TransAction Work Session

Project Update

October 3, 2022

presented to

Planning and Programming Committee

NVTA's TransAction

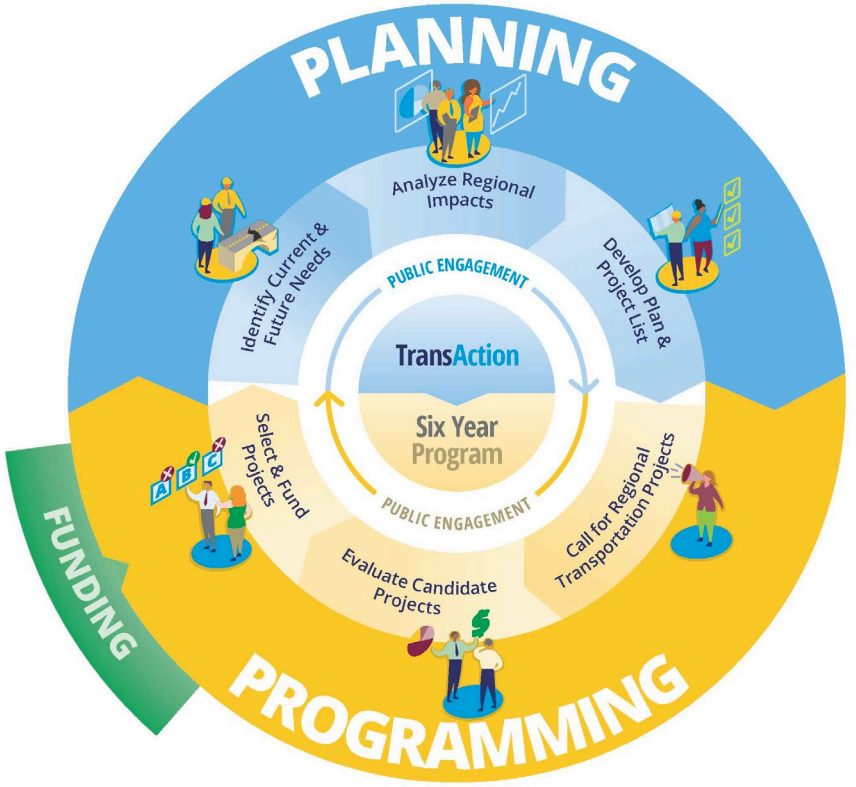
Transportation Action Plan for Northern Virginia

Topics

1. Welcome & Introductions
2. Update on TransAction Progress
3. Public Comments on TransAction
4. Modeling Results
5. Scenario Analysis
6. Next Steps

TransAction Activities and Schedule

- Nov/Dec 2021: NVTA approved TransAction goals, objectives, performance measures, and weights
- Winter/Spring 2022: Transportation Perception Survey, web post series, TransAction project modeling and analysis
- Summer 2022: Public comment period – August 1 – September 18th
- Fall 2022: Finalization of plan and project list based on public and stakeholder comments
- December 2022: NVTA adopts TransAction



NVTA's TransAction

TransAction Public Engagement 2022

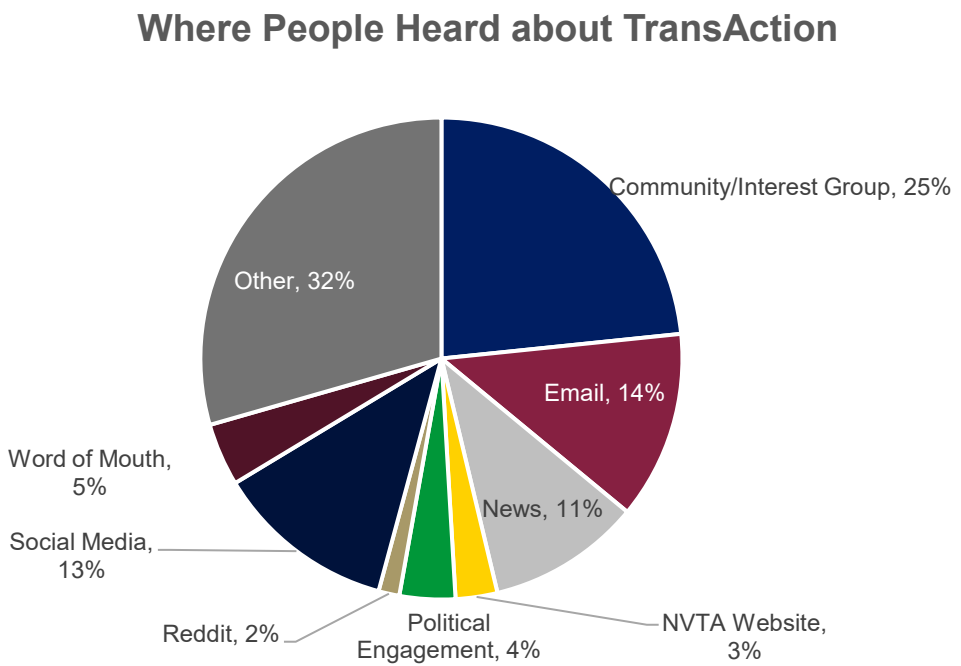
- Public comment period: August 1 – September 18th
  - Detailed on-line comment form
  - TransAction Plan 2022 Update – Draft Summary
  - TransAction Plan 2022 Update – Draft Project List, containing 429 projects
  - Other supporting information
- Draft Summary document and comment form available in English, Spanish, and Korean

Public Comments Received

» Total Comments Received

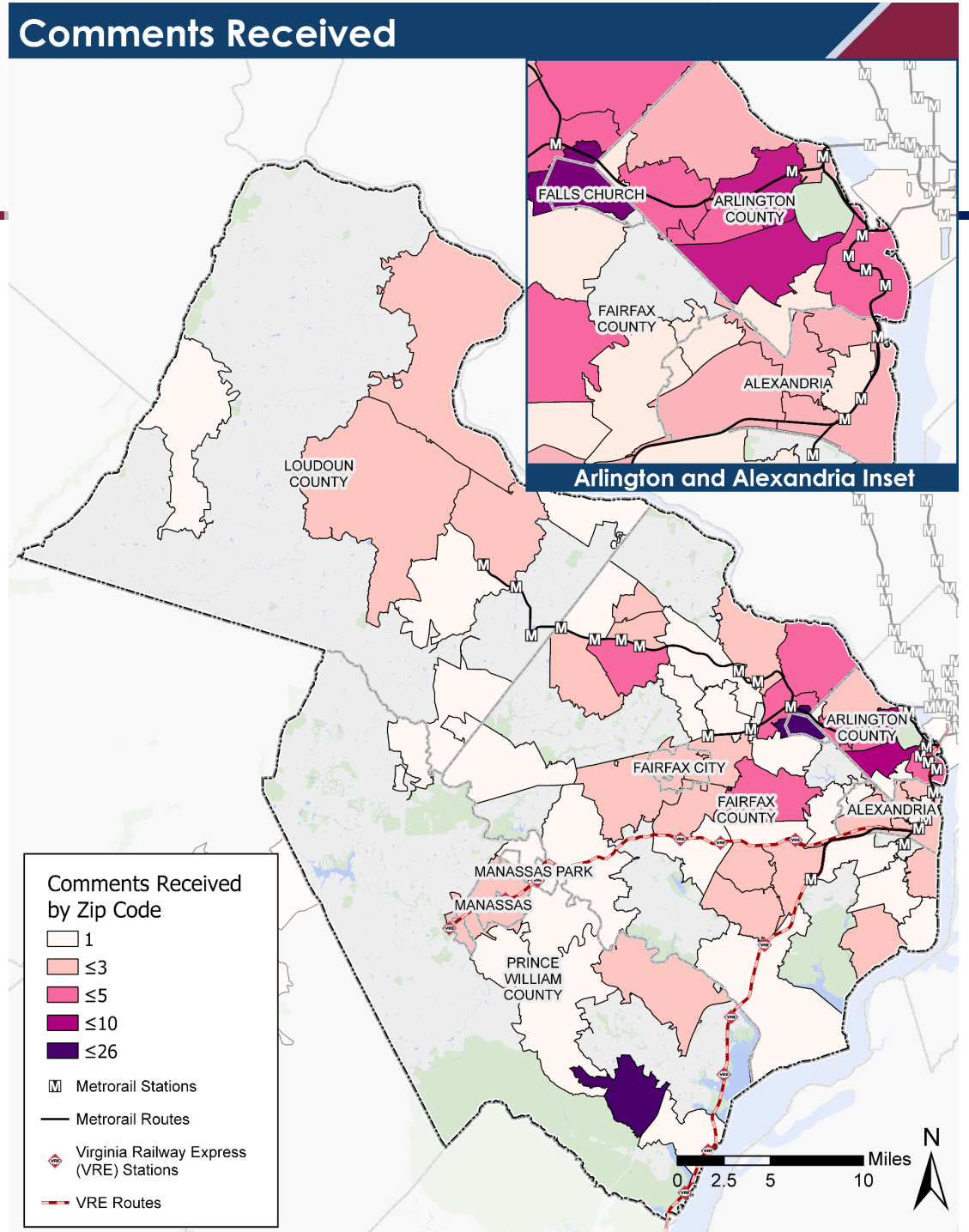
- 223 comments received
  - 193 comments through web comment form
  - 21 comments heard at public hearing
  - 6 letter responses
  - 2 emails
  - 1 voicemail
- 222 comments in English, 1 in Korean
- 205 unique commenters

