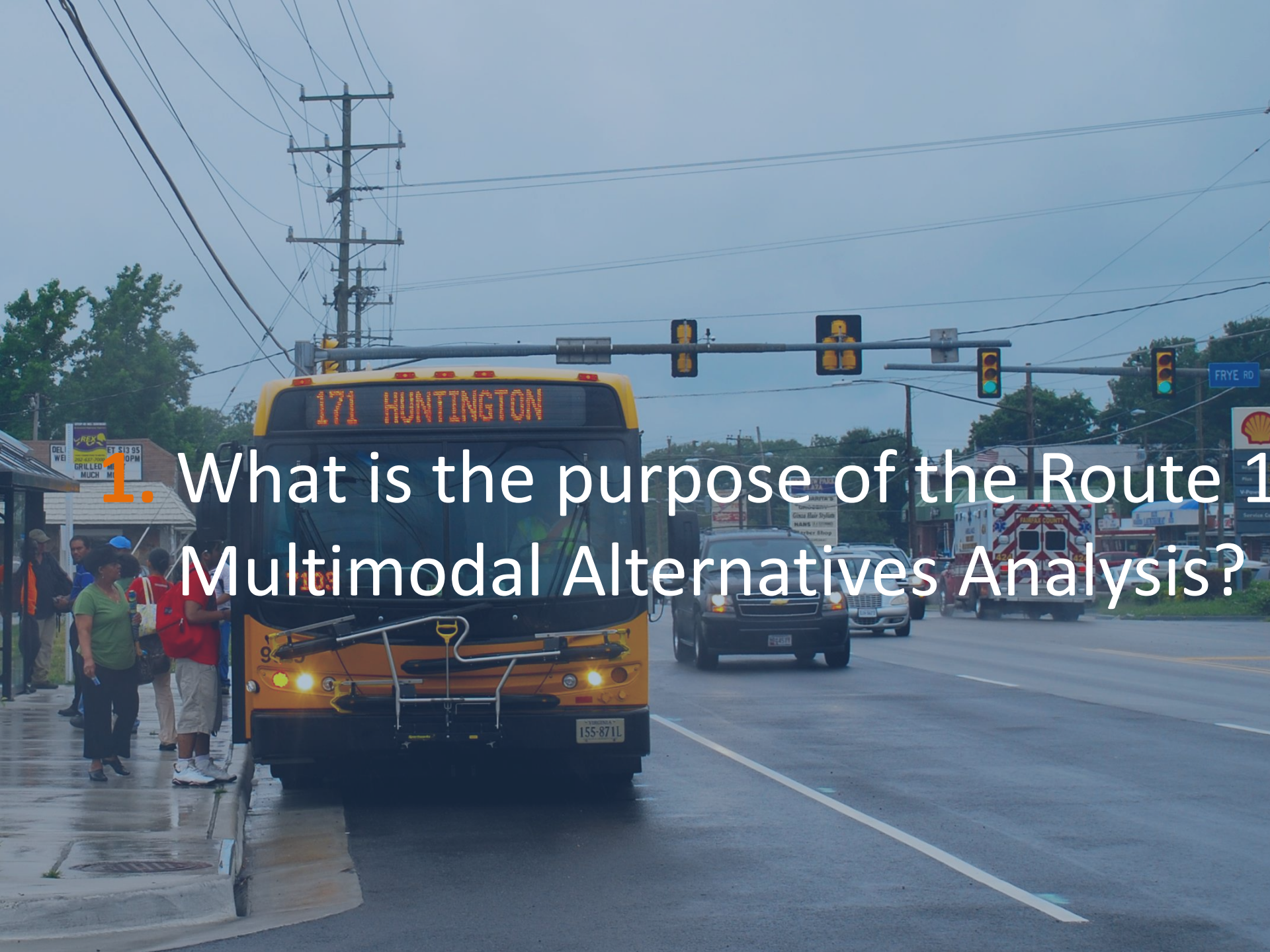
Route 1 Multimodal Alternatives Analysis

