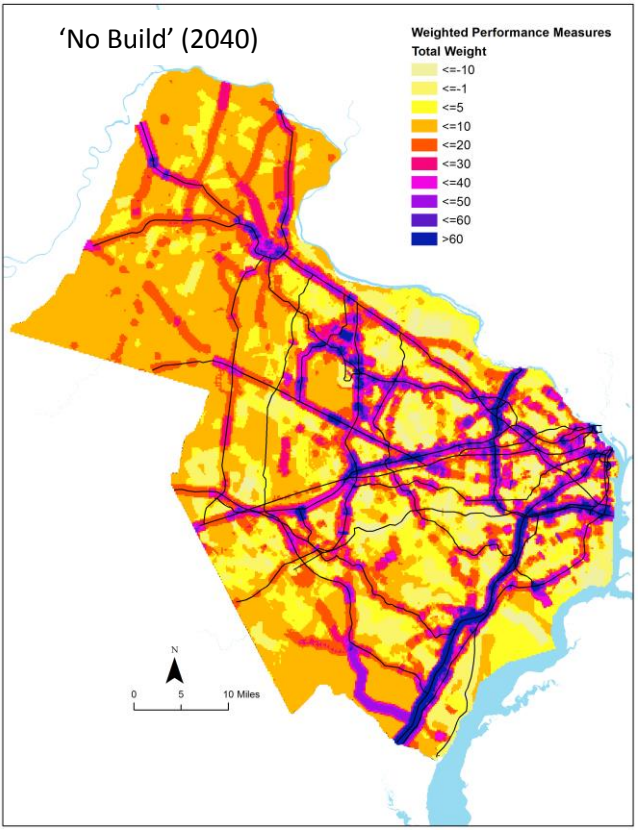


NVTA's TransAction

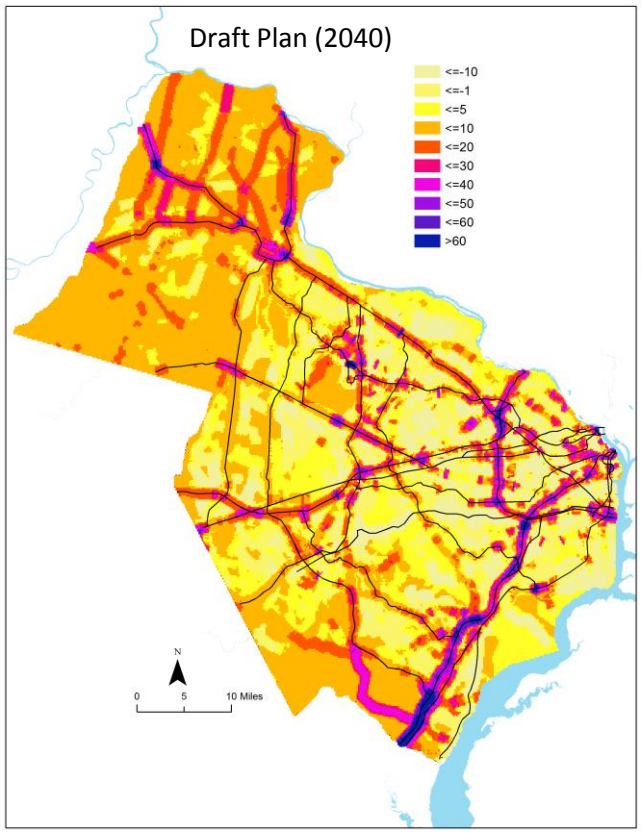
Overall Impact of Draft Plan

Draft Plan (2040) compared to 'No Build' (2040)

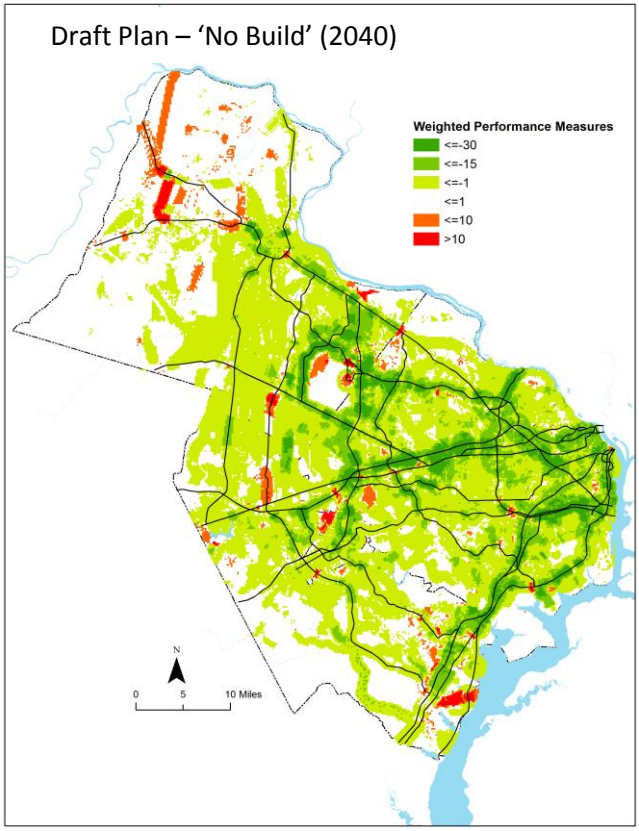
'No Build' (2040)



Draft Plan (2040)



Draft Plan – 'No Build' (2040)

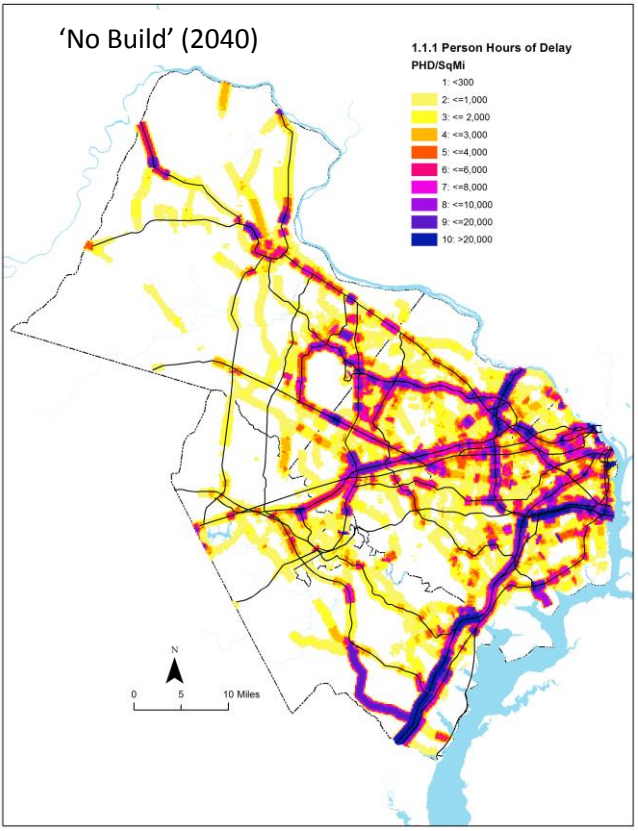


NVTA's TransAction

Impact on Person Hours of Delay

Draft Plan (2040) compared to 'No Build' (2040)

