CORE OF ROSSLYN
Transportation Study

ARLINGTON
VIRGINIA

Kimley»Horn

March 15, 2019

Performance-Based Multimodal Planning and Implementation of Rosslyn Streets Reconfiguration

MWCOG Travel Forecasting Subcommittee

Agenda

- Introduction
- Travel & Growth Patterns
- Data & Methodology
- Application
- Key Findings & Next Steps

Introduction

From Sector Plan to Core Study

Sector Plan
Adoption 2015

Long-Term: Core Study

April 2018
Public Kick Off & Data Workshop

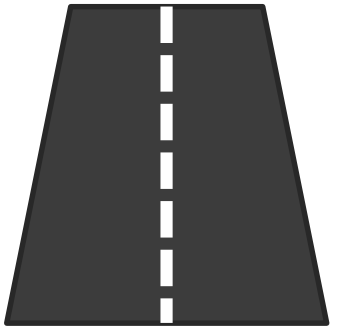
2018-2019
Core Study Development & Public Workshops

Summer 2019
Final Study Recommendations & Next Steps

VISION
"Balance among all travel modes to meet transportation needs and support Rosslyn's growth"

STUDY → **IMPLEMENTATION**

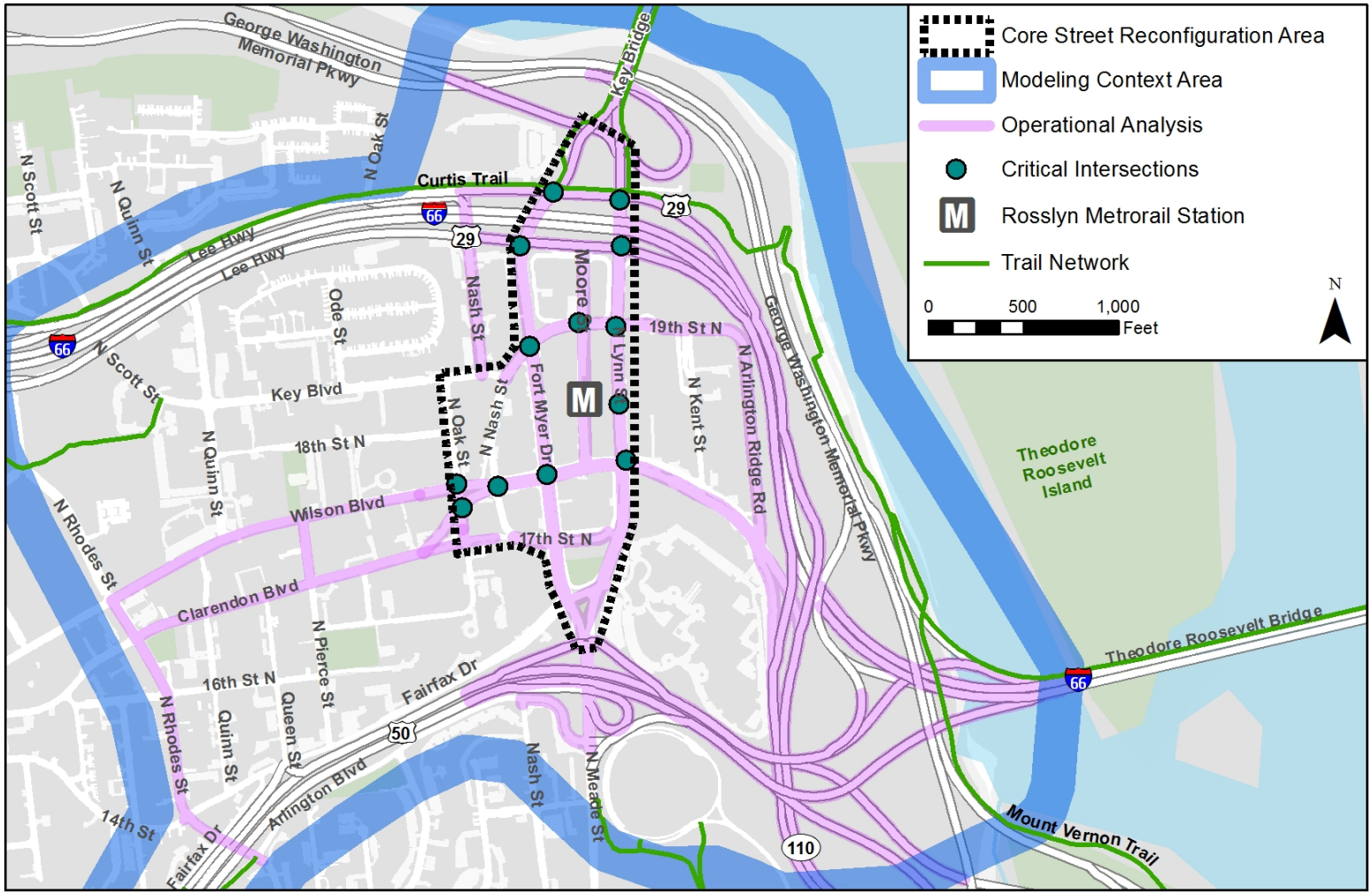
Analysis → **Design** → **Public Input**