» Where public heard about TransAction Comment Period



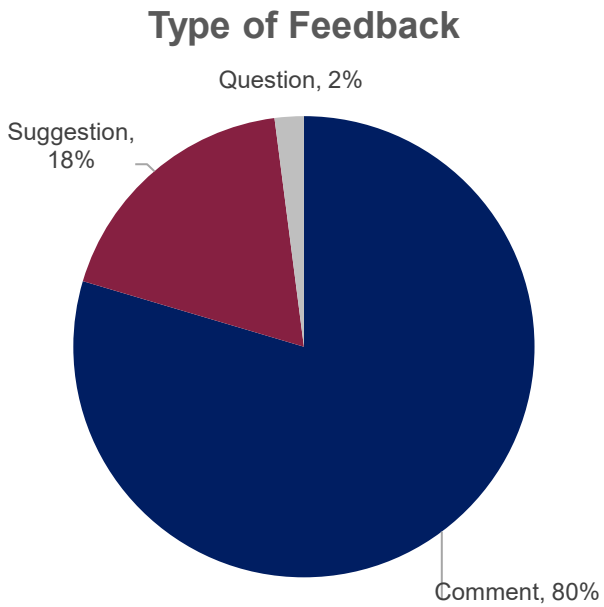
Comments Received by ZIP Code

- Most comments from Inside the Beltway
- Zip code 22025 (Four Seasons): Van Buren Rd Extn
- Zip code 22046 (Falls Church): Mixed comments
- A few from DC, MD, other VA



Type and Themes of Comments Received

Common Theme	Example Comment
Against Roadway or Widening	“We must shift the scoring for NVTA projects to reward those that reduce Vehicle Miles Traveled if we are ever going to meet our climate goals.”
Environmental Concern	“Northern Virginia needs a plan that will keep its residents safe from disastrous climate change. We should be working towards resilience and emissions-curbing solutions, not business-as-usual and increased driving. From what I have read, the list of projects in 2045 far exceeds what Northern Virginia can afford, fails to address the land use policies and lack of affordable housing at the root of our transportation problems, and largely ignores urgent climate goals.”
Increase/Improve Transit	“As a resident, I would like to voice my support for this NVTA TransAction vision, and for the City projects contained within the draft project list. Investments in pedestrian, bicycle, transit projects help to relieve congestion and increase connectivity and accessibility.”
Improve Bike-Ped Routes	
Safety	“Driving is the most dangerous thing most of us do all day; this plan's continued focus on driving will harm safety, not improve it. Increased VMT will cause more crashes, injuring more drivers, more passengers, and more people walking & biking.”



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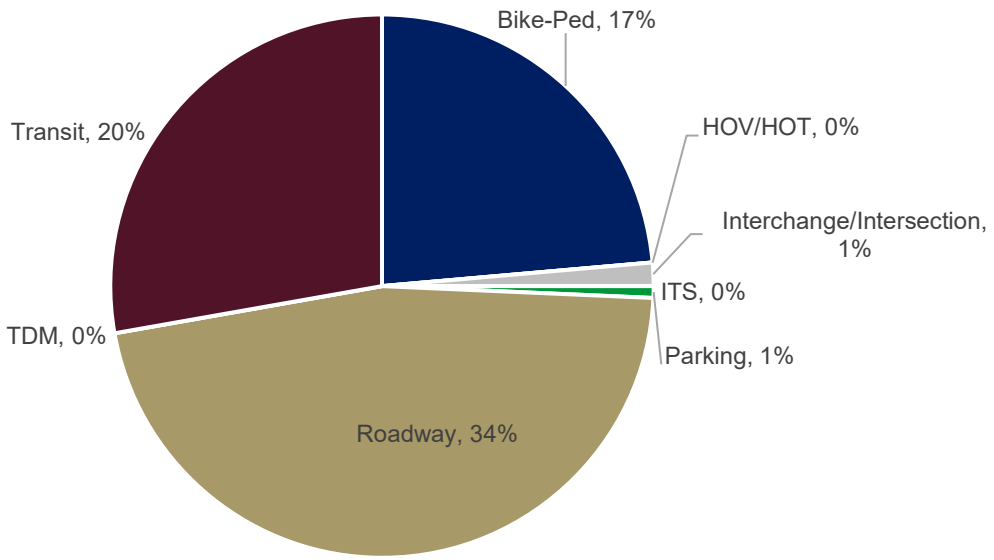
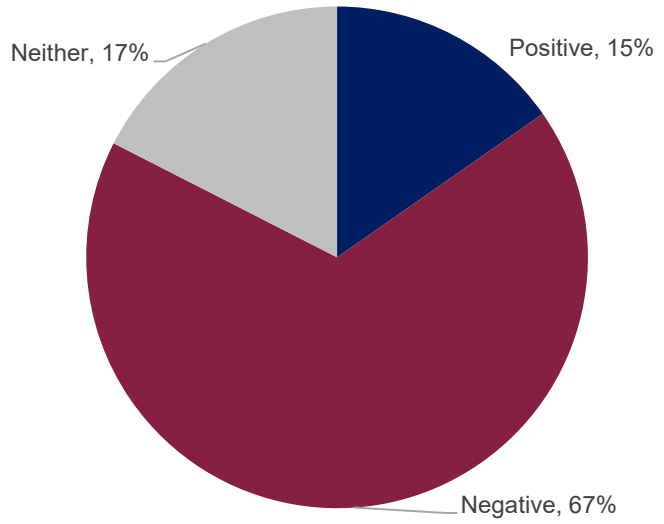
Public Comments Received

Amount Modes Mentioned



Direction of Feedback



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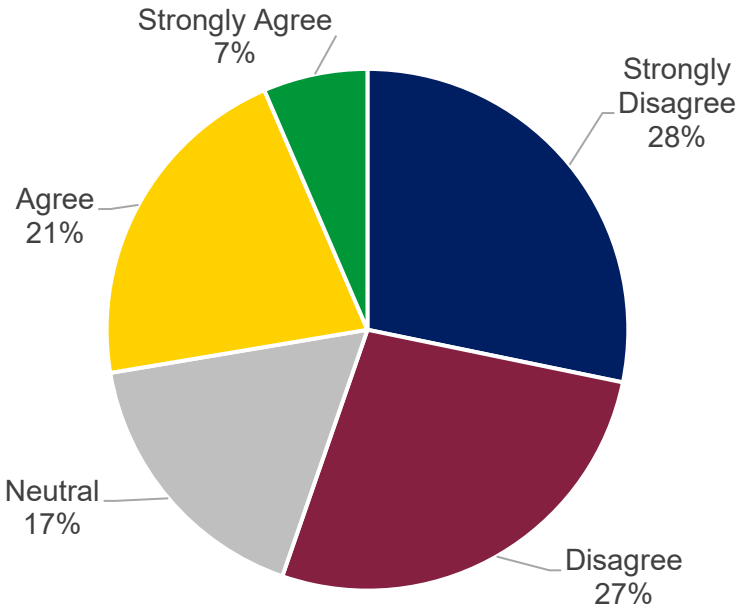
Does the Plan Achieve TransAction Goals - Mobility, Accessibility, and Resiliency?

» Example comments:

- “It is a start, but there is so much more to be done to actually achieve those goals.”
- “A plan that would do little to improve mobility without the massive financial outlay of a car cannot achieve true mobility in the region nor improve accessibility for those who need it most.”
- “The BRT plan definitely increases mobility, accessibility, and resiliency.”
- “A plan that fails to reduce vehicle miles traveled and greenhouse gas emissions cannot be a resilient plan; it dooms us to more and more of the disruptive severe weather we have been seeing over the last few years.”
- “I often use the Burke VRE trail to travel from the GMU area to West Springfield. I'm glad to see you are extending the trail out to Manassas. Please continue to expand these types of trails, keeping cyclists and pedestrians as far away from busy roads as possible.”



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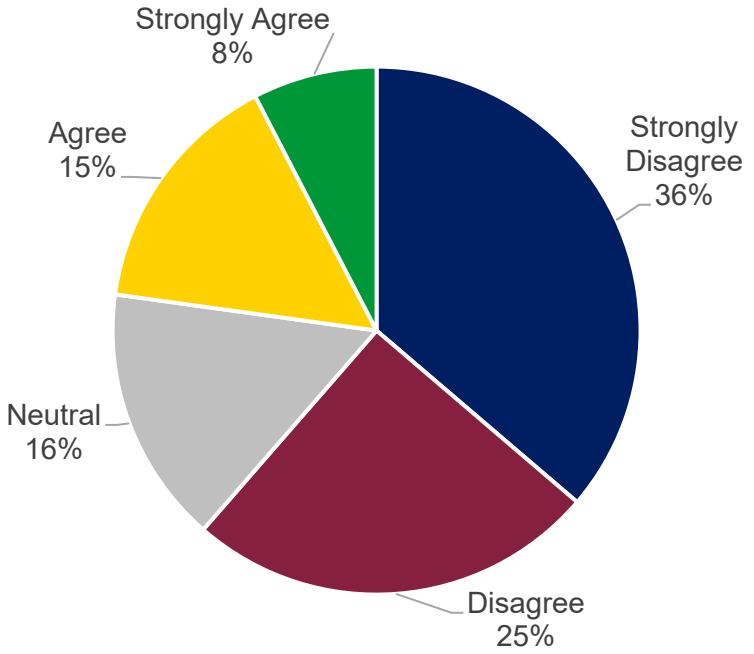
Does the Plan Reflect TransAction Core Values - Safety, Equity and Sustainability?