'No Build' (2040)



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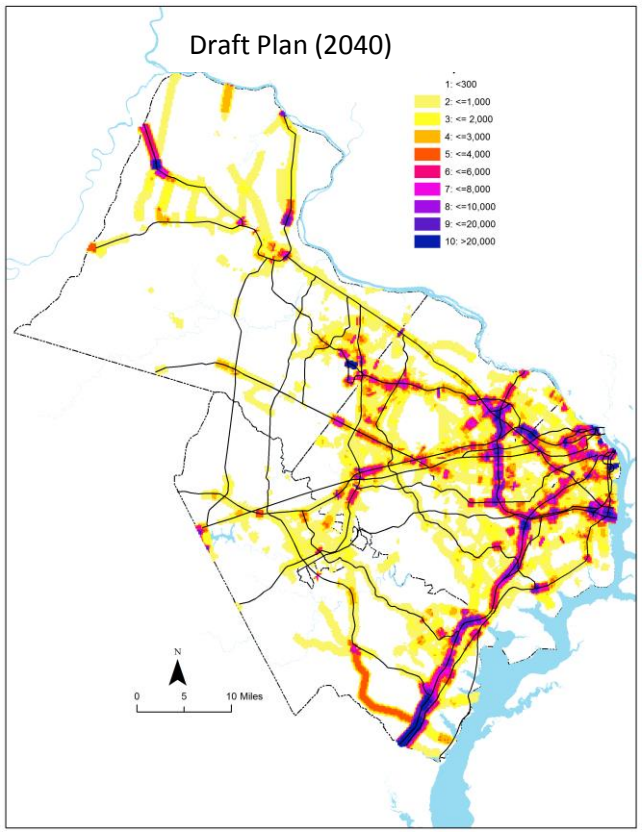

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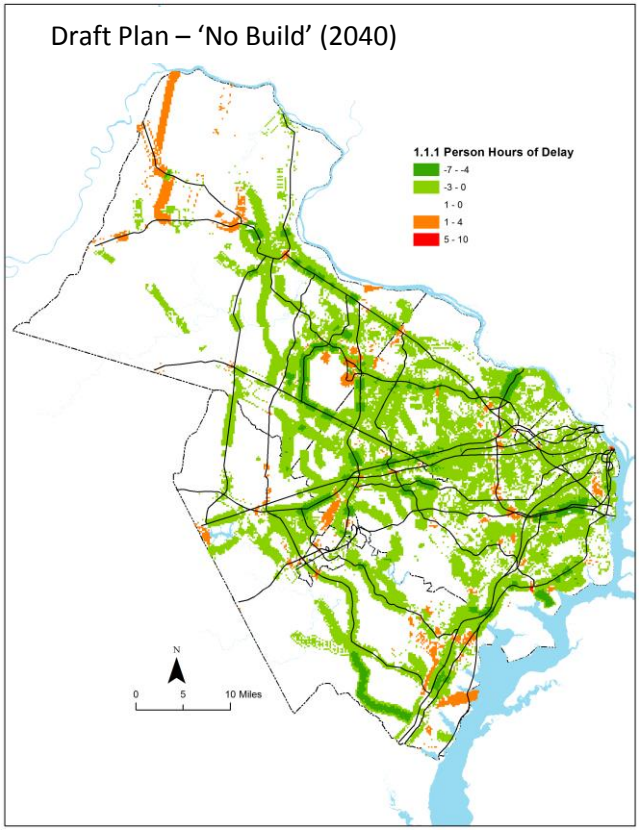
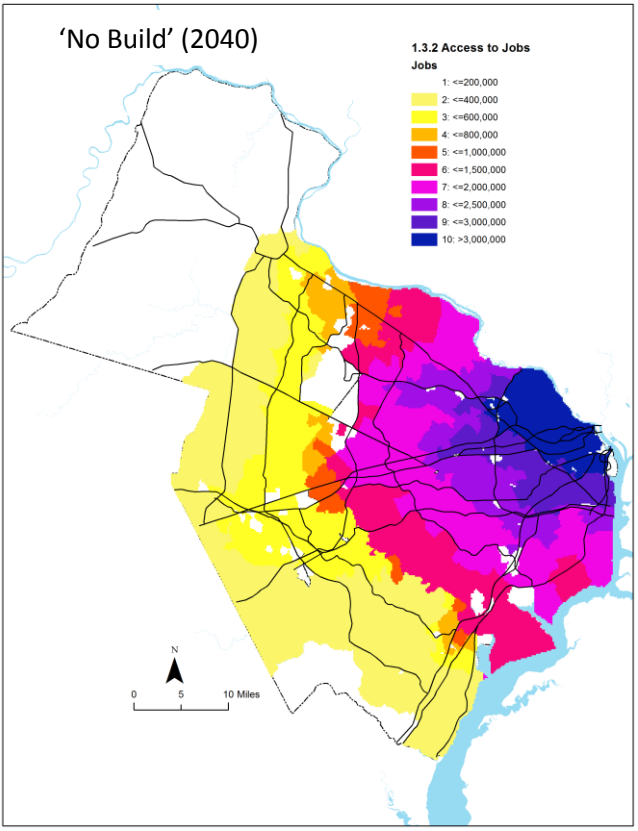


NVTA's TransAction

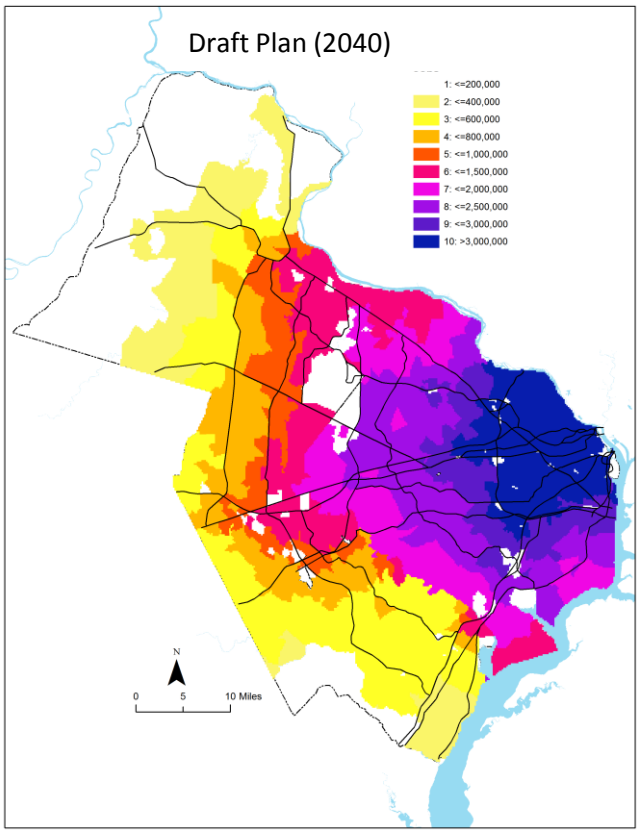
Impact on Access to Jobs

Draft Plan (2040) compared to 'No Build' (2040)