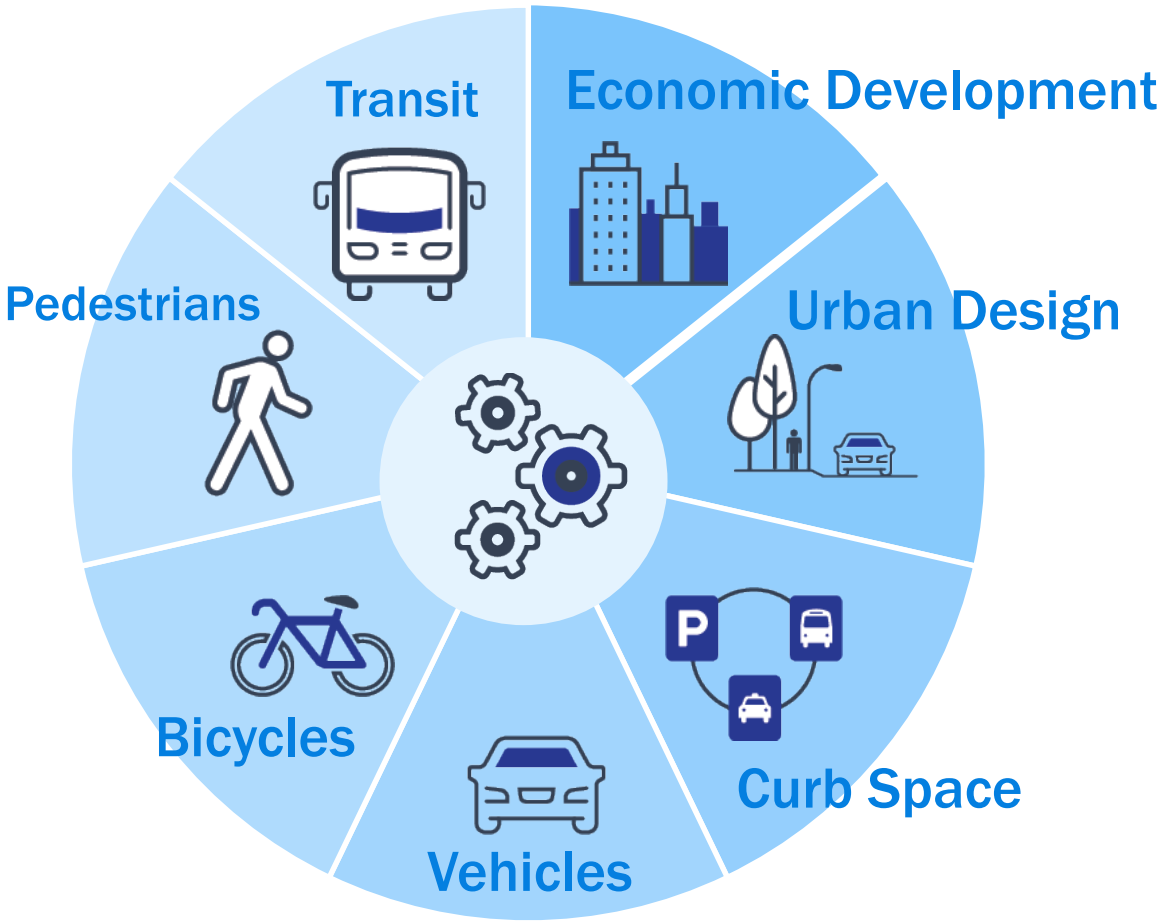
Goals

- Analyze multimodal transportation conditions and needs
- Engage the public and stakeholders in the analysis process
- Evaluate concepts for street network design to achieve the Sector Plan's objectives
- Arrive at a final alternative concept (set of projects) to move through the County's design process

Study Area


Core Street Reconfiguration Area
Modeling Context Area
Operational Analysis
Critical Intersections
Rosslyn Metrorail Station
Trail Network
0
500
1,000
Feet
N
George Washington Memorial Pkwy
Key Bridge
N Oak St
Curtis Trail
N Scott St
N Quinn St
Lee Hwy
Ode St
Nash St
Moore St
19th St N
Lynn St
Fort Myer Dr
Key Blvd
18th St N
N Kent St
N Arlington Ridge Rd
George Washington Memorial Pkwy
Theodore Roosevelt Island
Wilson Blvd
17th St N
N Rhodes St
Clarendon Blvd
N Pierce St
16th St N
Fairfax Dr
Queen St
Quinn St
Arlington Blvd
14th St
Nash St
N Meade St
Theodore Roosevelt Bridge
Mount Vernon Trail

Transportation Study Focus Areas



- Align with Sector Plan goals
- Used to develop performance measures:
  - Allow for *comparative* assessment between baseline and concepts

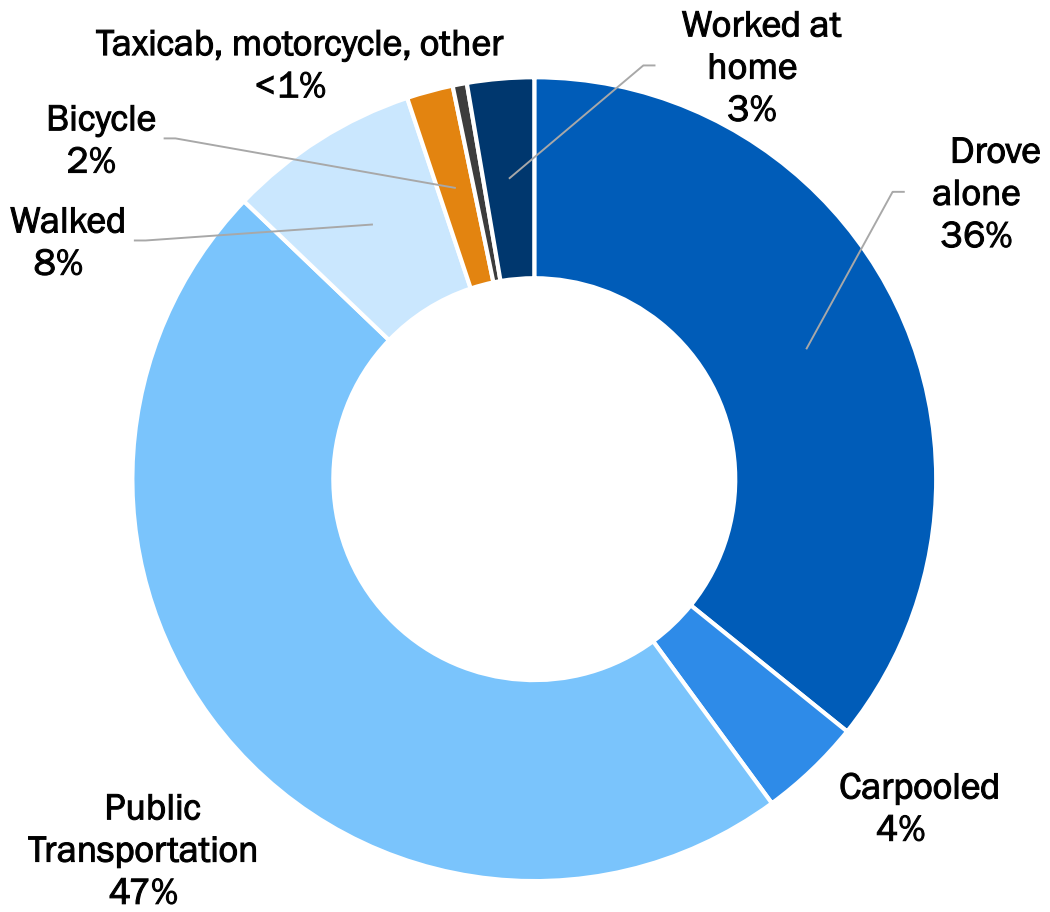
Travel and Growth Patterns

Commuting Patterns

- **Common Destinations for Rosslyn Residents**
  - Tysons Corner
  - Rosslyn-Ballston Corridor
  - Downtown DC

- **Common Origins for Rosslyn Employees**
  - I-66 Corridor
  - South Arlington

Rosslyn Mode Share: Residents

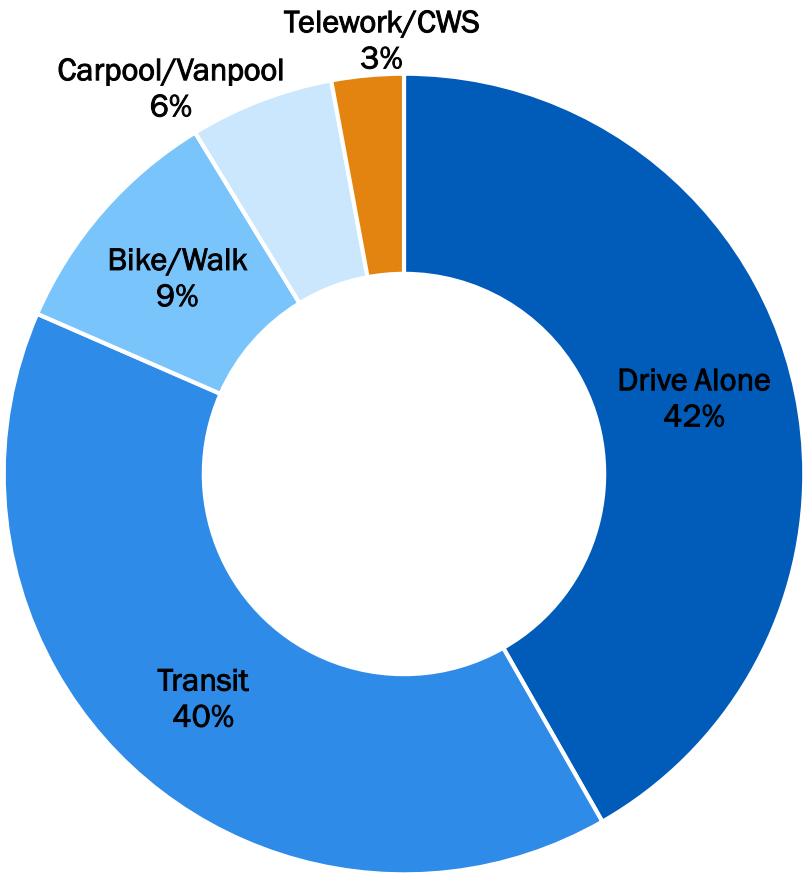


FROM ROSSLYN

- Rosslyn's public transit and active mode shares are *almost double* that of the County as a whole
- Accommodating public transit and active modes is *critical* in Rosslyn