» Example comments:

- “A plan that anticipates such a large increase in VMT for a majority of the region cannot reasonably called sustainable”
- “Expanding transit options can build up lower-income and minority communities by providing needed access to public goods, employment, and amenities.”
- “More bus services (including BRT) for underserved communities. People shouldn't have to take three buses to get to work.”
- “NVTA and TransAction continue to advocate for roadway widening. Nearly 1000 people die every year on Virginia roads, and a non-insignificant cause of some of these crashes are roadway design and roads meant to speed up cars.”
- The goals are reasonable to meet the core values of safety, equity, and sustainability.



Comments on Scenario Analysis

“Because there is uncertainty associated with predicting the future, TransAction considered multiple ways that the future of Northern Virginia could unfold. These scenarios were: Post-Pandemic ‘New Normal’, Technology, and Incentives/Pricing.”

Common Themes	% of Responses	Positive	Negative	Neither
Specific strategies or types of projects	13%	31%	35%	34%
Scenario definition	11%	5%	14%	81%
Thoughts on future travel	10%	5%	5%	90%

Example Comments:

- “It sounds as though the region is preparing for multiple scenarios, which is encouraging to see.”
- “Post-Pandemic 'New Normal' -> need to focus on transit and non-car travel across the region, not just connections to DC”
- “Technology - With automated vehicles, there should probably be fewer cars on the road: if people can rent cars out to ride-share services while they aren't using their own cars, then it will decrease the reliance on owning a car”
- “Incentives and pricing are one of the most effective ways to alter behavior, but NVTA needs to support such a policy with the appropriate infrastructure to give people a real choice. Without that infrastructure, it will be nothing more than a tax on the poor.”

Feedback on Specific Projects

Project ID	Project Name	Mentions	Positive	Negative	Neither
273	Construct Van Buren North Road: Cardinal Drive to Dumfries Road	28	0	28	
67	Route 29 Trail	10	8	0	2
31	Route 7 Transit: Tysons to Mark Center	9	8	0	1
18	Seven Corners Ring Road Improvements	8	8	0	
21	Bike Lanes on Route 7: Alexandria to Seven Corners	8	8	0	
62	East Falls Church Metrorail Station Second Entrance	8	8	0	
66	Falls Church Multimodal	8	8	0	
70	East Falls Church Metrorail Station Multimodal Improvements	8	8	0	
71	Route 29 Bus Improvements	8	8	0	
114	Metrorail Pocket Track Improvements	8	8	0	
118	East Falls Church Bikeshare Connections	8	8	0	
133	Falls Church Enhanced Bus Service	8	8	0	
208	Underpass at Intersection of Route 123, Lewinsville Road, and Great Falls Street	8	8	0	
333	Transit Boulevard on Sycamore St	8	8	0	
334	Falls Church Metro Station Access	8	8	0	
335	Falls Church Regional Bicycle Connections	8	8	0	
356	CoFC Greenway and Parkway Network	8	8	0	
357	Bicycle Facility Route 7	8	8	0	
359	Fall Church Park Once and Walk	8	8	0	
360	Falls Church Safe Routes to School	8	8	0	

Modeling Results

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Transportation Action Plan for Northern Virginia

TransAction 2045 Build Networks for Testing

Build

- Complete project list except for select systemwide improvements (Regionwide TDM, CAV, and microtransit projects)

Modal Tests

- Highway Only (includes roadway, interchanges and intersections, and HOV/HOT)
- Transit Only

Project Packages

- Interchanges and intersections
- Transit service improvements
- Transit access improvements
- Roadway improvements (multiple)
- Technology

Individual Project Runs

- Large individual projects (highway and transit)
- Systemwide tests (TDM, technology)

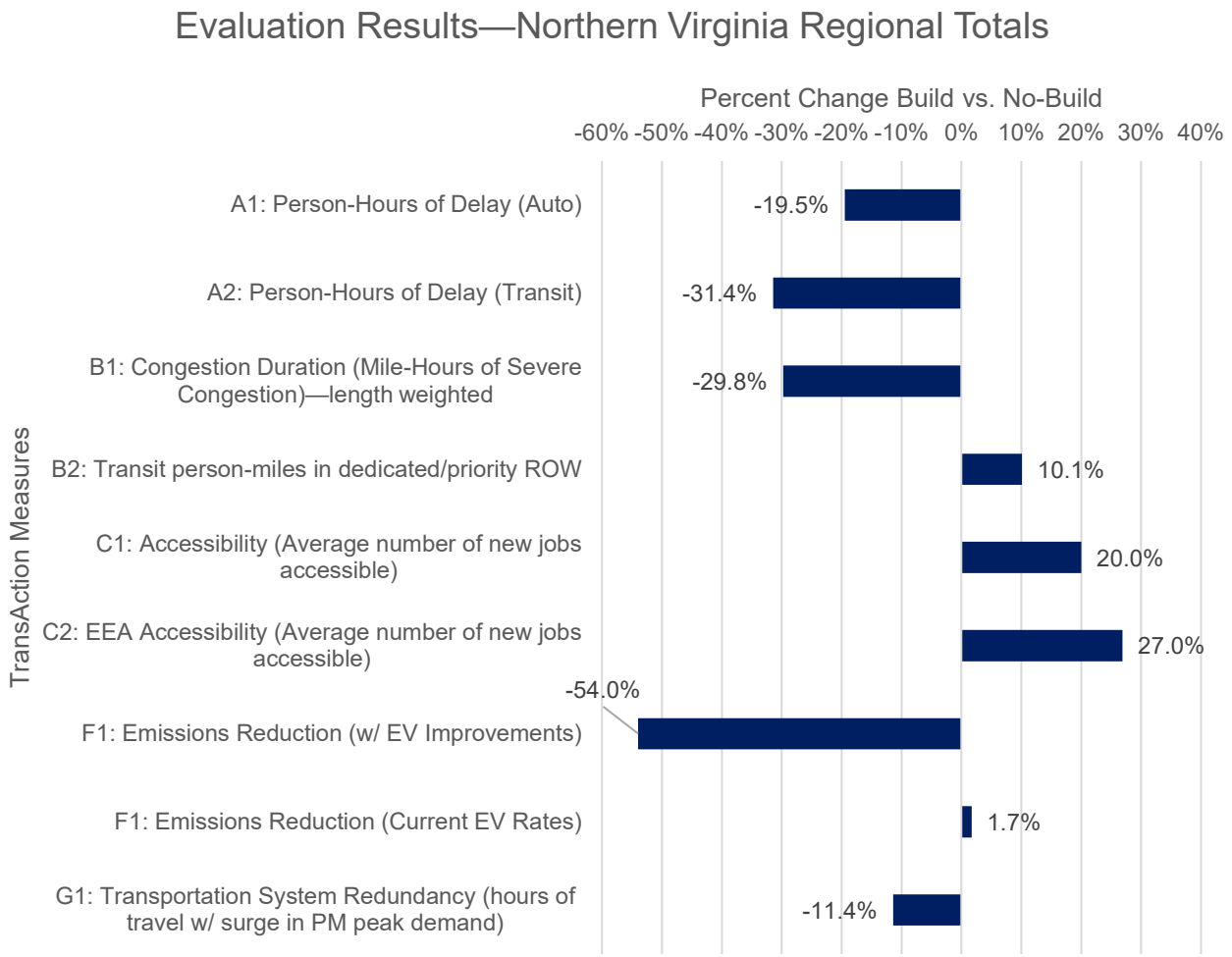
All Build networks evaluated relative to the 2045 No Build network.