Community Involvement Committee

October 1, 2014

Agenda

1. Purpose of the study
2. What we've learned from you
3. Review of study process and status
4. Evaluation of Alternatives
5. Key considerations for implementation
   - *Population and employment growth*
   - *Traffic capacity*
   - *Phasing and funding of multimodal improvements*
6. Next Steps

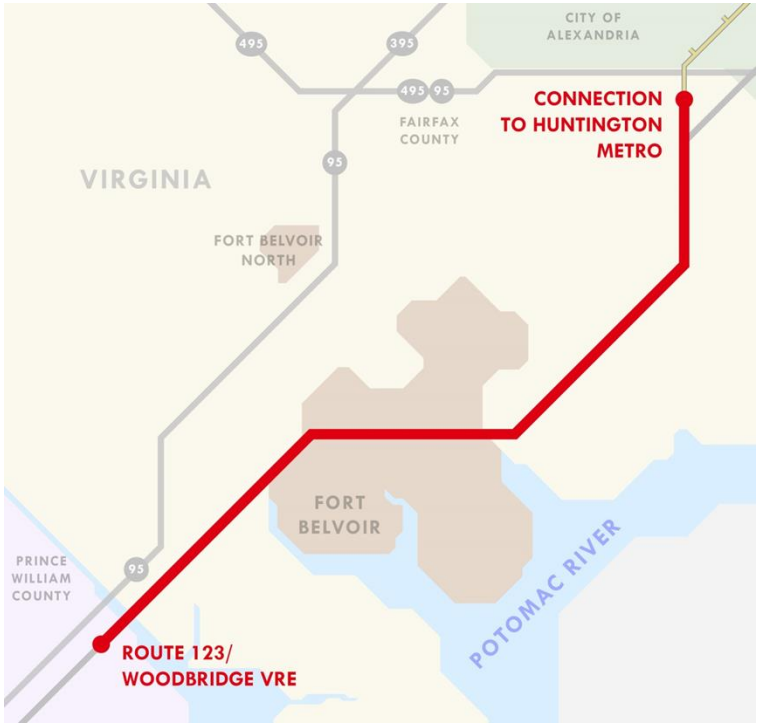


1. What is the purpose of the Route 1 Multimodal Alternatives Analysis?

Alternatives Analysis Study Outcomes

- Recommend a program of **multimodal transportation improvements** for adoption by Fairfax County and Prince William County

- Define **transit**, **roadway**, and **bicycle**/**pedestrian** projects that could be advanced for implementation.



Purpose and Need

Purpose:

Provide improved performance for **transit**, **bicycle** and **pedestrian**, and **vehicular conditions** and facilities along the Route 1 corridor that support **long-term growth** and **economic development**.

Needs:

- Attractive and competitive transit service
- Safe and accessible pedestrian and bicycle access
- Appropriate level of vehicle accommodation
- Support and accommodate more robust land development

Project goals

GOAL 1: Expand attractive multimodal travel options to improve local and regional mobility
GOAL 2: Improve safety; increase accessibility
GOAL 3: Increase economic viability and vitality of the corridor
GOAL 4: Support community health and minimize impacts on community resources

2. What have we learned from you to date?

Where We've Been

Public Meeting #1
(Fall 2013)

- Study introduction
- Existing Conditions
- Goals and Objectives

Public Meeting #2
(Spring 2014)