Source: American Community Survey commuting data (2011-2015) for two census tracts generally representing Study Area

Rosslyn Mode Share: Employees

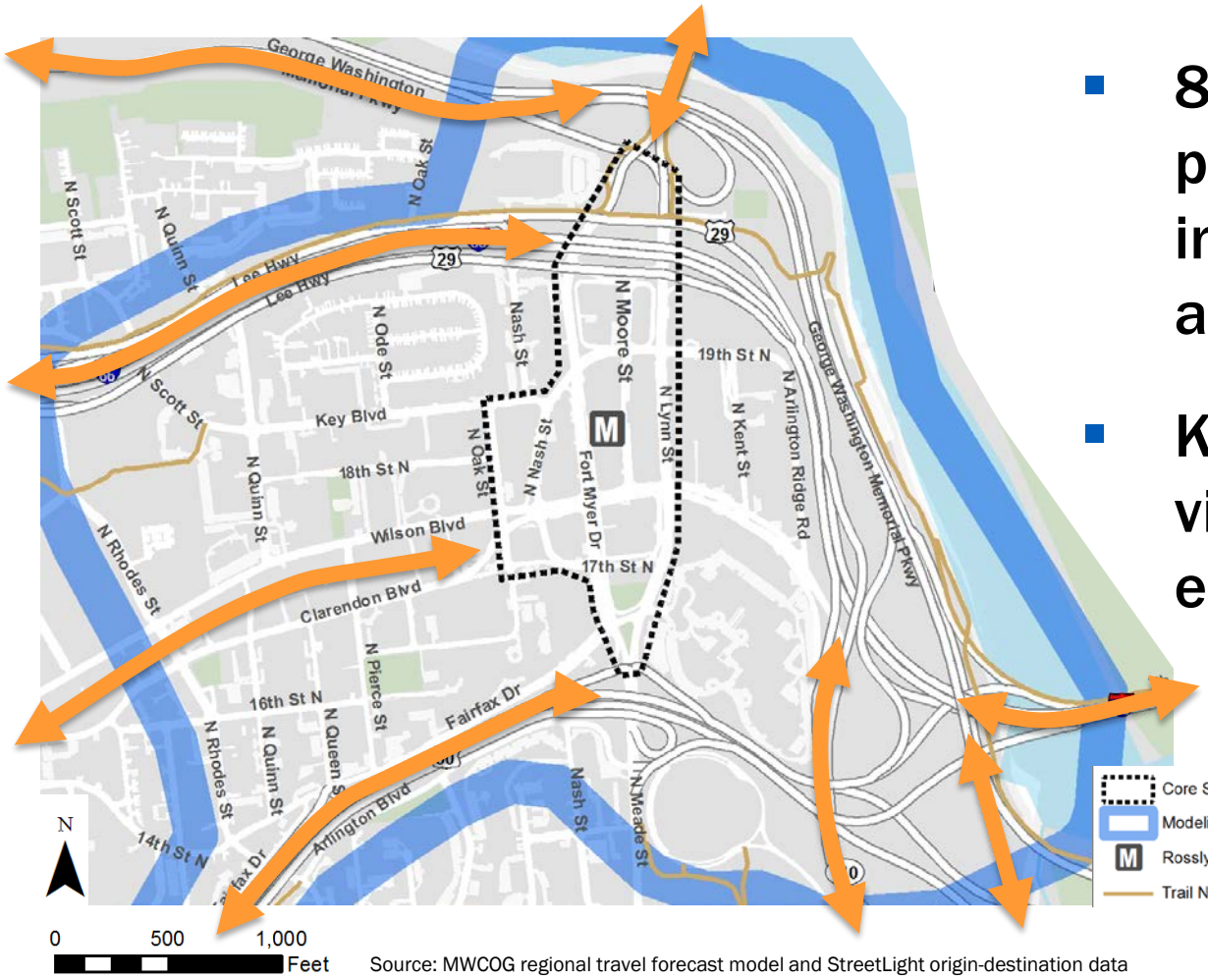


TO ROSSLYN

- Almost equivalent percentages of drive alone and public transit trips
- *Public transit is a vital link* for commuters who work in Rosslyn

Source: Arlington County Building Survey (2016) for buildings in the Rosslyn Study Area