Build Network Results

Daily Travel	2017 Base	2045 No-Build	2045 Build	% Change 2017 to 2045 No-Build	% Change 2045 Build vs. 2045 No-Build
Auto Person Trips	6.74 M	8.22 M	8.15 M	22.0%	-0.8%
Transit Person Trips	0.26 M	0.39 M	0.43 M	47.5%	12.1%
Non-Motorized Person Trips	0.85 M	1.36 M	1.35 M	59.3%	-0.2%
Total Person Trips	7.86 M	9.97 M	9.94 M	26.9%	-0.2%
Person Miles Traveled (PMT)	70.69 M	91.16 M	94.70 M	29.0%	3.9%
Vehicle Miles Traveled (VMT)	52.42 M	66.12 M	68.53 M	26.1%	3.6%

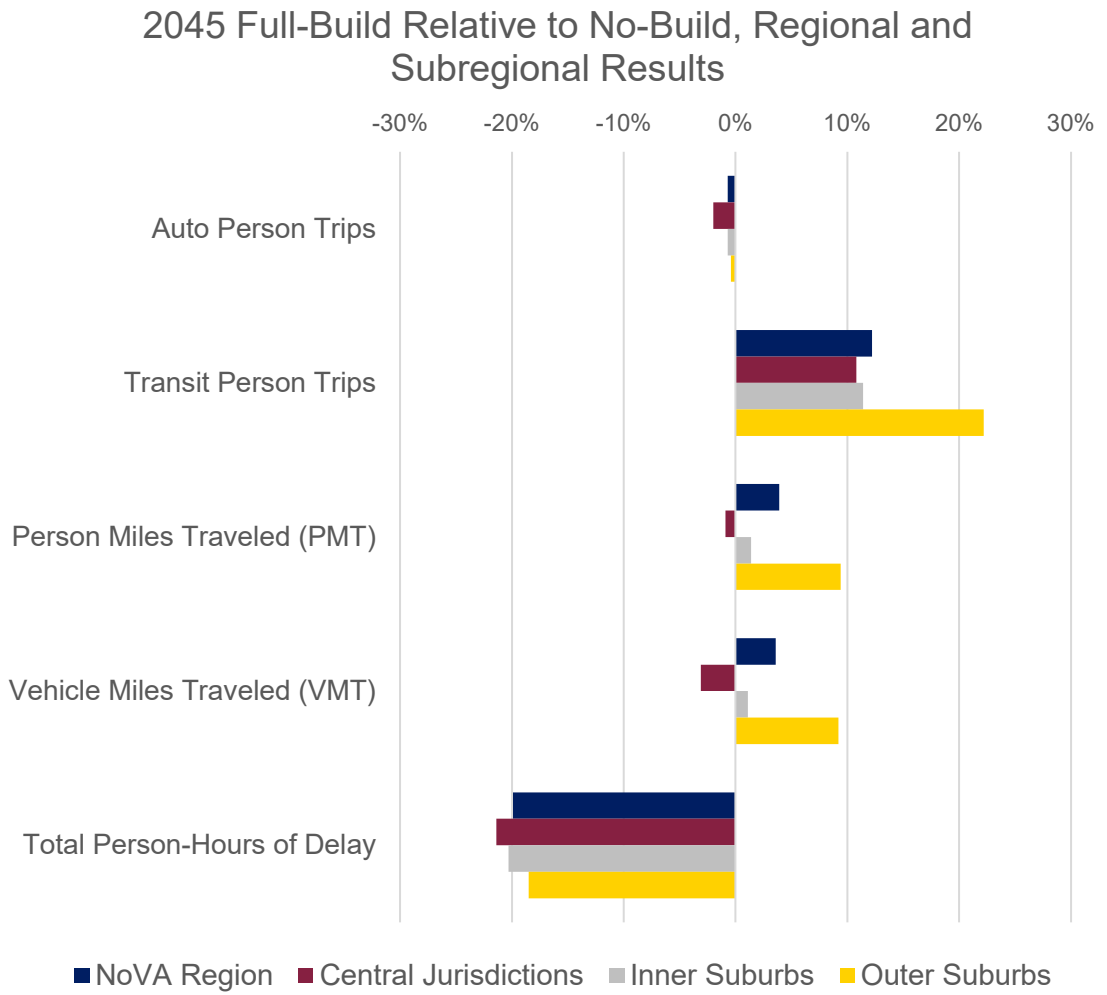
- Total person trips remain essentially the same between the 2045 No-Build and 2045 Build analysis
- Number of transit trips increases by 12% due to the significant investment in proposed in transit projects.
- Vehicle miles traveled (VMT) increase by 3.6% between the 2045 No-Build and 2045 Build analysis, as highway capacity improvements and reduced travel delay lead to some increases in the length of auto trips.

Build Network Results



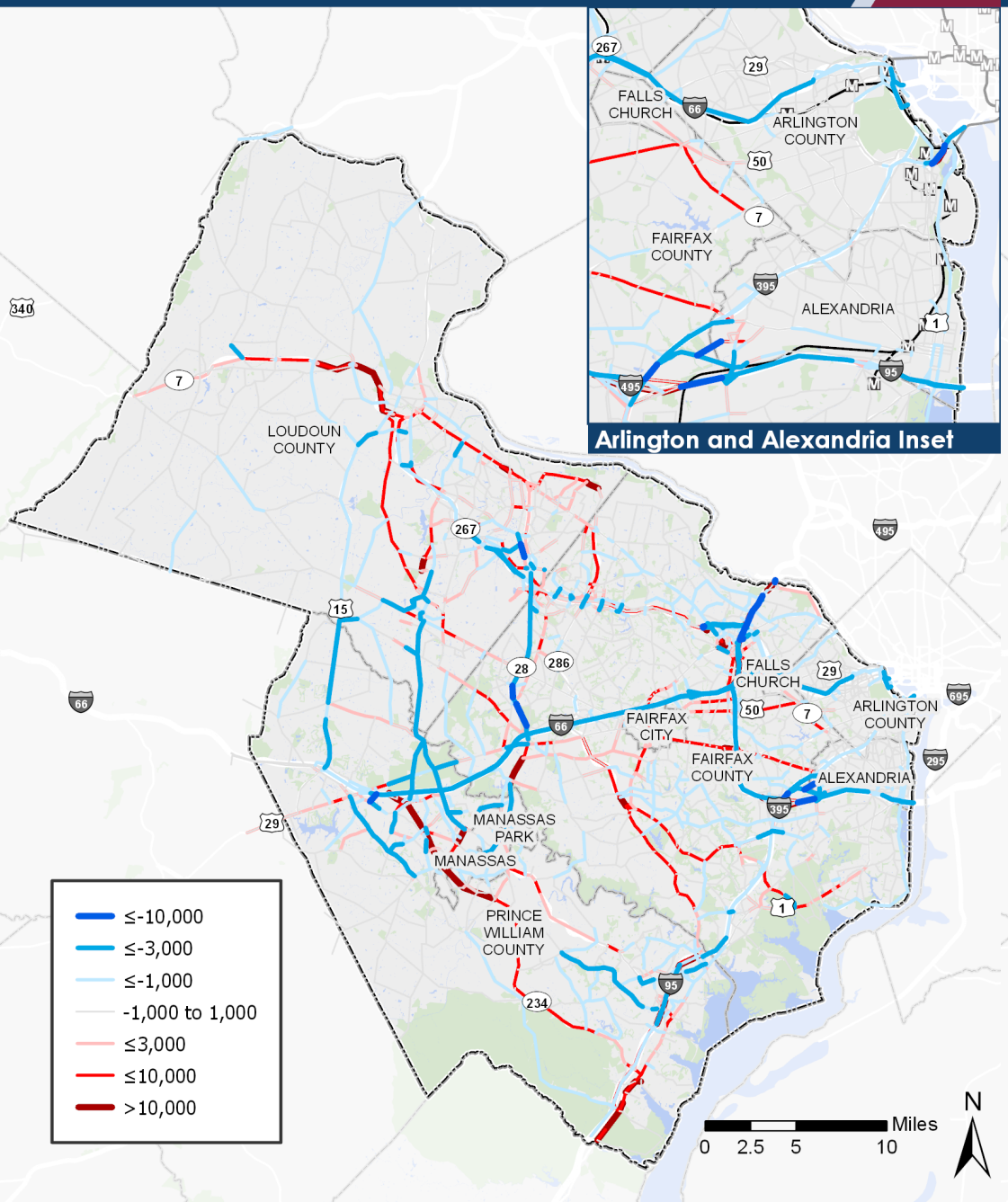
- Person hours of delay decreases by 19.5% for auto trips and by 31.4% for transit trips representing significant improvements in congestion across the region
- Hours of severe congestion decrease by 29.8%
- Accessibility to jobs improves by 20.0% overall, and slightly more (27.0%) for Equity Emphasis Area (EEA) residents
- Emissions impacts are highly dependent on electrification of vehicles - emissions could be reduced by up to 54%