'No Build' (2040)



Draft Plan (2040)



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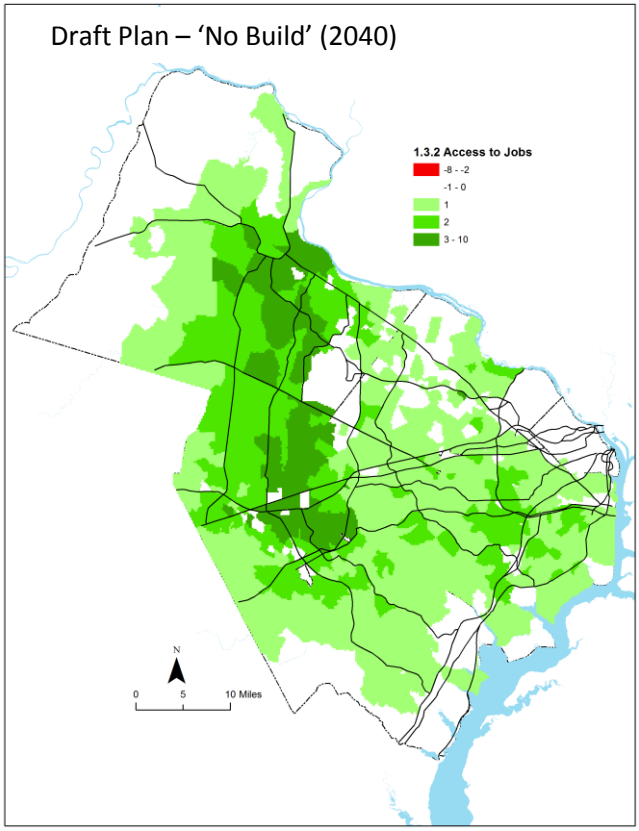
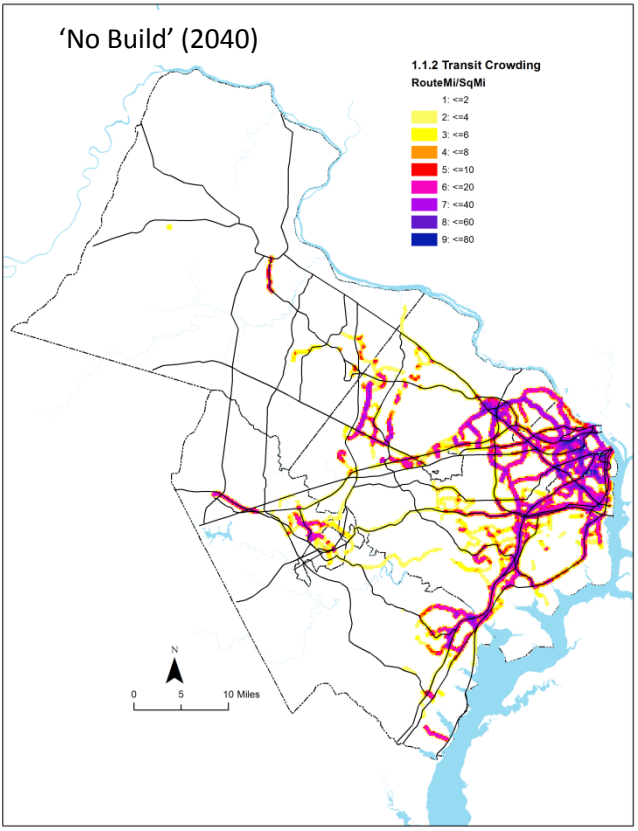


NVTA's TransAction

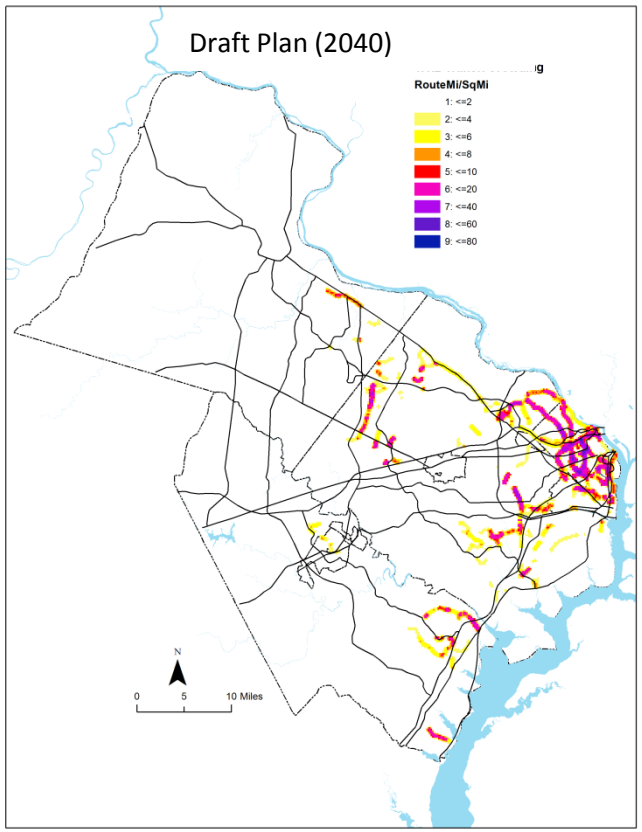
Transit Crowding

Draft Plan (2040) compared to 'No Build' (2040)

'No Build' (2040)



Draft Plan (2040)