Regional Gateway

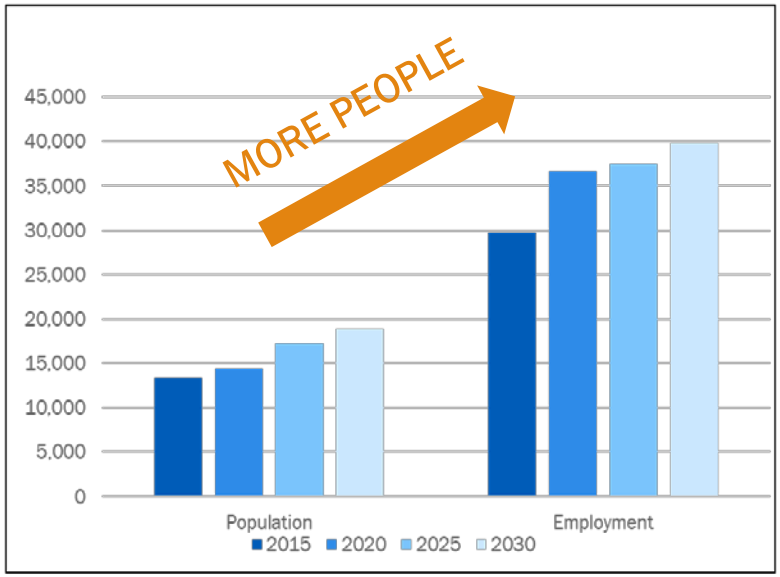


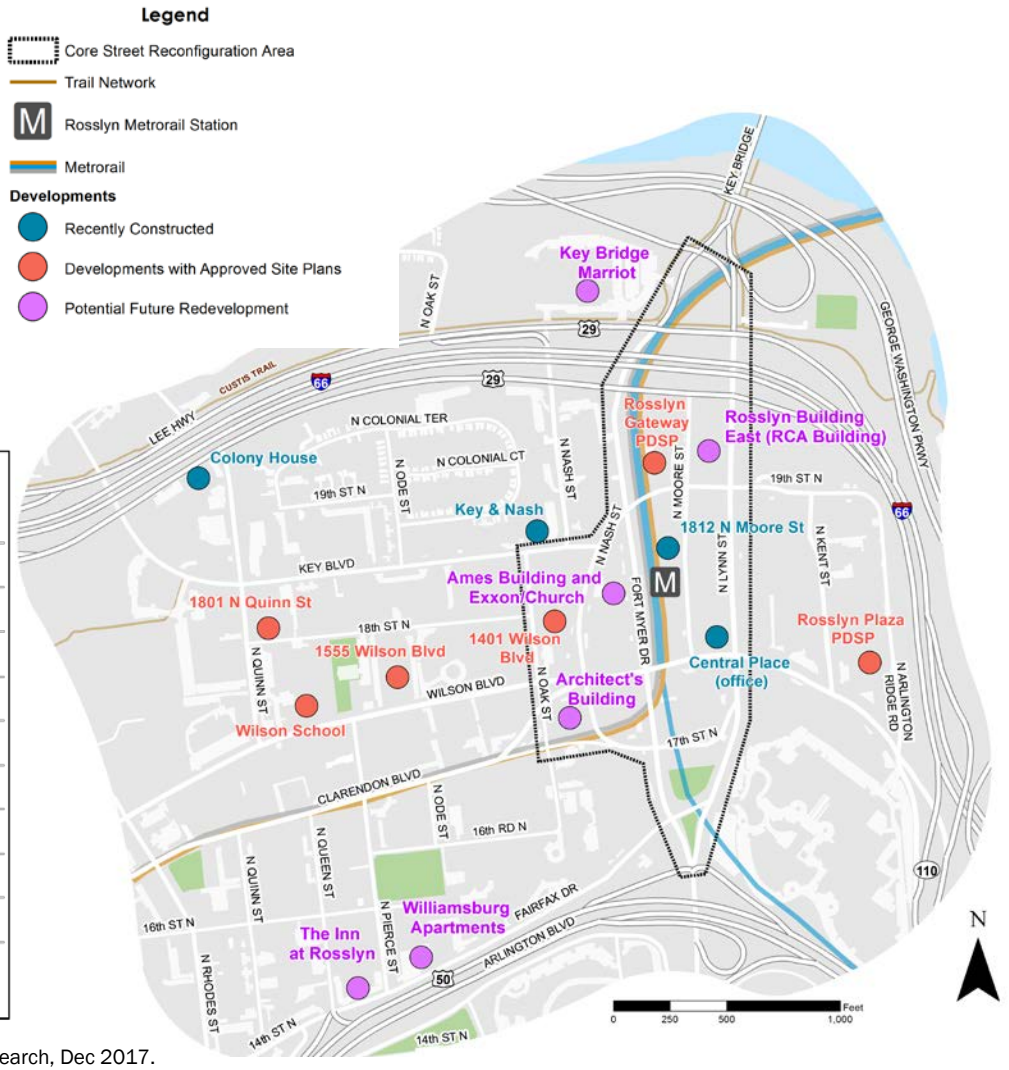
Source: MWCOG regional travel forecast model and StreetLight origin-destination data

- 80% of peak period vehicle trips in/through Rosslyn are *through trips*
- Key opportunity for visibility and economic growth

Development and Growth in Rosslyn

- From 2015 to 2030
  - 42% Population Growth
  - 34% Employment Growth





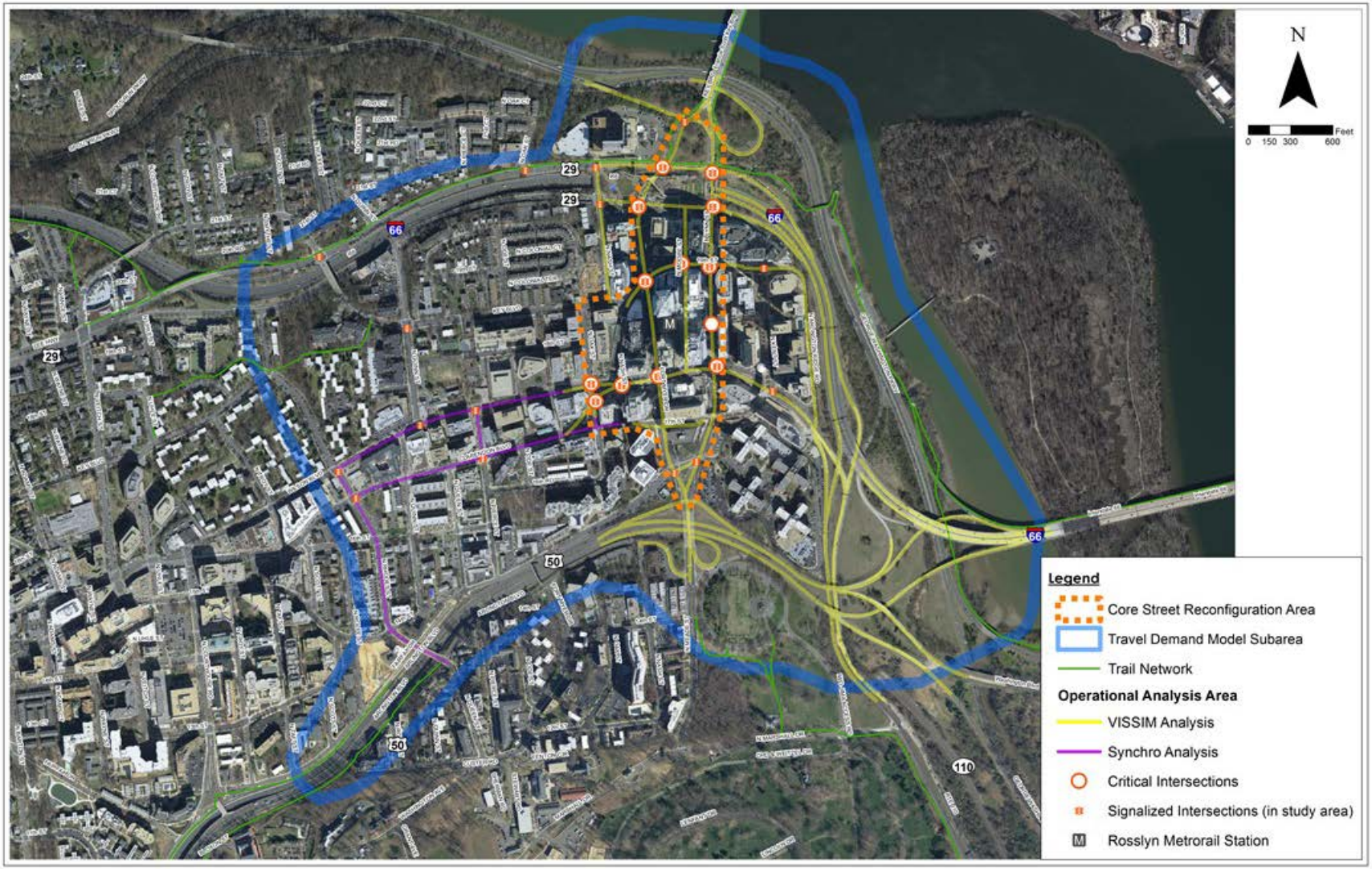
Source: Arlington County, CPHD, Planning Division, Center for Urban Design and Research, Dec 2017.