- Initial alternatives
- Evaluation measures
- Land use analysis

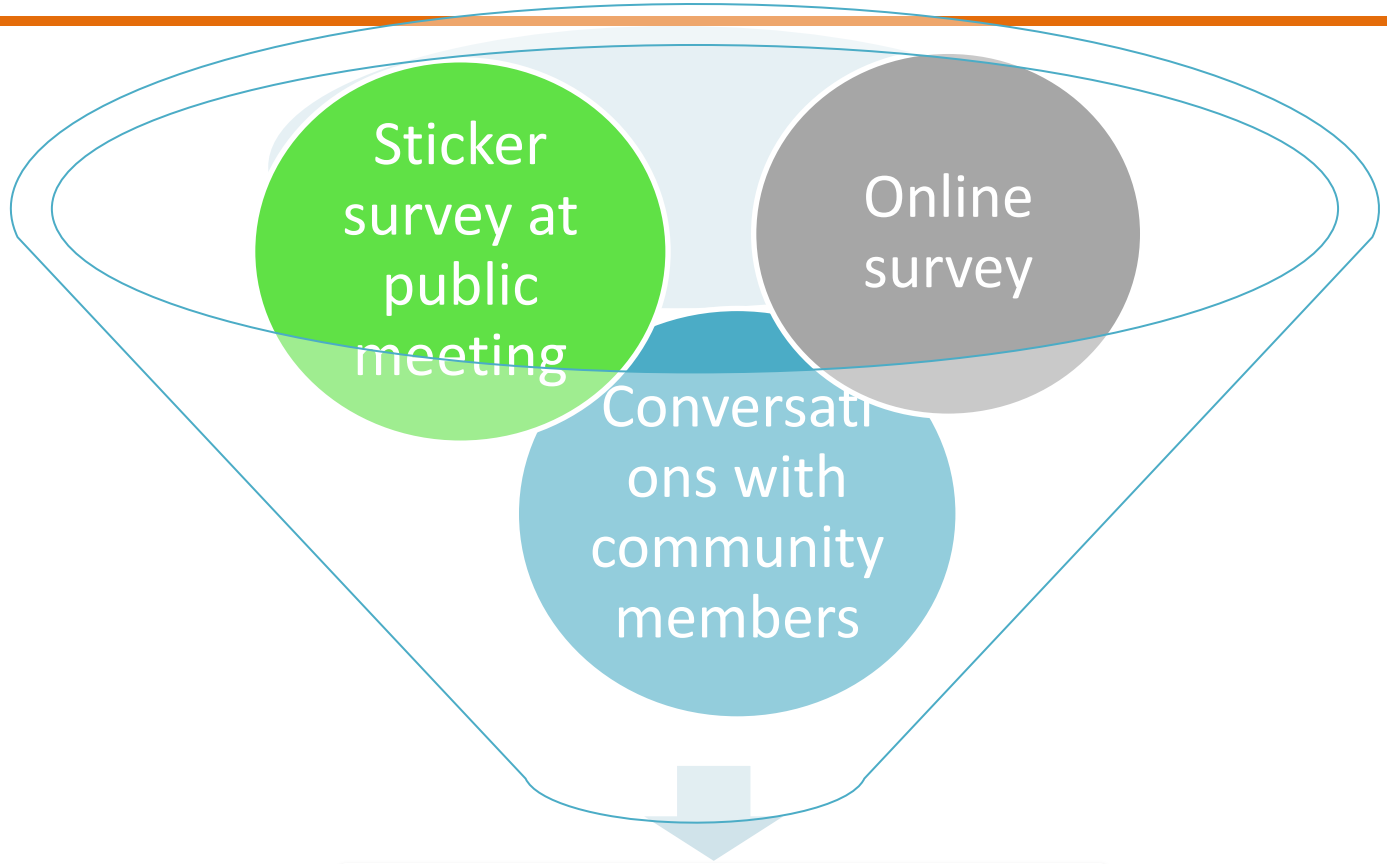
Public Meeting #3

- Evaluation of alternatives
- Study recommendations
- Phasing and implementation

Outreach Methods

- Committee Meetings
  (technical, elected, community)
- Public Meetings
- Social Media
- News Ads and Press Release
- Flyers and Fact Sheets
- Metro Station and Bus Ads
- Community Event Booths
- Bilingual
- On-Line and On-Corridor
- Targeted Efforts to Engage Diverse Populations