Build Network Results by Subregion

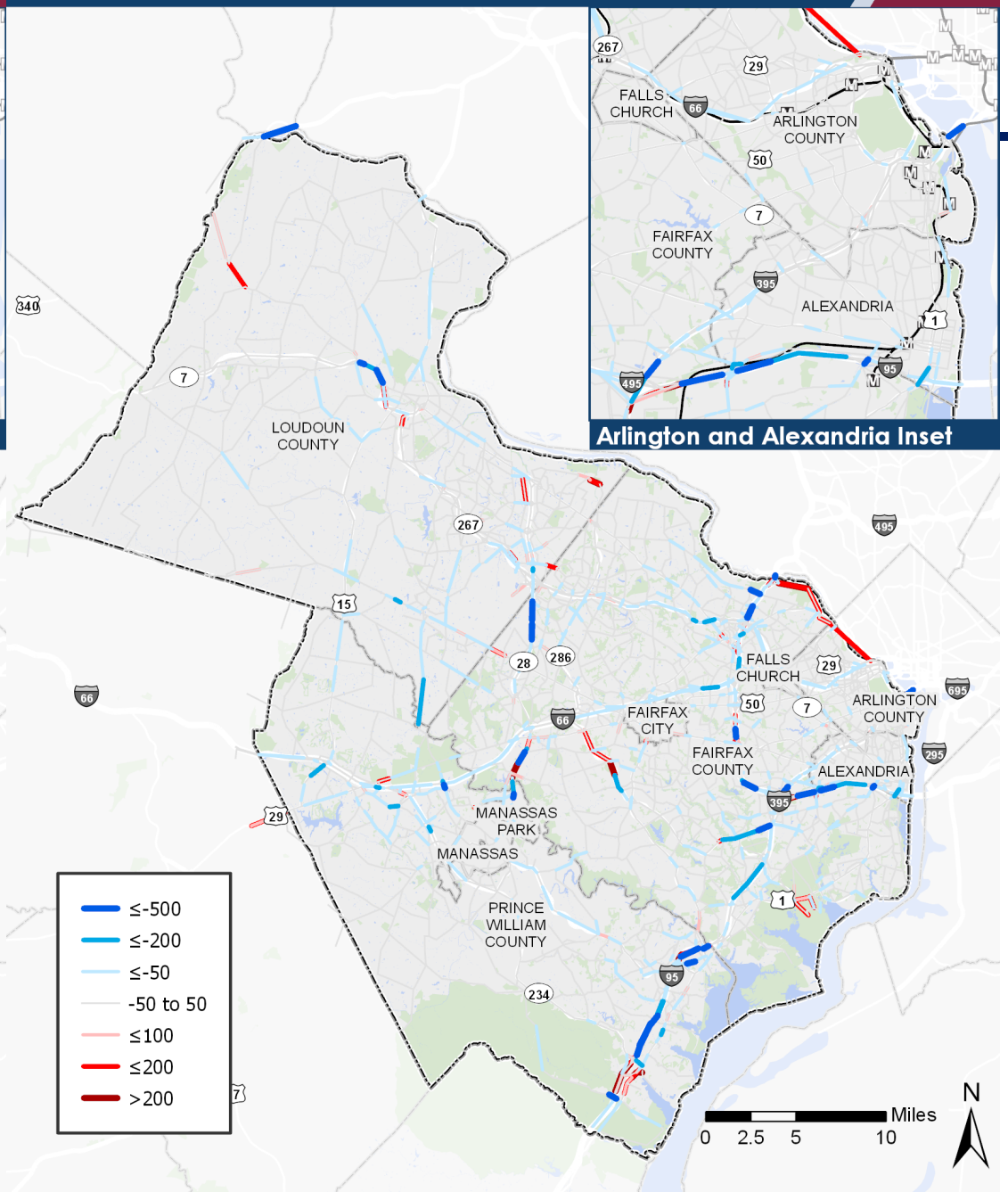


- Transit trips show the largest percentage increase (22.2%) in the Outer Suburbs as transit options expand
- VMT changes vary considerably by sub-region, with a decrease (-3.1%) in the Central jurisdictions; modest increase (+1.1%) for Inner Suburbs; and a larger increase (+9.2%) in the Outer Suburbs
- Reductions in total person hours of delay are distributed more evenly throughout Northern Virginia

Change in 2045 Daily Highway Traffic Volumes Build vs. No-Build



Change in 2045 Daily Vehicle Hours of Delay Build vs. No-Build



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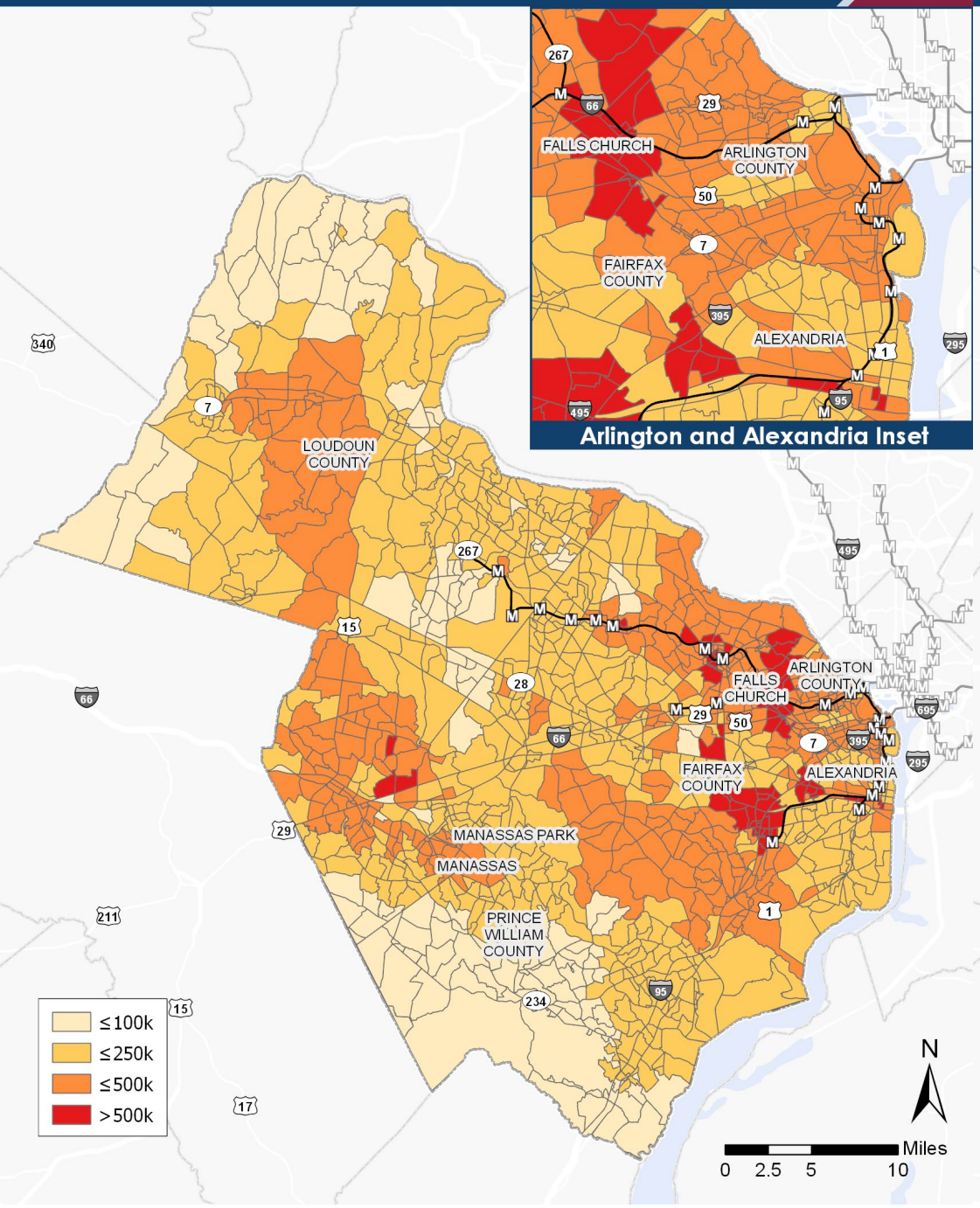
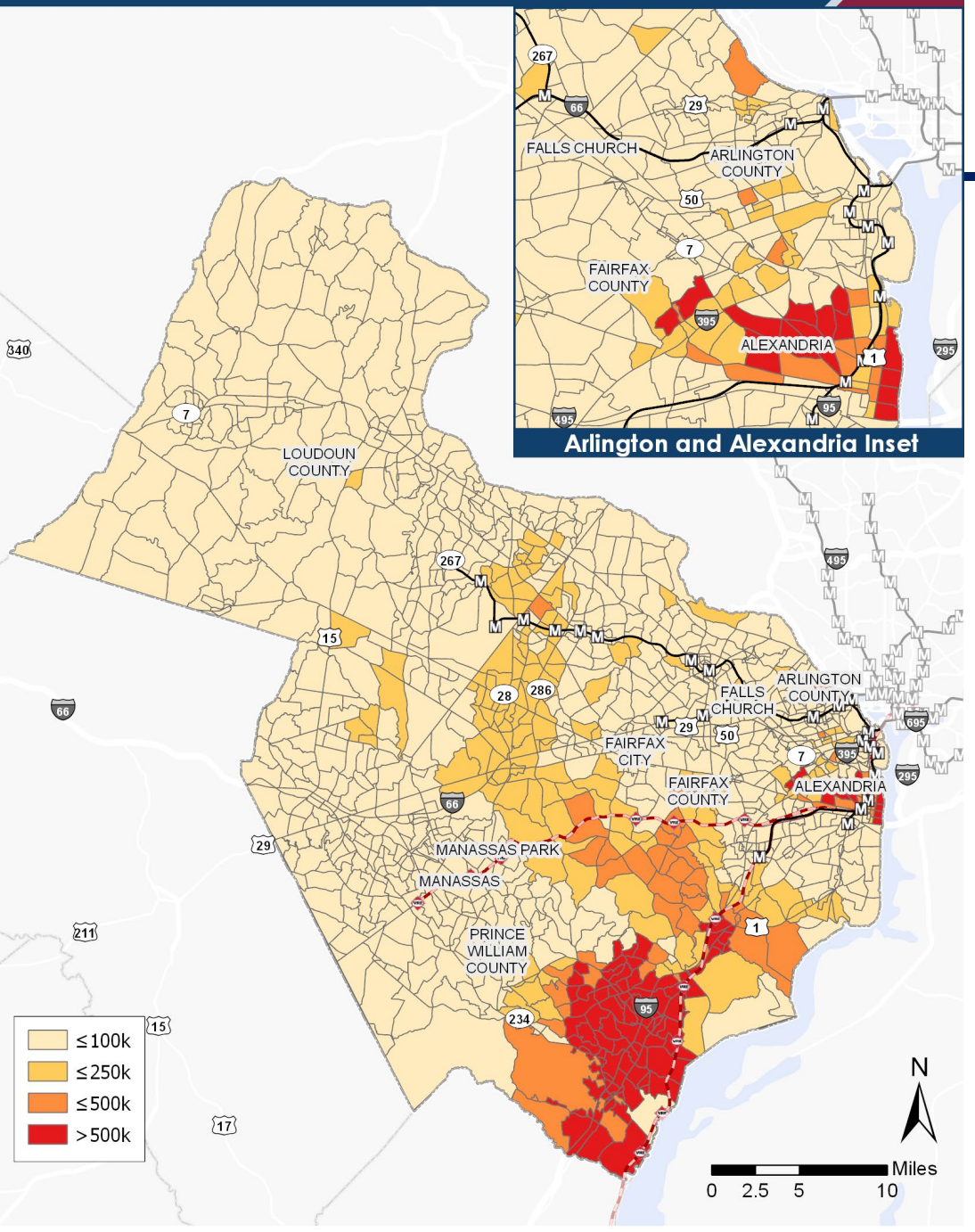
Auto Job Access: Build vs. No-Build