Data & Methodology

Key Data and Model Assumptions

	Use
Existing Data Counts, StreetLight, Parking, Surveys, Google API	• Balanced volumes • Travel patterns • Mode share • Garage access
MWCOG Travel Demand Forecasting Model	• Version 2.3.70 • Regional vehicular trips/growth patterns (relative to Rosslyn) • Review mode share
VISUM Subarea Model	• O-D matrix estimation for 2017 • Reassigning ITE-based vehicular trips in 2030 • High-level concept screening
VISSIM Models	• Evaluating multimodal traffic operations and reporting performance measures

Modeling and Analysis Framework



Purposes of Applying Different Models

- **MWCOG Model** – replicate regional vehicular trip magnitude and patterns relative to Rosslyn
  - ✓ External-External (through) trips pattern/growth
  - ✓ E-I/I-E distributions

- **VISUM Model** – replicate subarea travel patterns, link volumes, and turning volumes
  - ✓ Subarea assignment

- **VISSIM Model** – replicate existing multimodal operations

MWCOG Model Regional Trip Magnitude and Patterns

- ✓ Internal-External and External-External trips (relative to Rosslyn subarea)
- ✓ Cutlines (west of Rosslyn, south/east, DC river crossings)
- ✓ Origin/Destination (O/D) as percentage of overall traffic
- ▪ O-D patterns in AM and PM peak periods

AM Peak Period Trip Pattern Validation

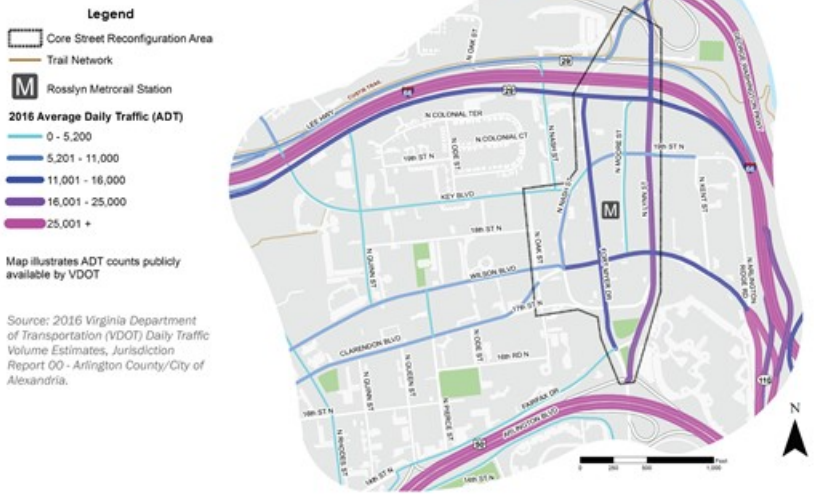
	Seeding Trip Table		StreetLight	MWCOG	
Trip Type	Trips	%	%	Trips	%
External to External	54,828	79.4%	76.1%	51,138	76.8%
External to Internal	9,535	13.8%	14.3%	10,388	15.6%
Internal to External	4,374	6.3%	9.1%	4,501	6.8%
Internal to Internal	309	0.4%	0.5%	524	0.8%
Total	69,046	100.0%	100.0%	65,799	100.0%