What We've Learned From You



- Purpose and Need
- Weighting of evaluation measures
- Recommendations and action plan

Goals for Today's Meeting

Key takeaways:

- Evaluation of alternatives process
- Study recommendations
- Potential phasing and implementation sequence for corridor improvements

We want to feedback from you on:

- Recommendations

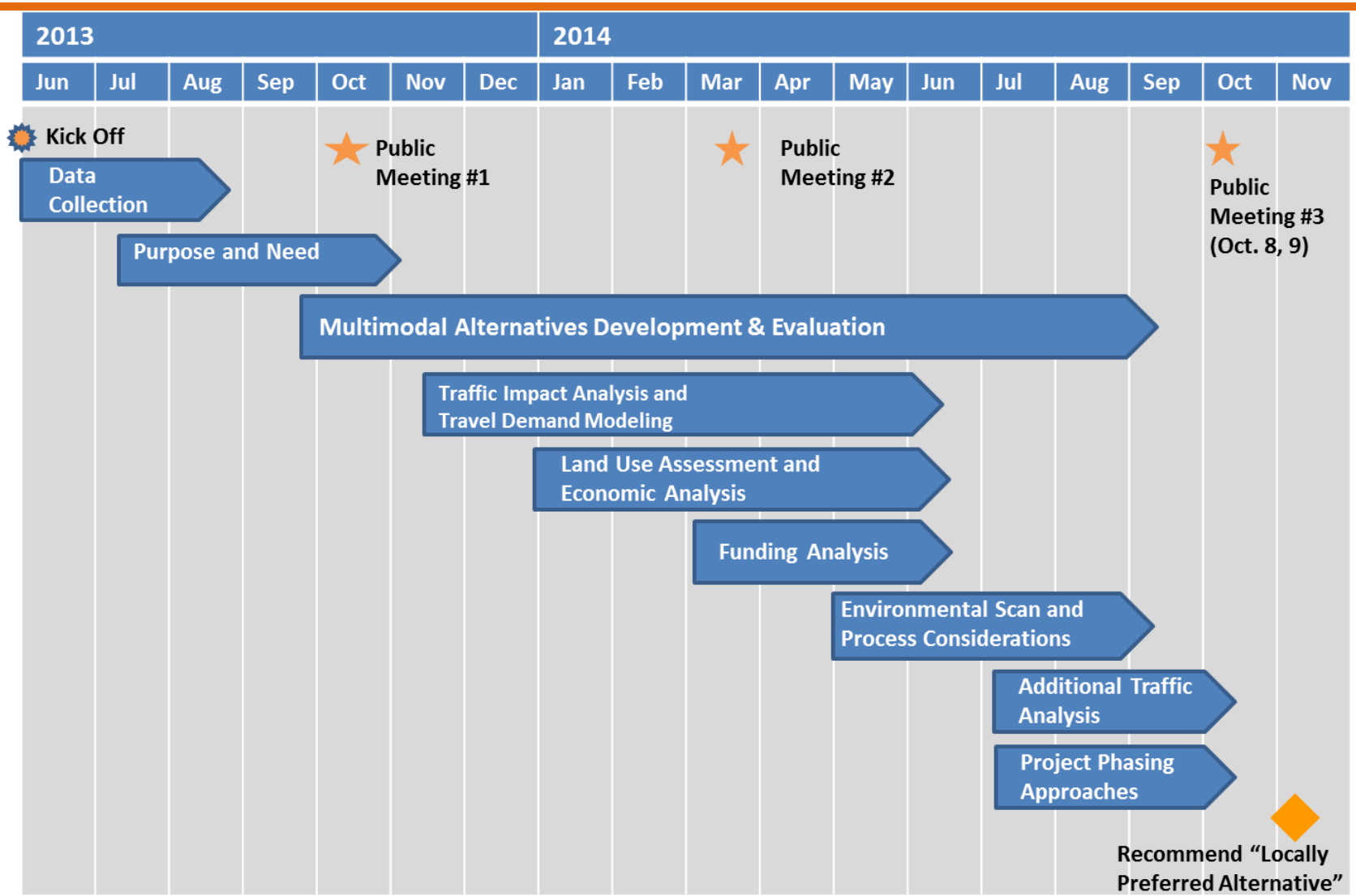
3. Review of study process and status

Alternatives Analysis Study Outcomes

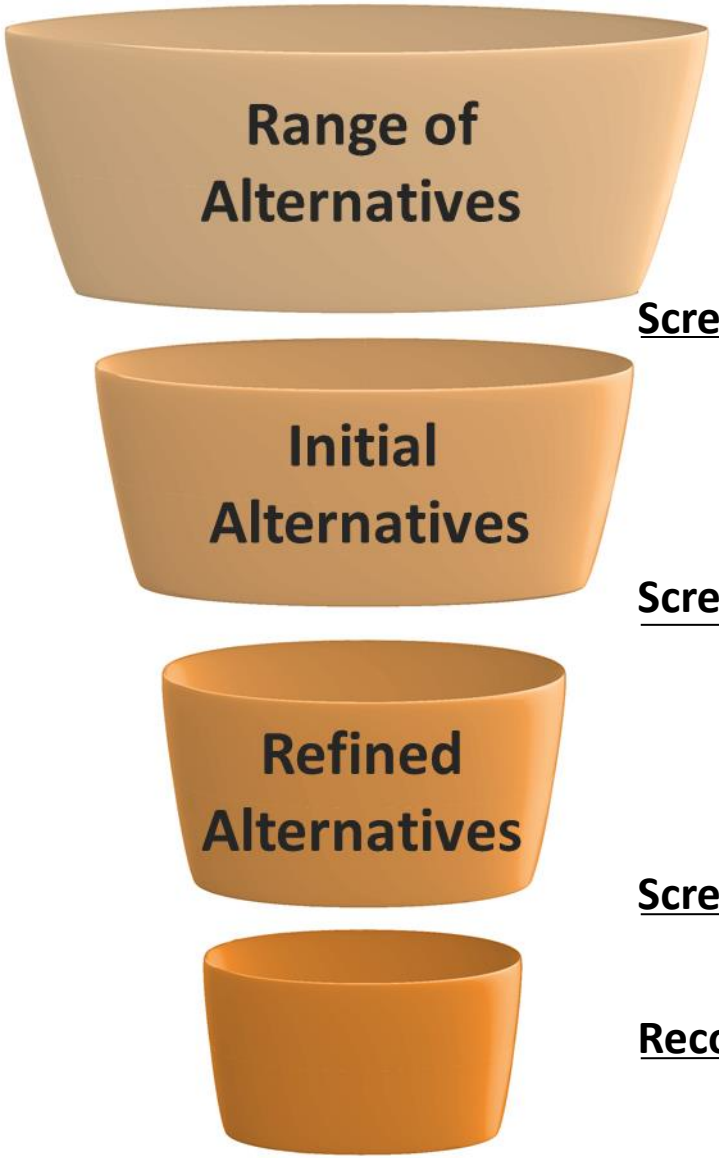
The recommended projects would:

- Respond to County and State transportation and land use plans and policies
- Support economic development goals
- Be financially feasible and potentially competitive for federal funding

Study Schedule: Major Activities



Evaluation Process



Public Meeting #1 (Fall 2013)

Screen 1: Initial Alternatives

Public Meeting #2 (Spring 2014)

Screen 2: Refined Alternatives

Screen 3: Detailed Evaluation

Public Meeting #3 (Fall 2014)

Recommendations

4. Evaluation of Alternatives:

Ability to address goals and objectives

Bicycle/Pedestrian and Roadway Recommendations

Recommendations:

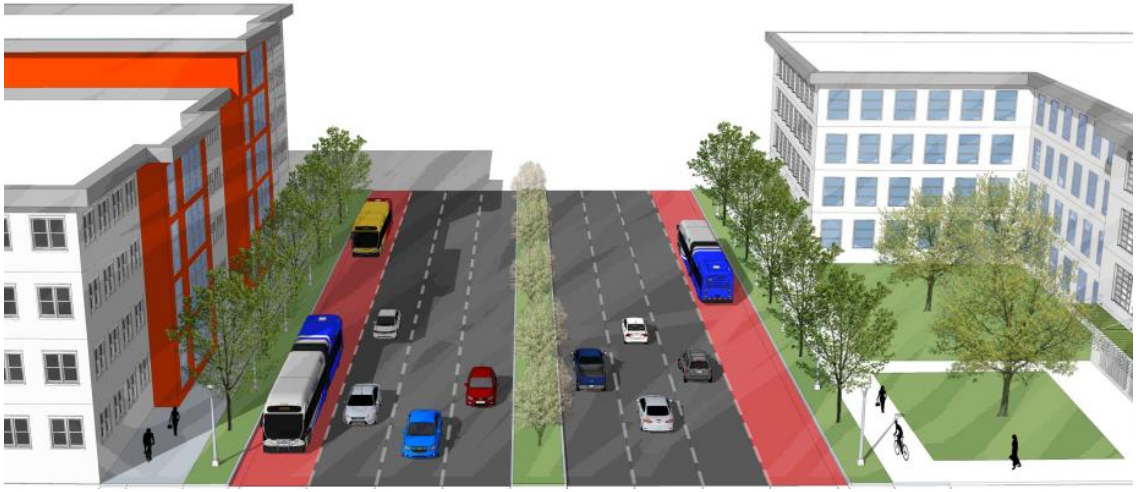
- Roadway: Consistent, 6 vehicular lanes along the corridor

- Bike/Ped: 10-foot multiuse path

  (Note: implementation of recommended section varies along the corridor)

Alternative 1:
Bus Rapid Transit 1 – Curb

BRT operates in dedicated curb lanes to Pohick Road North



BRT operates in mixed traffic from Pohick Road North to Woodbridge

Alternative 2:
Bus Rapid Transit 2 - Median

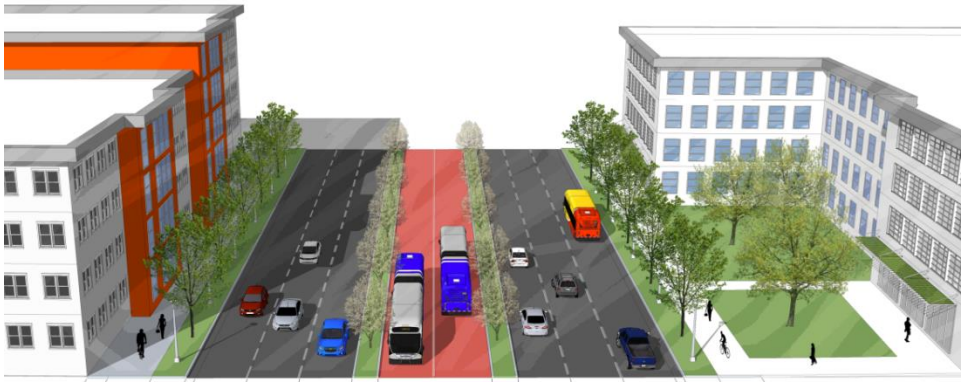
BRT operates in median in dedicated lanes in Fairfax County; transitions to mixed traffic through Prince William County

Alternative 3:
Light Rail Transit (Median)