Arlington and Alexandria Inset

Transit Job Access: Build vs. No-Build



Arlington and Alexandria Inset

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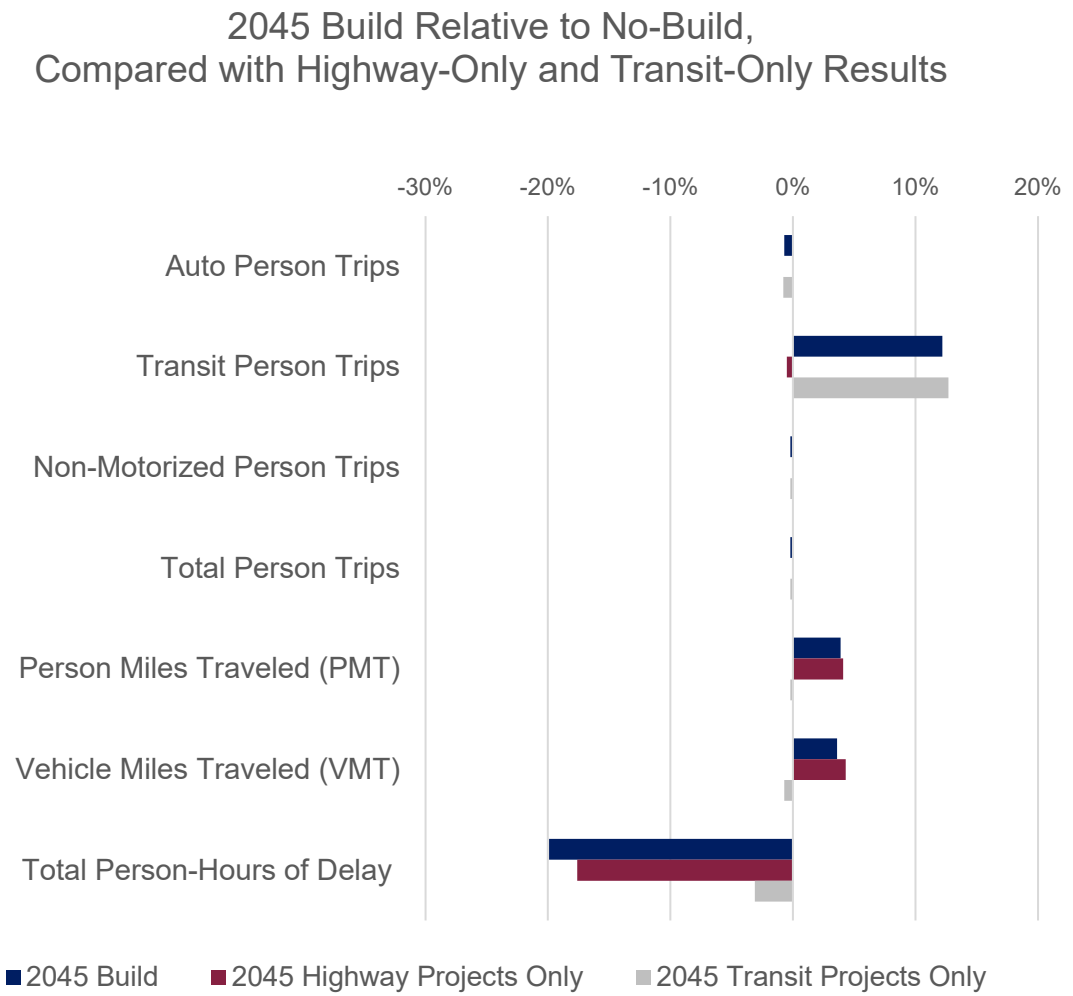
Build Network Results by Primary Mode



- Transit projects and highway projects appear to be serving very different markets and are only in competition with one another in very limited cases:
  - Transit-only network shows only a small percentage increase in transit trips relative to the Build network (12.6% vs. 12.1%)
  - VMT difference between Build and Transit-only is less than 1%
- Roadway projects have a bigger impact on reducing congestion in the region than other modes:
  - Roadway projects alone reduce delay by 17.6%
  - Addition of the remaining projects further reduces congestion to a total of 19.9%

Scenario Analysis

NVTA's TransAction

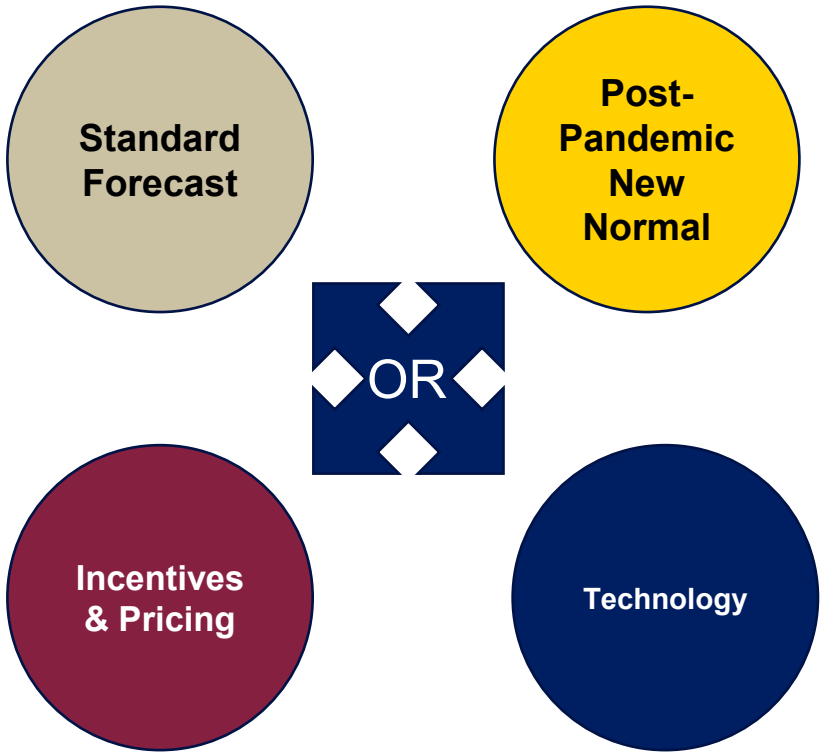
Transportation Action Plan for Northern Virginia

Dealing with Uncertainty

- The TransAction process includes analysis to better understand uncertainty:
  - Plausible futures, but not necessarily preferred or predicted
  - Assumptions-based using proxy metrics than can be modeled
  - May identify potential investment obsolescence
- Three specific alternative futures (scenarios):
  - Post-Pandemic ‘New Normal’
  - Transportation Technology
  - Transportation Policy/Mechanisms

Scenario Analysis

What could happen to transportation in Northern Virginia by 2045?



- **Post-Pandemic "New Normal" Scenario:**

  Reduction of work-related trips, reduction of shopping trips, increase in delivery trips, increase in non-motorized trips.