VISUM Subarea Model and Forecasting

Application

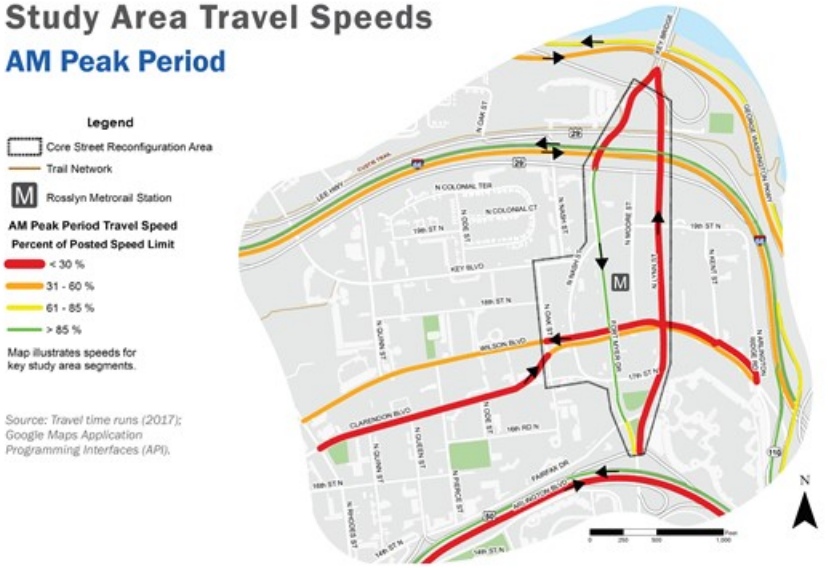
Existing Traffic Conditions

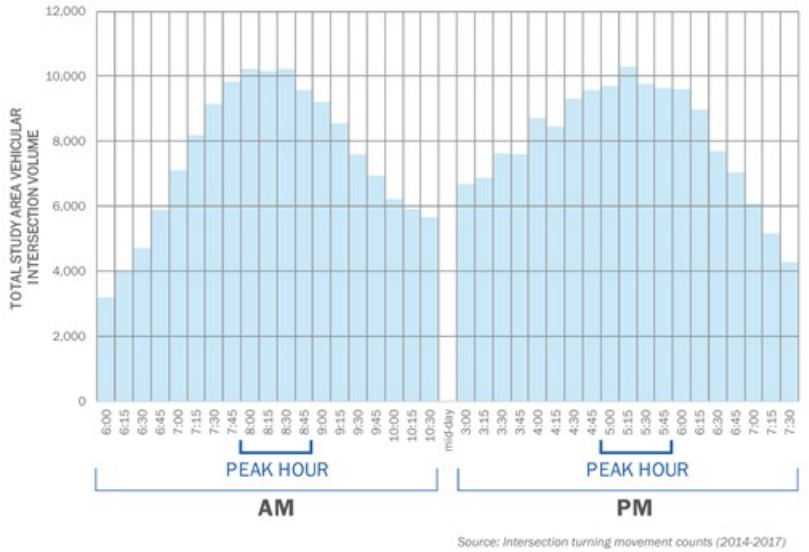
Average Daily Traffic Map



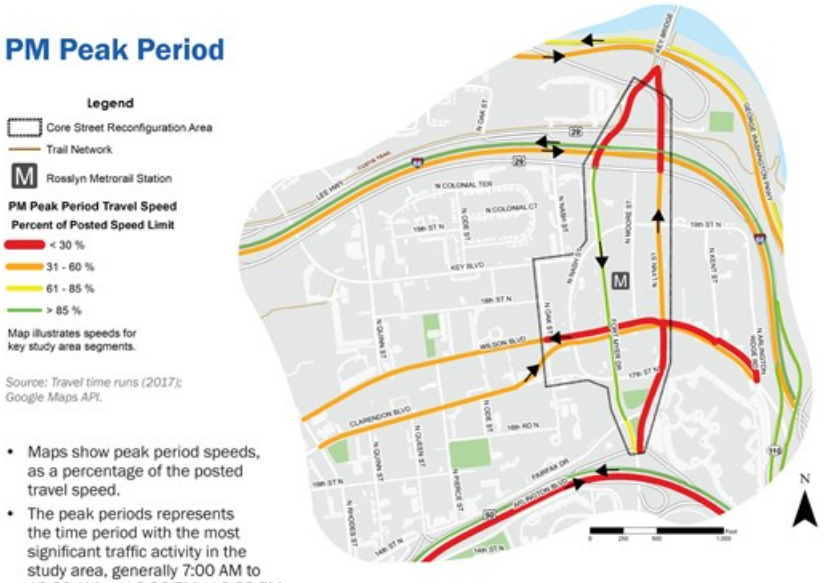
Study Area Travel Speeds

AM Peak Period



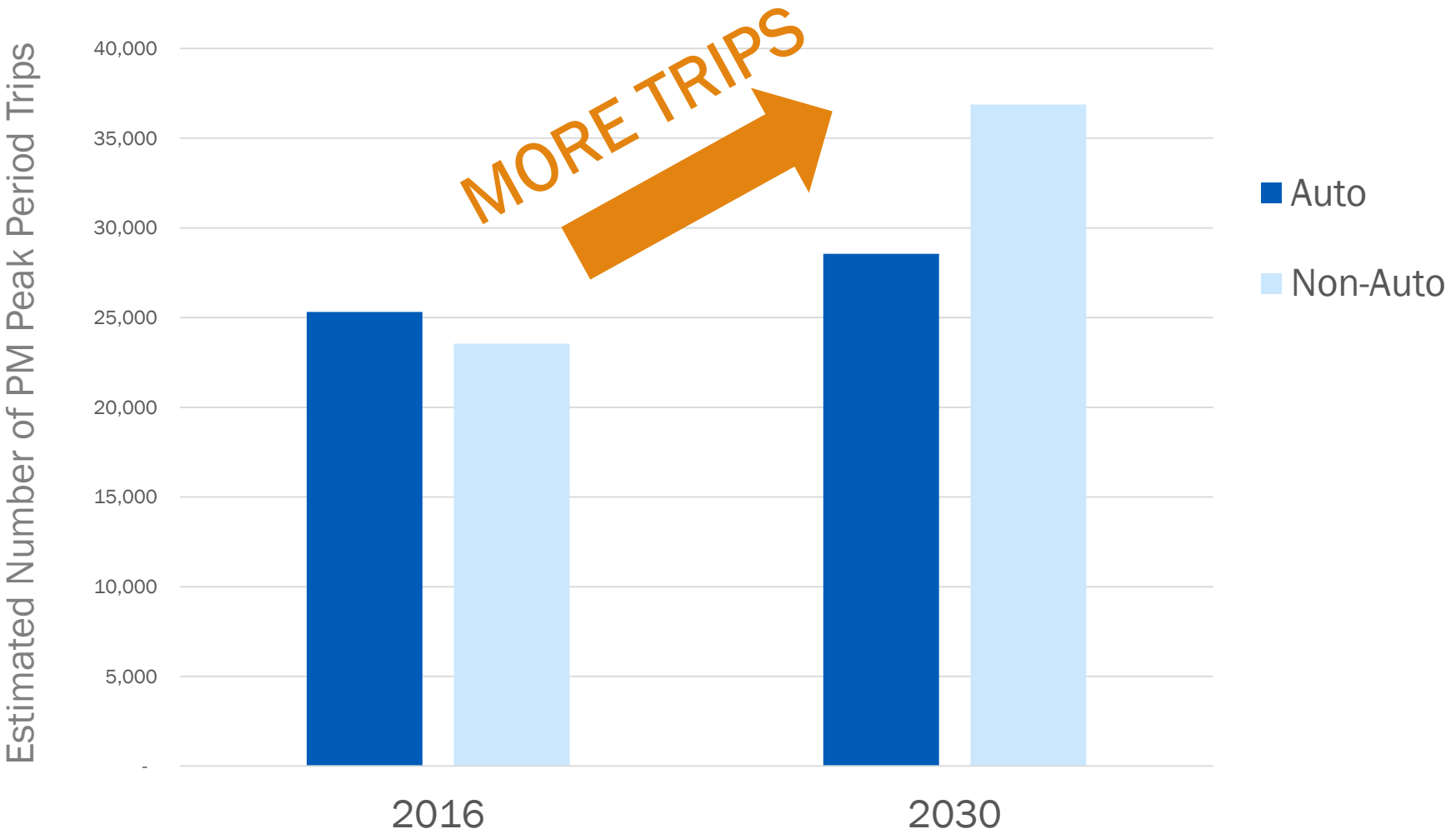


PM Peak Period

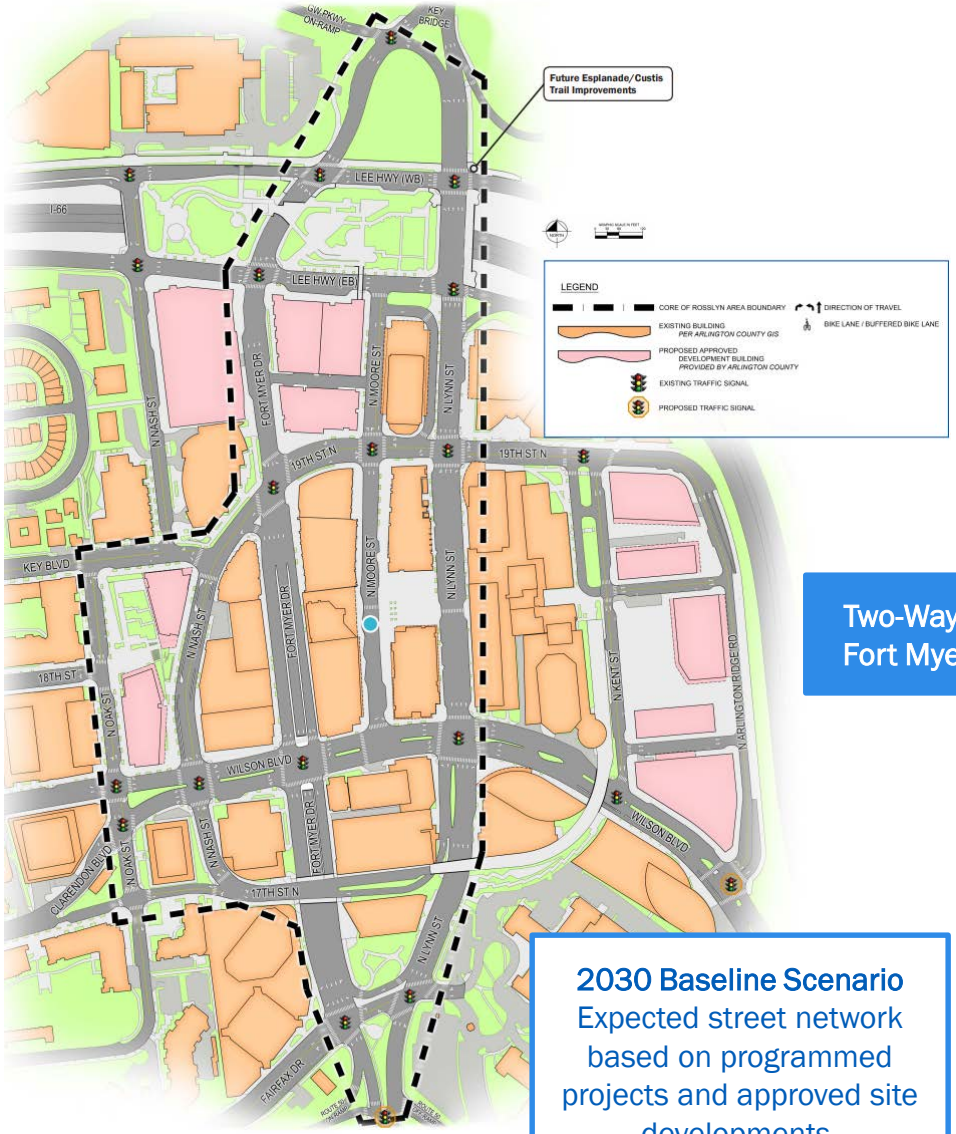


- Maps show peak period speeds, as a percentage of the posted travel speed.
- The peak periods represents the time period with the most significant traffic activity in the study area, generally 7:00 AM to 10:00 AM and 3:30 PM to 6:30 PM