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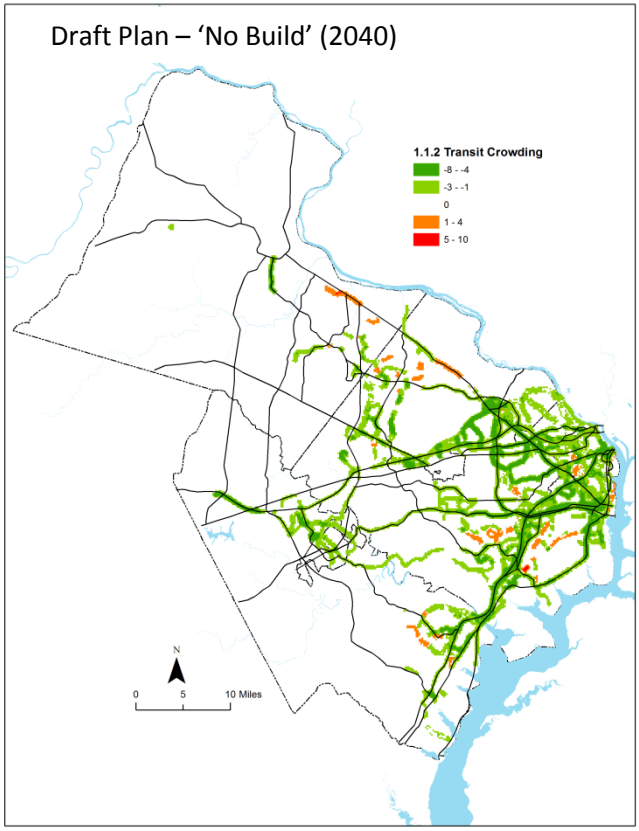
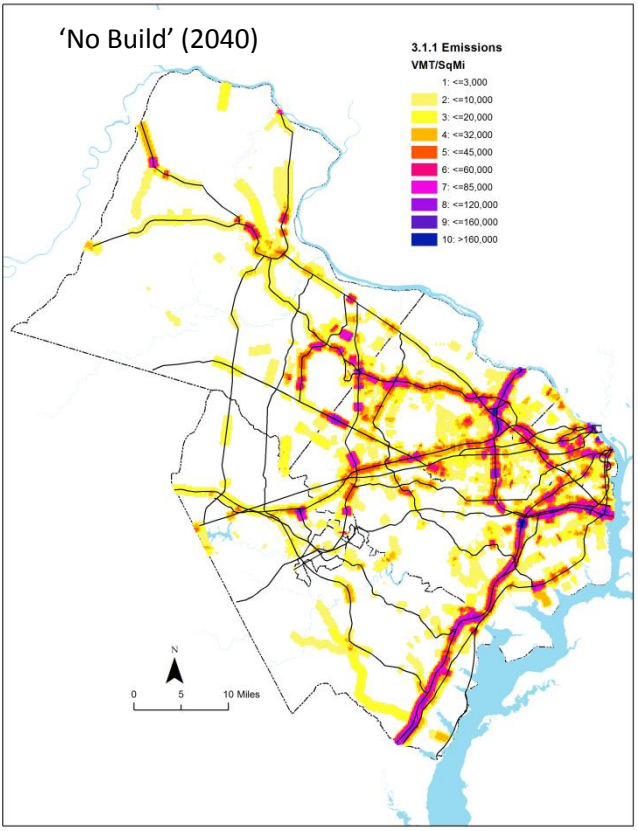


NVTA's TransAction

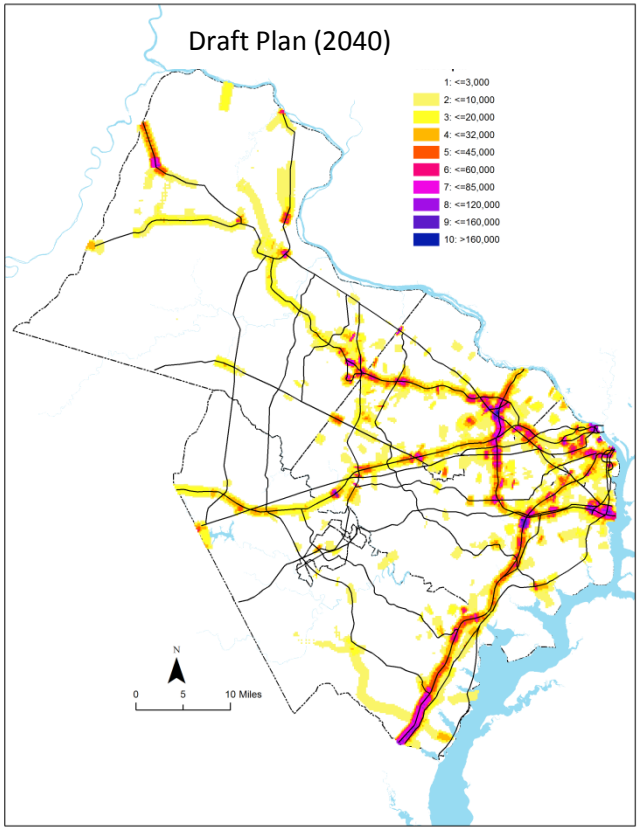
Emissions

Draft Plan (2040) compared to ‘No Build’ (2040)

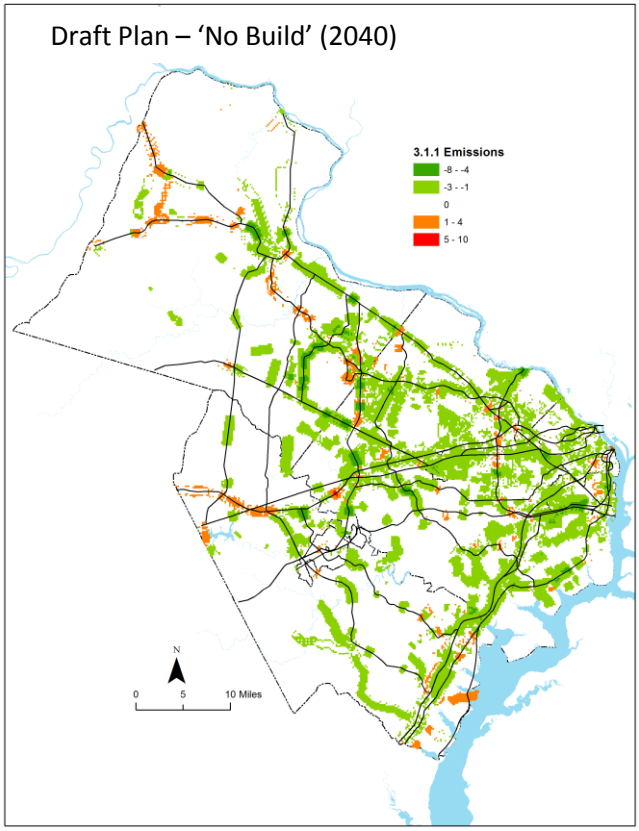
‘No Build’ (2040)



Draft Plan (2040)



Draft Plan – ‘No Build’ (2040)