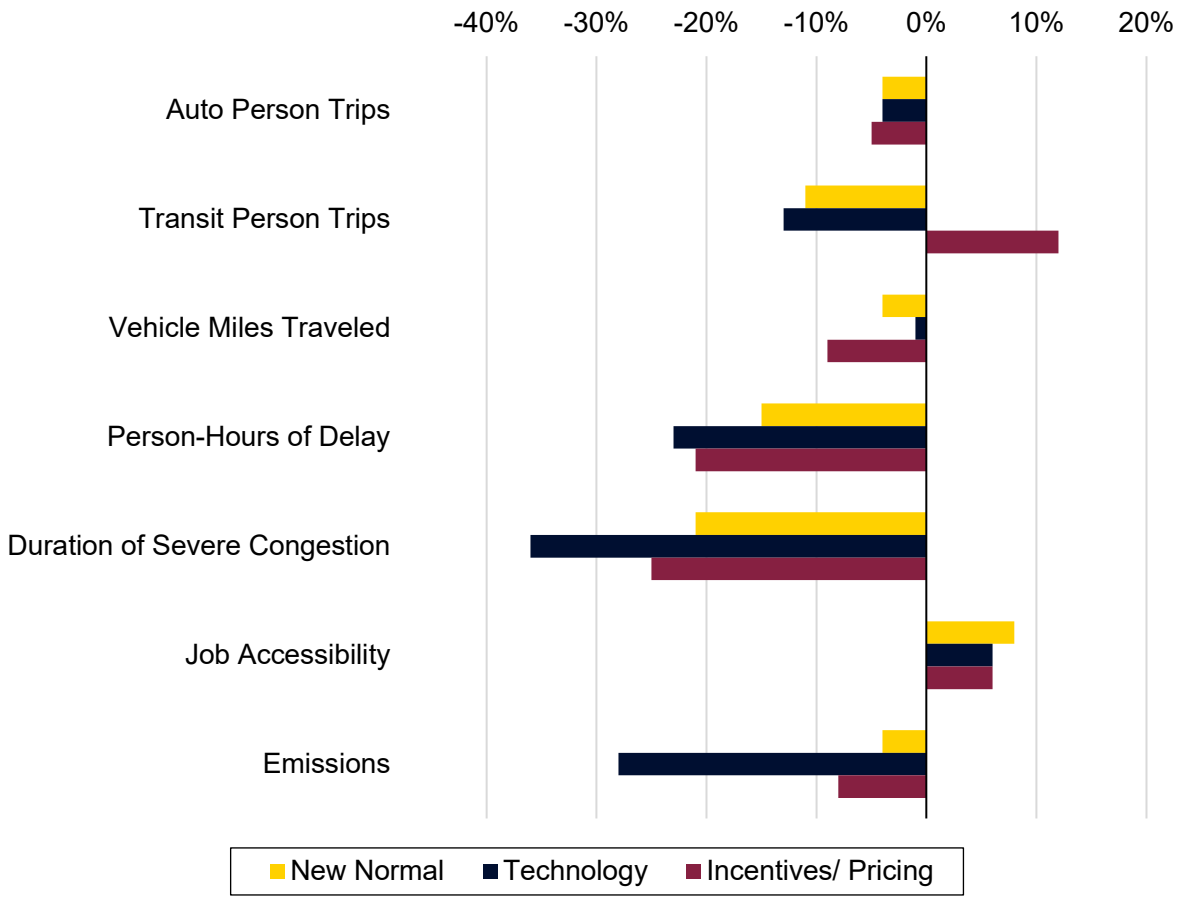
- **Technology Scenario:**

  Increased market penetration of CASE vehicles, changes in operating costs for automated vehicles, increases in effective roadway capacity, changes in trip generation, and automated transit shuttles at all rail stations

- **Incentives/Pricing Scenario:**

  VMT pricing on all roads with discounts for lower-income households, increase in parking costs across the region, free transit (no fares), and shift in travel times from peak hours

Change in 2045 No-Build Results Under Each Scenario

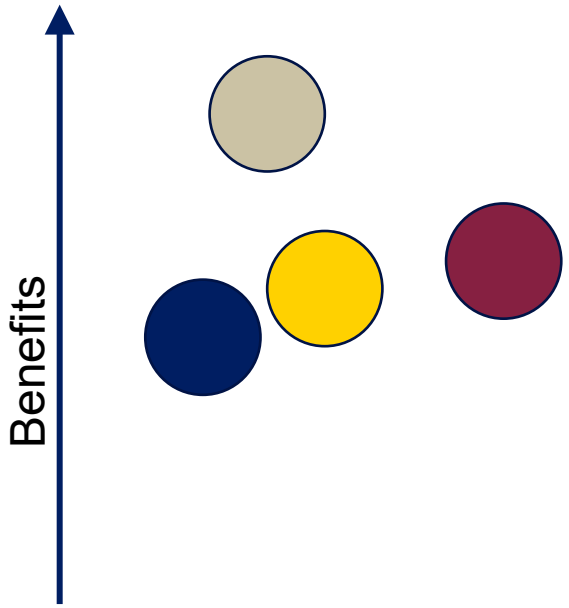


- Post-Pandemic 'New Normal' scenario:
  - Fewer commute trips in the peak period results in less congestion: person-hours of delay decreases by 15%
  - Decreases also seen in VMT (-4%) and overall emissions
- Technology scenario:
  - Decreases in person hours of delay (-23%) and in duration of severe congestion (-36%)
  - Transit trips decrease (-13%) due to the combined effects of reduced trips and transit trips shifting to CASE vehicles
  - Emissions decrease by 28% as a result of electrification.
- Incentives/Pricing scenario:
  - Transit trips increase by 12%, with gains in transit use offset by reduced work trips
  - Decreases in VMT (-9%), person hours of delay (-20%) and in duration of severe congestion (-25%) are more significant because of the reduced work trips.

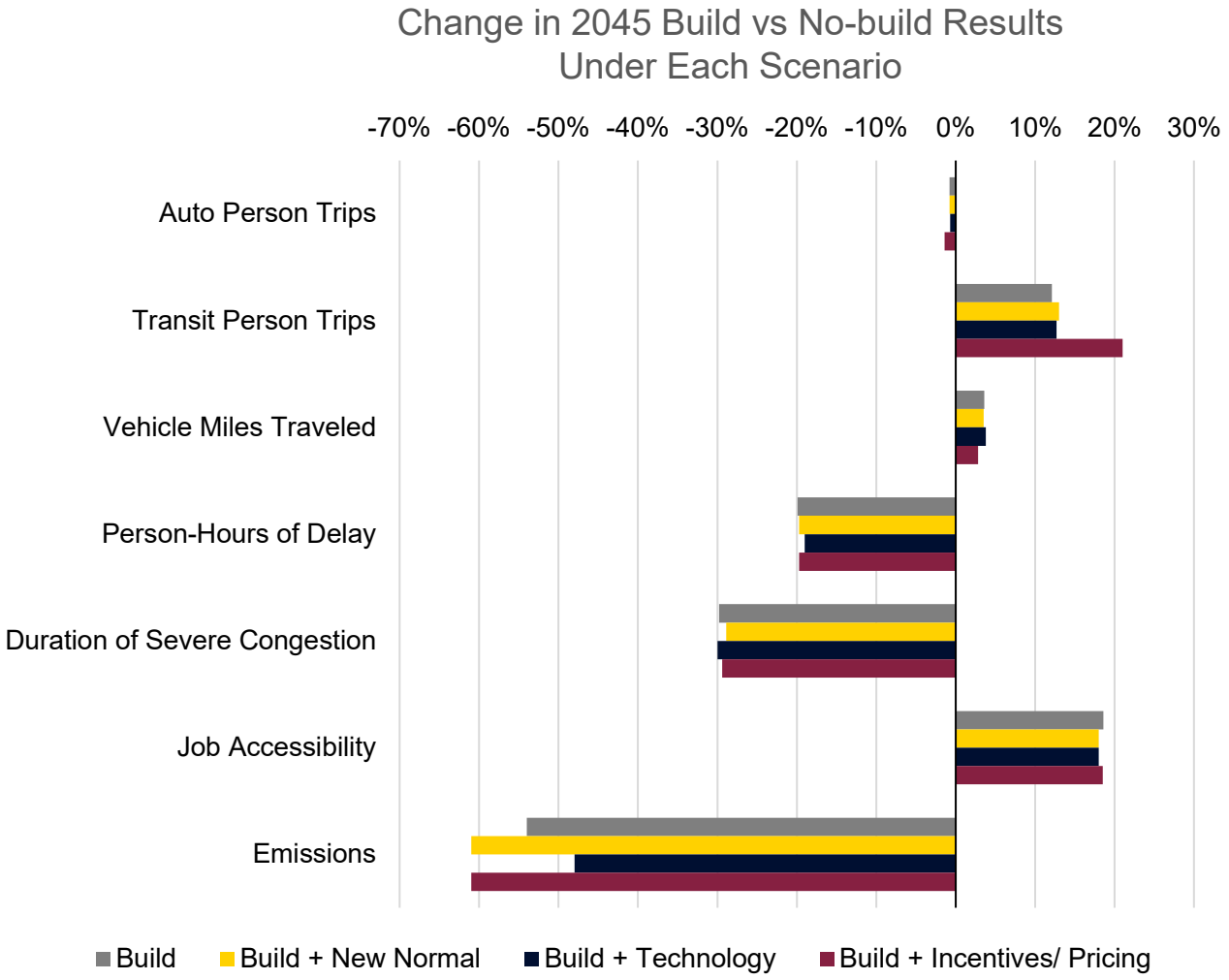
Robustness of TransAction Investments

- Tested how well the TransAction projects would perform in each of these potential futures
- Scenario build network compared with scenario no-build

What are the potential benefits of the TransAction projects?