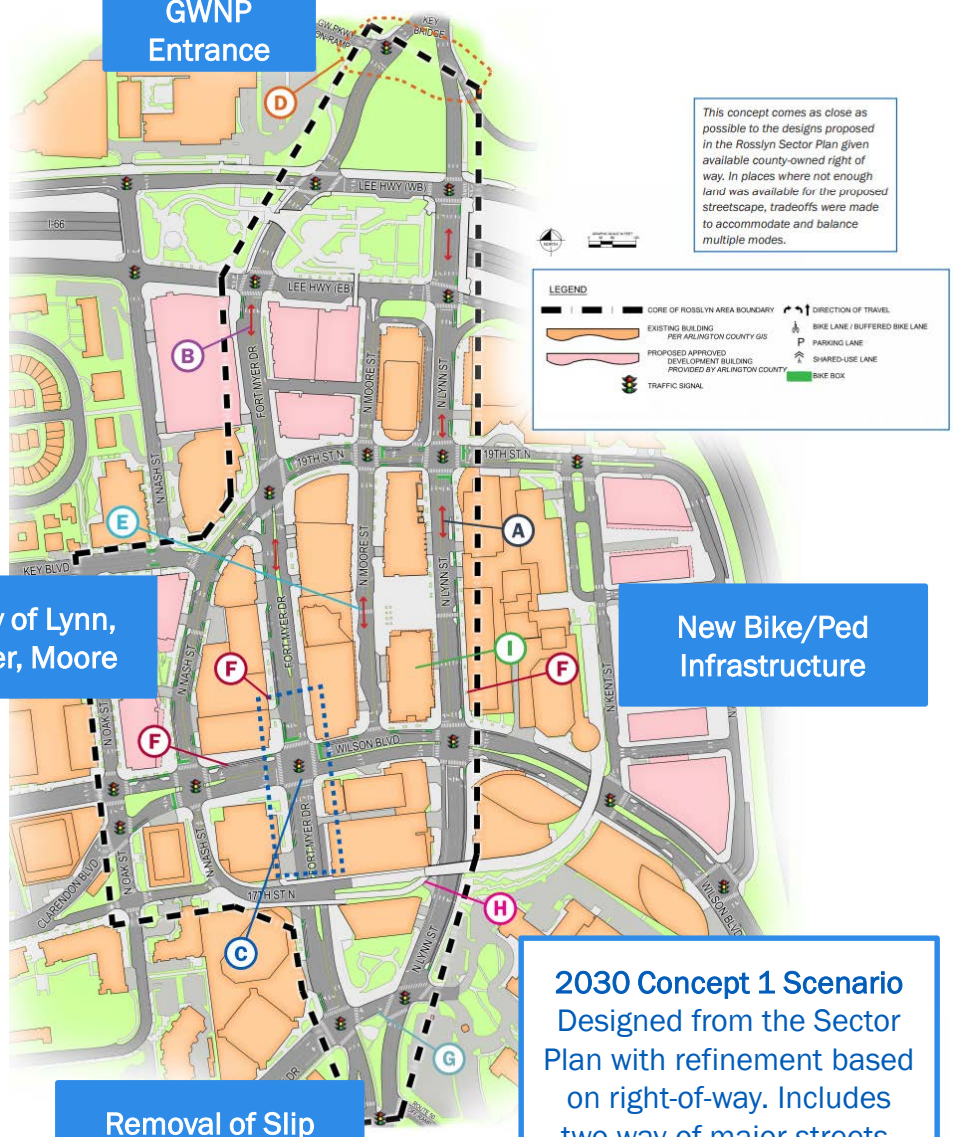
Trip-Making Patterns (PM Peak Period)



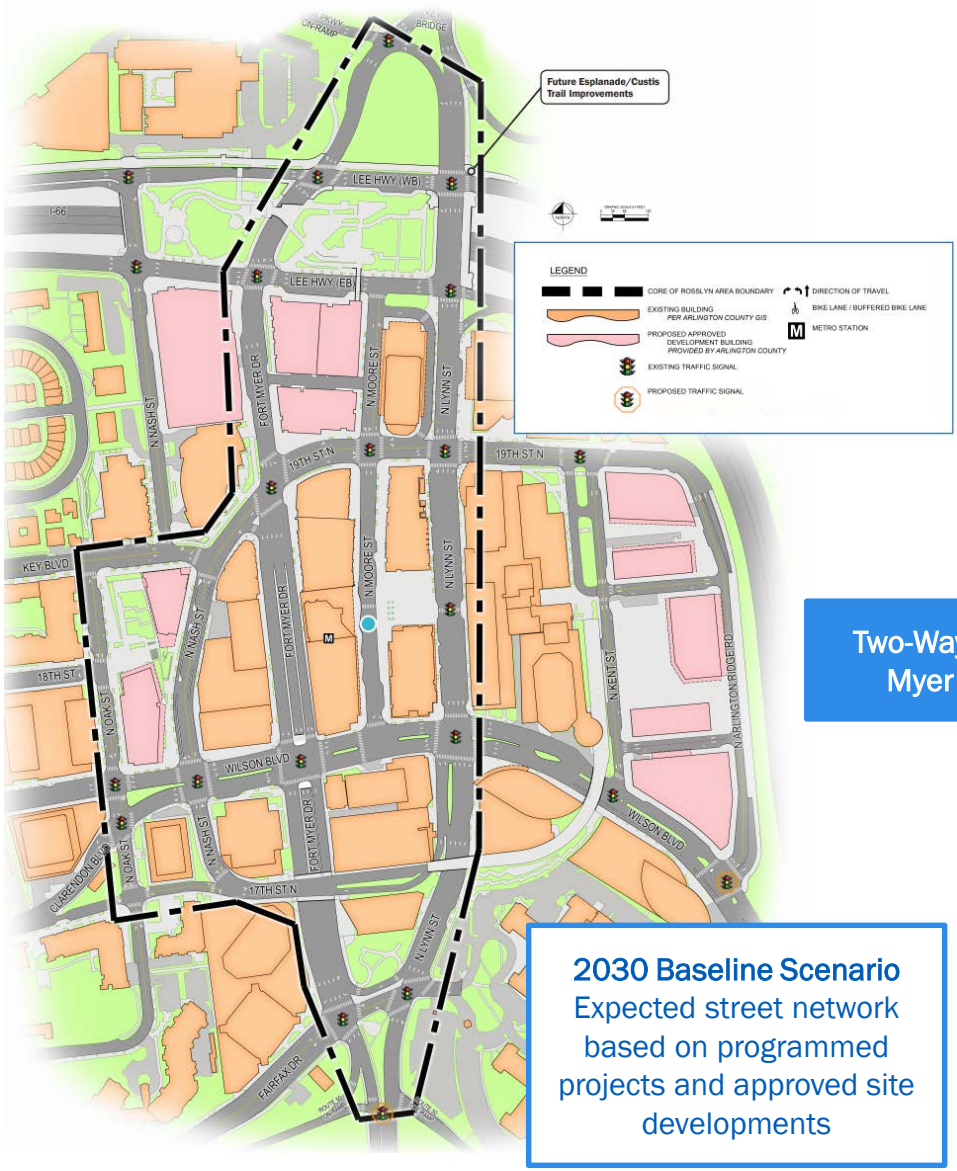
Sources: Institute of Transportation Engineers (ITE) Trip Generation Model (10th Edition), MWCOG Version 2.3.7 Travel Demand Model with Round 9.1 cooperative forecasts for Arlington County



2030 Baseline Scenario
Expected street network based on programmed projects and approved site developments.



2030 Concept 1 Scenario
Designed from the Sector Plan with refinement based on right-of-way. Includes two-way of major streets.