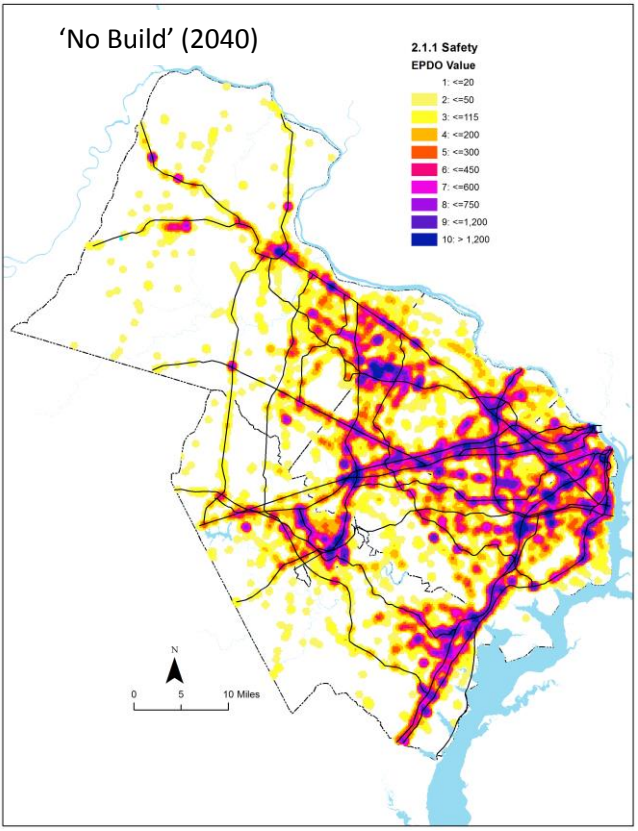


NVTA's TransAction

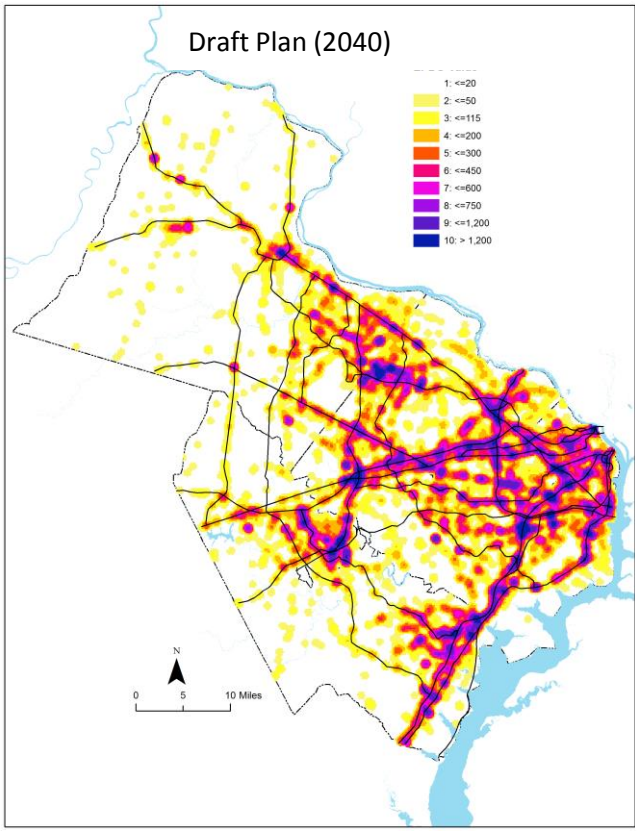
Safety

Draft Plan (2040) compared to ‘No Build’ (2040)

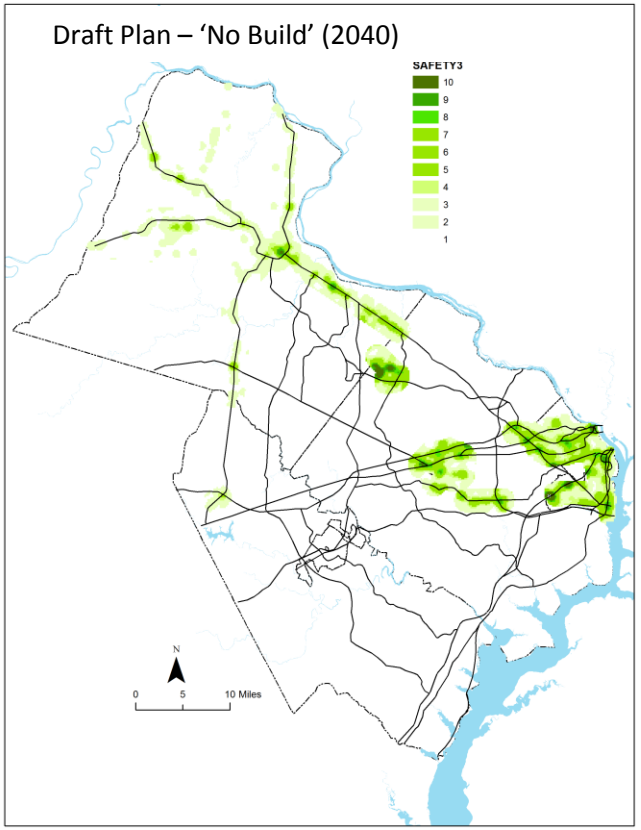
‘No Build’ (2040)



Draft Plan (2040)



Draft Plan – ‘No Build’ (2040)



NVTA's TransAction

Calculation of Performance Ratings

Two methods for Calculating Performance Ratings

NVTA Performance Rating:

- Calculate improvement from 'No Build' (2040) for each performance measure for each corridor/segment
- Identify corridor/segment with largest benefit
- All corridors/segments assigned score (0-100) based on percent of that maximum benefit achieved

Improvement of Draft Plan compared to 'No Build' (2040)

- Calculate percent improvement from 2040 'No Build' on each performance measure for each corridor/segment
- All corridors/segments assigned score (0-100) based on that calculation

Scores for each performance measure are then weighted and summed to get a single performance rating for each corridor/segment

Draft Plan: Corridor Performance

Geography	NVTA Corridor Performance Rating	Improvement of Draft Plan compared to 'No Build' (2040)
Corridor 1: VA 7 / Toll Road / VA 9 / Silver Line	61.3	23.5
Corridor 2: Loudoun County Pkwy / Bi-County Pkwy / VA 234	35.9	37.4
Corridor 3: VA 28	36.7	34.3
Corridor 4: Prince William Pkwy / Route 234 Bypass	30.5	**43.3**
Corridor 5: Fairfax County Pkwy	37.0	33.9
Corridor 6: I-66 / US 29 / US 50 Inner / Orange-Silver Line/ VRE Manassas	69.2	29.1
Corridor 7: I-495 Beltway	55.1	27.1
Corridor 8: I-95 / I-395 / US 1 / VRE / Blue-Yellow Line	**80.0**	26.0
Corridor 9: US 15	19.8	29.7
Corridor 10: Columbia Pike / Braddock Rd / VRE Manassas	**41.9**	27.6
Corridor 11: US 50 Outer	**38.4**	38.7

Draft Plan: Corridor Performance

Top 4 highest-rated Corridors*:

- I-95/US-1/VRE/Metrorail (Corridor 8)
- I-66/US-29/VRE/Metrorail (Corridor 6)
- VA 7/VA 267/Metrorail (Corridor 1)
- I-495 Capital Beltway (Corridor 7)