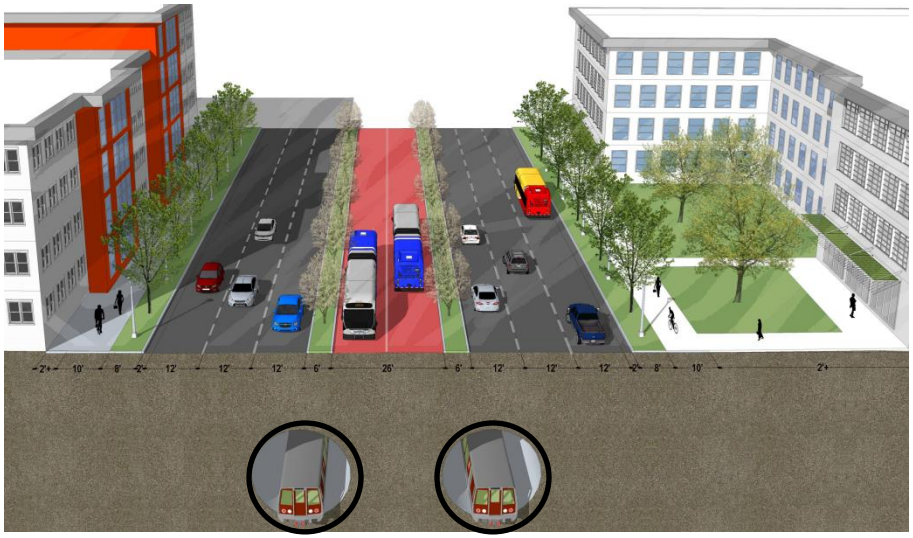
Light Rail operates in median in dedicated lanes for entire corridor

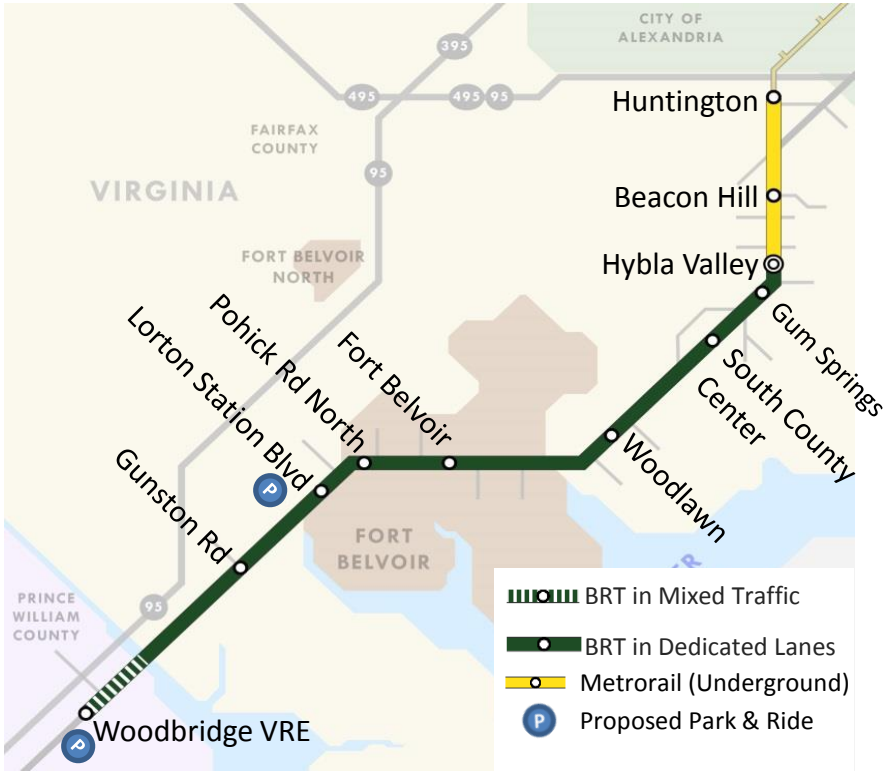
Alternative 4: Metrorail- BRT Hybrid

Median Running BRT in the near-term



Metrorail underground to Hybla Valley with supporting BRT in the long-term





Summary of Key Indicators

Based on Scenario 1 Land Use (COG 2035 Forecast)