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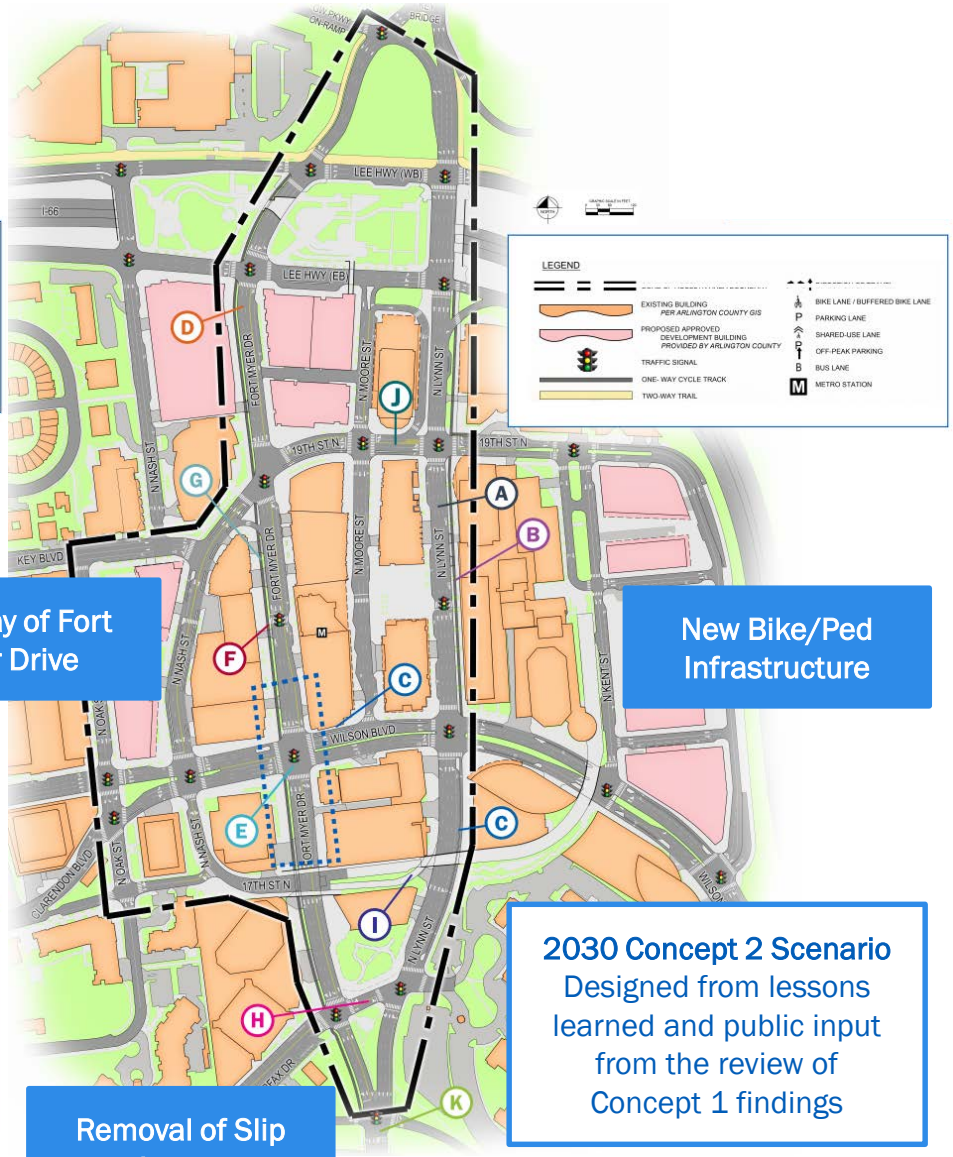

Two-Way of Fort Myer Drive

New Bike/Ped Infrastructure

Removal of Slip Lanes

2030 Concept 2 Scenario
Designed from lessons learned and public input from the review of Concept 1 findings

Measures of Effectiveness

POSITIVE CHANGE | NEGATIVE CHANGE | APPROXIMATELY THE SAME

CATEGORY	MEASURE	Baseline	2030 CONCEPT 1 IN COMPARISON TO 2030 BASELINE SCENARIO	2030 CONCEPT 2 IN COMPARISON TO 2030 BASELINE SCENARIO
PEDESTRIAN AND URBAN DESIGN	Quantity of Sidewalks in Public Right-of-Way	154,000 sq ft	179,300 sq ft	164,900 sq ft
	Number of New or Improved Pedestrian Crossings (Shortened or Added Median)	–	14	18
	Pedestrian Delay at Critical Intersections - AM (Number of intersections with 40 or more seconds of delay)	3	6	4
	Pedestrian Delay at Critical Intersections - PM (Number of intersections with 40 or more seconds of delay)	7	8	6
BICYCLES	Bicycle Network Connections to Local/Regional Trails	5	5 (improved connections to Custis and Mt. Vernon Trails and Key Bridge)	5 (improved connections to Custis and Mt. Vernon Trails and Key Bridge)
	Quantity of New or Improved Protected Bike Facilities	2,200 ft (0.4 miles)	6,900 ft (1.3 miles)	9,700 ft (1.8 miles)
	Percentage of Segments with 'Low stress' Biking Experience (Bike Level of Traffic Stress 1 or 2)	28%	56%	62%
	Bicycle Delay at Critical Intersections - AM (Number of intersections with 40 or more seconds of delay)	0	4	1
	Bicycle Delay at Critical Intersections - PM (Number of intersections with 40 or more seconds of delay)	2	3	3
VEHICLES	Total Network Queue Length – AM (Number of intersections with queues that exceed block length)	1,205 vehicles (17)	1,563 vehicles (16)	1,321 vehicles (15)
	Total Network Queue Length – PM (Number of intersections with queues that exceed block length)	855 vehicles (16)	1,419 vehicles (15)	1,185 vehicles (15)
	Overall Vehicle Delay at Intersections (Number of intersections operating with significant overall delay)	8	17	12
	Peak Period Travel Speed - AM	9 MPH	7 MPH	8 MPH
	Peak Period Travel Speed - PM	9 MPH	7 MPH	7 MPH
TRANSIT	Transit Average Speed - AM	9 MPH	6 MPH	8 MPH
	Transit Average Speed - PM	10 MPH	8 MPH	8 MPH
PARKING AND CURBSPACE	Quantity of On-Street Parking Supply	98 parking spaces	96 parking spaces	137 parking spaces (includes off-peak parking)
	Quantity of New Multimodal Curb Space (Includes bus, taxi, bike lanes protected by parking, loading zones, carshare/bikeshare)	11%	14%	13%

Key Findings & Next Steps

Key Takeaways – MWCOG Model and Data

MWCOG model does well in:

- Replicating overall proportions of through and internal trips compared to probe-vehicle data
- Cutline volumes reasonably represent traffic counts
  - ✓ External-External trip growth

Wish we had:

- Better O-D data for subzones and gateways
- Better data to understand mode split (auto vs. non-motorized trip rates)

Key Takeaways – Study

- Performance-based planning
  - An iterative process of analysis, design, and public engagement to arrive at a balanced street network concept for all users
  - Develop multimodal performance measures that allow for *comparative* assessment between baseline conditions and concepts
- Qualitative and quantitative analysis
- A lens of regional and local perspective
  - Data and modeling help inform public and stakeholders of needs and conditions

Schedule & Next Steps

- Assess Final Design Alternative Options
  - Key Stakeholder Coordination: March/April
  - Public Feedback Closes: April 3rd
  - Decision Points/Final Model Runs: Mid-April
- Arrive at Final Design Recommendations
  - Final Public Meeting: June
  - Final Study Report: Late Summer 2019

Questions