* Based on 15 weighted performance measures

Draft Plan: Segment Performance

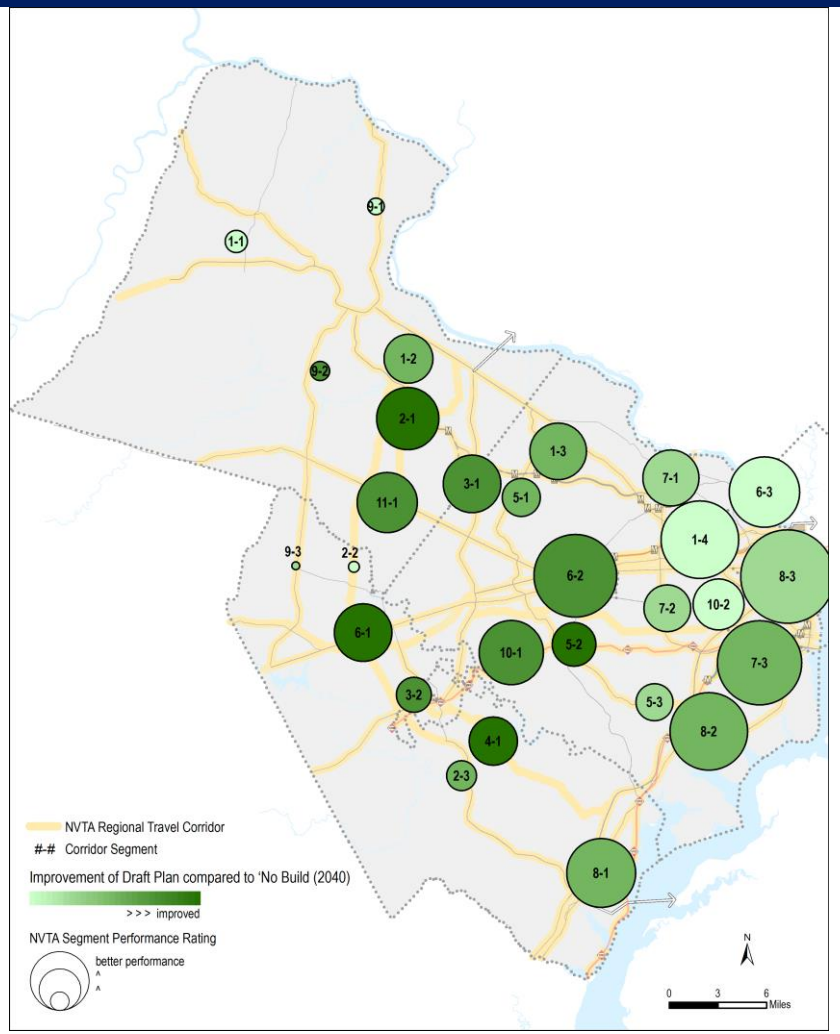
Geography	NVTA Corridor Segment Performance Rating	Improvement of Draft Plan compared to 'No Build' (2040)
Segment 1-1: VA 7 / VA 9 -- Loudoun County Line to Town of Leesburg	15.8	21.7
Segment 1-2: VA 7 / Toll Road -- Town of Leesburg to VA 28	34.5	30.6
Segment 1-3: VA 7 / Toll Road / Silver Line -- VA 28 to Tysons Corner	39.9	30.4
Segment 1-4: VA 7 / Toll Road / Silver Line -- Tysons Corner to Old Town Alexandria	54.7	22.0
Segment 2-1: Loudoun County Pkwy	43.9	**45.9**
Segment 2-2: Bi-County Pkwy	7.7	13.2
Segment 2-3: VA 234	21.0	30.1
Segment 3-1: VA 28 -- VA 7 to I-66	40.7	33.9
Segment 3-2: VA 28 -- I-66 to Prince William County Line	24.9	36.6
Segment 4-1: Prince William Pkwy	34.2	43.3
Segment 5-1: Fairfax County Pkwy -- VA 7 to US 50	27.0	31.4
Segment 5-2: Fairfax County Pkwy -- I-66 to Rolling Road	31.0	43.1
Segment 5-3: Fairfax County Pkwy -- Rolling Road to US 1	26.4	27.2
Segment 6-1: I-66 / US 29 / VRE Manassas -- Prince William County Line to VA 28	40.5	41.9
Segment 6-2: I-66 / US 29 / US 50 / Orange-Silver Line -- VA 28 to I-495	58.1	36.6
Segment 6-3: I-66 / US 29 / US 50 Inner / Orange-Silver Line -- I-495 to Potomac River	49.5	22.1
Segment 7-1: I-495 Beltway -- American Legion Bridge to I-66	39.6	27.5
Segment 7-2: I-495 Beltway -- I-66 to I-95	33.0	23.8
Segment 7-3: I-495 Beltway -- I-95 to Wilson Bridge	59.2	29.4
Segment 8-1: I-95 / US 1 / VRE -- Prince William County	48.5	32.3
Segment 8-2: I-95 / US 1 / VRE -- Fairfax County Line to I-495	54.6	32.7
Segment 8-3: I-395 / US 1 / VRE / Blue-Yellow Line -- I-495 to Potomac River	**65.8**	25.3
Segment 9-1: US 15 -- Maryland to Town of Leesburg	11.8	20.4
Segment 9-2: US 15 -- Town of Leesburg to I-66	13.6	34.2
Segment 9-3: US 15 -- I-66 to Prince William County Line	5.8	26.2
Segment 10-1: Braddock Rd / VRE Fairfax -- VA 28 to I-495	45.4	37.6
Segment 10-2: Columbia Pike / Braddock Rd -- I-495 to Pentagon	35.8	22.3
Segment 11-1: US 50 Outer -- Loudoun County Line to City of Fairfax	42.3	38.7

Draft Plan: Segment Performance

Ratings by Segment:

- Circle Size: NVTA Segment Performance Rating
  - Larger circles show segments with higher ratings relative to other segments

- Circle Color: Improvement of Draft Plan compared to 'No Build' (2040)
  - Darker circles show larger improvement on a segment relative 'No Build' (2040) conditions



NVTA's TransAction

Draft Plan: Segment Performance

Top 3 highest-rated Corridor Segments*:

- I-95/US-1/VRE/Metrorail within I-495 (Segment 8-3)
- I-495 between I-395 & Woodrow Wilson Bridge (Segment 7-3)
- I-66/US-29/US-50/Metrorail between VA 28 & I-495 (Segment 6-2)

* Based on 15 weighted performance measures

Draft Plan: Segment Performance

Top 12 highest-rated Corridor Segments by geography*:

- Inside the Beltway – 3 (of 4) segments
- Beltway – 1 (of 3) segments
- Outside the Beltway (radial) – 6 (of 10) segments
- Outside the Beltway (circumferential) – 2 (of 11) segments