Performance of TransAction Projects by Scenario



As compared to the standard forecast:

- The increase in transit trips in the New Normal (13%) and Incentives/Pricing+ (21%) scenarios is greater than in the standard forecast (12.1%)
  - Transit projects included in the TransAction Plan are more attractive under the assumptions of those two scenarios
- TransAction projects have a similar impact on congestion in the alternative future scenarios
- TransAction projects have the biggest impacts in the Incentives/Pricing+ scenario; increasing transit trips by 21%, decreasing emissions by up to 61% and resulting in the smallest increase in VMT of any of the four futures considered

Next Steps

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Transportation Action Plan for Northern Virginia

Remaining TransAction Activities

- Complete public comment report
- Finalization of plan and project list based on public and stakeholder comments
- PPC Role:
  - October: Review any refinements to plan and project list
  - November: Endorsement of TransAction
- December 2022: NVTA adopts TransAction

Reference Slides

NVTA's TransAction

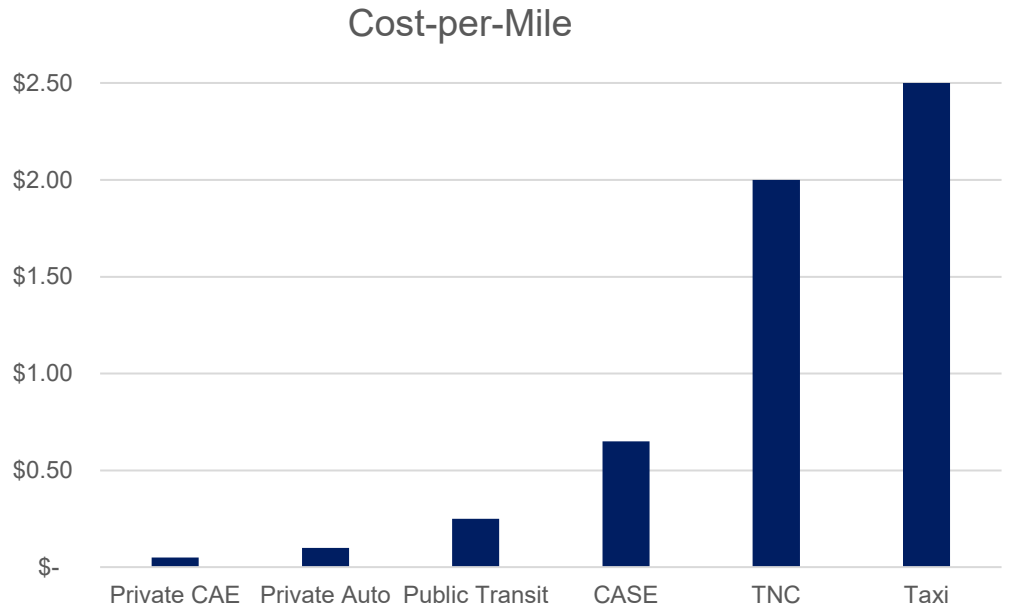
Transportation Action Plan for Northern Virginia

1 Post-Pandemic New Normal Scenario

- What if trends observed during the pandemic continue into the long-term future?
- Key Assumptions:
  - Reduction of work-related trips (HBW, NHW) by 21%
  - Reduction of shopping trips by 5.6%
  - Increase in delivery trips (1 delivery for every 3 shopping trips removed)
  - Increase in non-motorized trips by 5%
  - No Land Use changes assumed

2 Technology Scenario

- Focus on implementation of Connected/ Automated/ Shared/ Electric vehicles (CASEs)
  - Market Penetration:
    - Private Vehicles: 20%
    - TNCs: 100% fully automated within Northern Virginia, DC, Montgomery & Prince George's
    - Large Trucks: 33%
    - Transit Buses: not automated
    - Shuttle buses: 100% automated
  - All automated vehicles are assumed to also be Connected and Electric
  - Lower operating costs

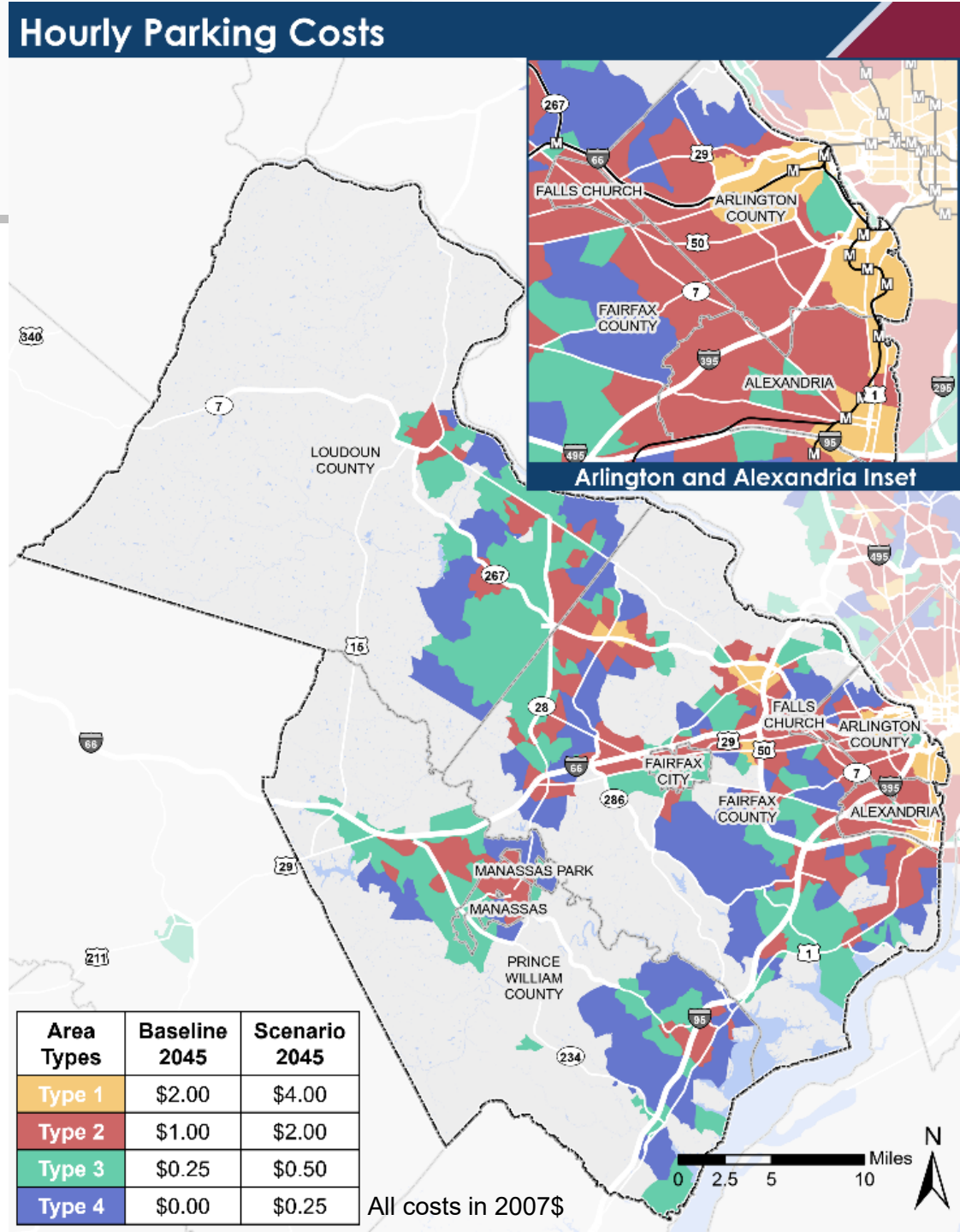


2 Technology Scenario (cont.)

- Focus on implementation of Connected/ Automated/ Shared/ Electric vehicles (CASEs)
  - Changes to trip making:
    - CAE owners make more trips
    - CAE owners make longer trips
  - Zero-Occupancy Vehicle (ZOV) trips:
    - Remote parking of private vehicles
    - CASE relocation between passengers
  - Capacity Increase:
    - Freeways: 15%
    - Major Arterials: 5%
  - Automated Shuttles available at all rail stations (FM/LM)
  - No Land Use changes assumes

3 Incentives/Pricing Scenario

- Implementing transportation pricing and incentive mechanisms to manage travel demand
- Key Assumptions:
  - VMT Pricing on all roads: 25¢ peak, 12¢ off-peak
    - Discounts for lower-income households
  - Increase in parking costs across the region
  - Free transit



Area Types	Baseline 2045	Scenario 2045
Type 1	$2.00	$4.00
Type 2	$1.00	$2.00
Type 3	$0.25	$0.50
Type 4	$0.00	$0.25

All costs in 2007$