* Based on 15 weighted performance measures

Benefit-Cost Analysis: Corridors

Location	Cost FY17 ($M)	NVTA Performance Rating			Improvement of Draft Plan compared to 'No Build' (2040)		
		Rating	Benefit / Cost	B/C Rank	Rating	Benefit / Cost	B/C Rank
Corridor 4: Prince William Pkwy / Route 234 Bypass	$ 936.7	30.5	32.6	1	43.3	46.3	1
Corridor 9: US 15	$ 671.6	19.8	29.4	3	29.7	44.2	2
Corridor 11: US 50 Outer	$ 1,248.7	38.4	30.7	2	38.7	31.0	3
Corridor 10: Columbia Pike / Braddock Rd / VRE Manassas	$ 2,277.0	41.9	18.4	5	27.6	12.1	6
Corridor 7: I-495 Beltway	$ 2,923.4	55.1	18.9	4	27.1	9.3	8
Corridor 5: Fairfax County Pkwy	$ 2,369.0	37.0	15.6	6	33.9	14.3	4
Corridor 3: VA 28	$ 2,708.9	36.7	13.6	7	34.3	12.7	5
Corridor 2: Loudoun County Pkwy / Bi-County Pkwy / VA 234	$ 3,124.2	35.9	11.5	8	37.4	12.0	7
Corridor 1: VA 7 / Toll Road / VA 9 / Silver Line	$ 6,643.8	61.3	9.2	9	23.5	3.5	9
Corridor 8: I-95 / I-395 / US 1 / VRE / Blue-Yellow Line	$ 9,255.7	80.0	8.6	10	26.0	2.8	10
Corridor 6: I-66 / US 29 / US 50 Inner / Orange-Silver Line/ VRE Manassas	$ 11,773.8	69.2	5.9	11	29.1	2.5	11
All Corridors	$ 43,932.8						

- 3 (of 4) highest-rated Corridors have the lowest B/C ratios
- 2 lowest-rated Corridors have the highest B/C ratios

Note: Benefit / Cost ratio = [Rating / Cost FY17($M)] * 1000

Benefit-Cost Analysis: Segments

Location	Cost FY17 ($M)	NVTA Performance Rating			Improvement of Draft Plan compared to 'No Build' (2040)		
		Rating	Benefit / Cost	B/C Rank	Rating	Benefit / Cost	B/C Rank
Segment 9-2: US 15 -- Town of Leesburg to I-66	$ 198.7	13.6	68.4	1	34.2	172.2	1
Segment 7-2: I-495 Beltway -- I-66 to I-95	$ 531.8	33.0	62.0	2	23.8	44.8	8
Segment 9-1: US 15 -- Maryland to Town of Leesburg	$ 197.6	11.8	59.6	3	20.4	103.3	2
Segment 5-1: Fairfax County Pkwy -- VA 7 to US 50	$ 559.8	27.0	48.2	4	31.4	56.0	4
Segment 5-3: Fairfax County Pkwy -- Rolling Road to US 1	$ 553.8	26.4	47.6	5	27.2	49.1	5
Segment 7-3: I-495 Beltway -- I-95 to Wilson Bridge	$ 1,403.8	59.2	42.2	6	29.4	21.0	18
Segment 10-2: Columbia Pike / Braddock Rd -- I-495 to Pentagon	$ 885.7	35.8	40.4	7	22.3	25.2	16
Segment 7-1: I-495 Beltway -- American Legion Bridge to I-66	$ 987.8	39.6	40.1	8	27.5	27.8	14
Segment 2-1: Loudoun County Pkwy	$ 1,109.4	43.9	39.6	9	45.9	41.4	9
Segment 4-1: Prince William Pkwy	$ 936.7	34.2	36.6	10	43.3	46.3	7
Segment 1-1: VA 7 / VA 9 -- Loudoun County Line to Town of Leesburg	$ 445.4	15.8	35.5	11	21.7	48.8	6
Segment 11-1: US 50 Outer -- Loudoun County Line to City of Fairfax	$ 1,248.7	42.3	33.8	12	38.7	31.0	12
Segment 10-1: Braddock Rd / VRE Fairfax -- VA 28 to I-495	$ 1,391.3	45.4	32.6	13	37.6	27.0	15
Segment 6-2: I-66 / US 29 / US 50 / Orange-Silver Line -- VA 28 to I-495	$ 2,209.1	58.1	26.3	14	36.6	16.6	23
Segment 5-2: Fairfax County Pkwy -- I-66 to Rolling Road	$ 1,255.4	31.0	24.7	15	43.1	34.4	11
Segment 3-1: VA 28 -- VA 7 to I-66	$ 1,655.7	40.7	24.6	16	33.9	20.5	20
Segment 3-2: VA 28 -- I-66 to Prince William County Line	$ 1,053.1	24.9	23.6	17	36.6	34.8	10
Segment 1-2: VA 7 / Toll Road -- Town of Leesburg to VA 28	$ 1,467.9	34.5	23.5	18	30.6	20.8	19
Segment 1-3: VA 7 / Toll Road / Silver Line -- VA 28 to Tysons Corner	$ 1,716.4	39.9	23.3	19	30.4	17.7	22
Segment 9-3: US 15 -- I-66 to Prince William County Line	$ 275.2	5.8	21.1	20	26.2	95.1	3
Segment 6-1: I-66 / US 29 / VRE Manassas -- Prince William County Line to VA 28	$ 1,931.5	40.5	21.0	21	41.9	21.7	17
Segment 8-2: I-95 / US 1 / VRE -- Fairfax County Line to I-495	$ 2,659.4	54.6	20.5	22	32.7	12.3	24
Segment 8-3: I-395 / US 1 / VRE / Blue-Yellow Line -- I-495 to Potomac River	$ 3,435.0	65.8	19.2	23	25.3	7.4	26
Segment 1-4: VA 7 / Toll Road / Silver Line -- Tysons Corner to Old Town Alexandria	$ 3,014.0	54.7	18.1	24	22.0	7.3	27
Segment 2-2: Bi-County Pkwy	$ 435.4	7.7	17.7	25	13.2	30.3	13
Segment 8-1: I-95 / US 1 / VRE -- Prince William County	$ 3,161.4	48.5	15.3	26	32.3	10.2	25
Segment 2-3: VA 234	$ 1,579.4	21.0	13.3	27	30.1	19.1	21
Segment 6-3: I-66 / US 29 / US 50 Inner / Orange-Silver Line -- I-495 to Potomac River	$ 7,633.1	49.5	6.5	28	22.1	2.9	28
All Segments	$ 43,932.8						

Note: Benefit / Cost ratio = [Rating / Cost FY17($M)] * 1000

NVTA's TransAction

Benefit-Cost Analysis: Segments

- B/C ratios of the 3 highest-rated Segments is mixed:
  - Segment 8-3 ranked 23rd
  - Segment 7-3 ranked 6th
  - Segment 6-2 ranked 14th
- B/C ratios of the 3 lowest ranked Segments is similarly mixed:
  - Segment 9-3 ranked 20th
  - Segment 2-2 ranked 25th
  - Segment 9-1 ranked 3rd

Draft Plan: Summary of Findings

- Compared to the 'No Build' (2040), the Draft Plan:
  - Improved travel conditions on all corridors;
  - Modestly increased total trips (1.0%), but with increased transit share (up by 8.2%);
  - Marginally decreased person miles traveled;
  - Noticeably reduced person hours of travel and person hours of delay (by 24% and 44%);
  - Significantly reduced transit crowding (by 64%) to below 2016 levels, in part due to regional BRT/LRT additions;
  - Noticeably improved job accessibility for residents in a broad corridor from Leesburg to Prince William County;
  - Residual problem areas include I-95 and I-495.

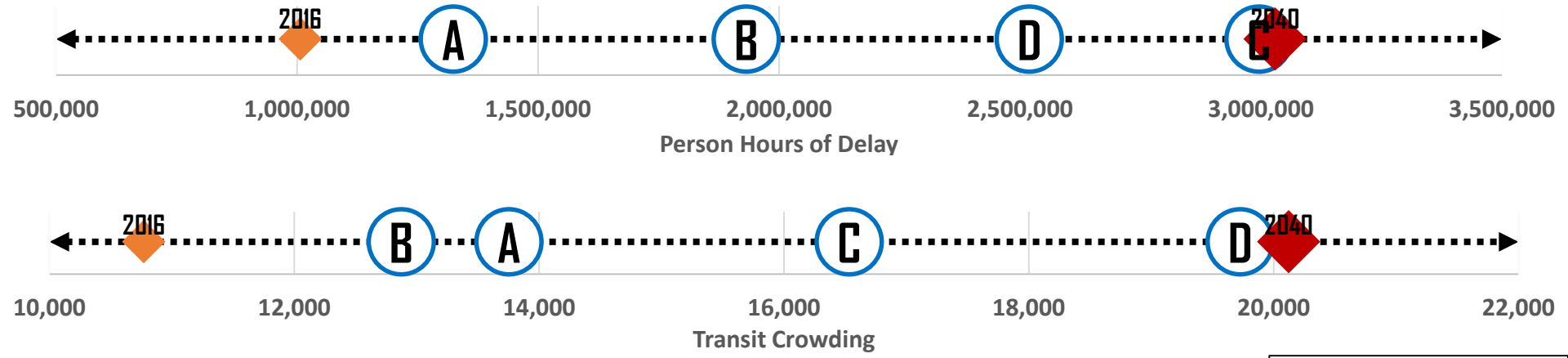
Draft Plan: Summary of Findings

- ‘Planning level’ benefit/cost analysis generally indicated that higher performance is associated with higher cost, especially for Corridors.

‘No Build’ (2040): Alternate Futures

All Alternate Futures improve ‘No Build’ conditions

- Scenario A has the lowest Person Hours of Delay
- Scenario B has the lowest levels of transit crowding
- Scenarios C and D highlight the relationship between land use and transportation modes



All data shown is for ‘No Build’ (2040)

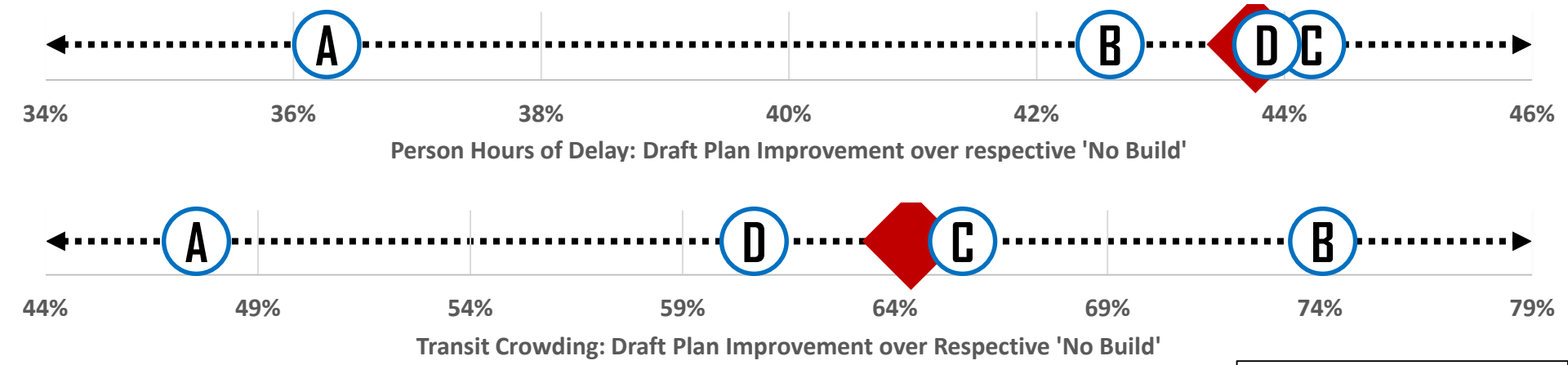
NVTA’s TransAction

Draft Plan: Alternate Futures

Draft Plan shows improvement under all Alternate Futures

- 36-44% improvement in Person Hours of Delay
- 48-74% improvement in Transit Crowding

Possible early indicator of some obsolescence in the Draft Plan under Scenario A



All data shown is for Draft Plan

NVTA's TransAction

NVTA Staff Draft Recommendations

Northern Virginia faces unprecedented levels of travel demand, delay, and transit crowding in 2040

1. NVTA should pursue targeted, multi-modal, regionally-coherent strategies to address the region's transportation needs, consistent with NVTA's priorities and the varying geographies of the region.
2. NVTA should work with member jurisdictions and regional stakeholders (including extra-territorial partners) to address the region's transportation needs.

NVTA Staff Draft Recommendations

No single project, program, or policy will address all the region's transportation needs

3. NVTA should work with member jurisdictions and regional stakeholders to consider the potential for near term approaches such as:
   - New, improved, and expanded transit services
   - New regional travel demand management (TDM) strategies that complement existing TDM programs
   - New and existing technology systems
   - Completion of ongoing construction of roadway and other projects

NVTA Staff Draft Recommendations

Projected regional revenues through 2040 would only fund less than a quarter of the total estimated cost of the 358 candidate regional projects in the Draft Plan

4. NVTA should emphasize the importance of maximizing use of additional funding sources as a factor during the development of the FY2018-23 Six Year Program.

NVTA Staff Draft Recommendations

Travel conditions under Alternate Futures may be improved compared to the 'No Build' (2040)

5. NVTA should monitor trends associated with Alternate Futures and report significant changes on an annual basis. Based on these trends, NVTA should:
   - Consider additional analysis to identify potential subsets of projects that complement emerging trends
   - Explore proactive policy guidance associated with beneficial elements of selected Alternate Futures, such as:
     - Public education regarding potential new transportation technologies
     - Integration of Self-driven and Connected/Autonomous Vehicles in different geographies across the region
     - Development of complementary transit and shared-used mobility services