	Alt 1: BRT- Curb	Alt 2: BRT- Median	Alt 3: LRT	Alt 4: Metro/BRT Hybrid
Average Weekday Ridership (2035)	15,200	16,600	18,400	26,500 (BRT 10,600; Metro 22,900)
Conceptual Capital Cost	$832 M	$1.01 B	$1.56 B	$2.46 B* (Metro $1.46B; BRT $1 B)
Annual O&M Cost (Each Alternative includes $5 M annual cost for Ft. Belvoir shuttle service)	$18 M (BRT $13M; Ft Belvoir Shuttle $5M)	$17 M (BRT $12M; Ft Belvoir Shuttle $5M)	$24 M (LRT $19M; Ft Belvoir Shuttle $5M)	$31 M** (Metro $17M; BRT $8M; Ft Belvoir Shuttle $5M)
Cost Effectiveness (Annualized capital + operating cost per rider)	$19	$20	$27	$28** (Metrorail: $28; BRT: $29)

* This figure represents full BRT construction between Huntington and Woodbridge, then Metrorail extension from Huntington to Hybla Valley

** These figures assume operation of Metrorail between Huntington and Hybla Valley, and BRT between Hybla Valley and Woodbridge

Evaluation of Alternatives: Key Findings

Goal	Example Measures
Goal 1: Local and Regional Mobility	• Ridership • Travel time savings
Goal 2: Safety and Accessibility	• Traffic • Pedestrian access
Goal 3A: Economic Development	• Economic development effects • Implementation
Goal 3B: Cost Effectiveness	• Capital costs • Operating costs
Goal 4: Community Health and Resources	• Environmental impacts • Vehicle Miles Traveled (VMT)

Evaluation of Alternatives: Findings

Evaluation Factors (Goals)	Alternative 1: BRT-Curb	Alternative 2: BRT-Median	Alternative 3: LRT	Alternative 4: Metrorail-BRT (Hybrid)
Goal 1: Local and Regional Mobility	0.7	0.8	0.8	**1.00**
Goal 2: Safety and Accessibility	0.7	**0.8**	**0.8**	**0.8**
Goal 3A: Economic Development	0.6	0.6	0.6	**0.7**
Goal 3B: Cost Effectiveness	**1.0**	0.9	0.7	0.5
Goal 4: Community and Health Resources	0.7	0.7	0.7	**0.8**
Ability to Meet Project Goals Average	**0.7**	**0.8**	**0.7**	**0.8**

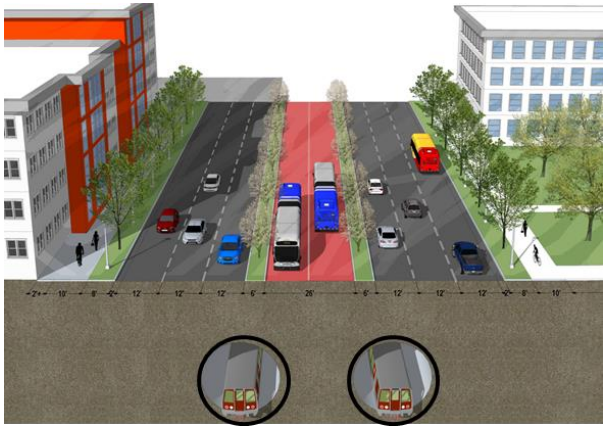
Check out **Board 4** for full evaluation results!

Draft Recommendation

Evaluation results suggest:

- Median running **Bus Rapid Transit (BRT)** in the **near-term** would provide a cost effective transportation solution to support economic development plans.

- **Metrorail extension** to Hybla Valley in the **long-term** has potential to provide a higher level of local and regional mobility and support long-term corridor development, contingent upon increased future land use density.



Hybla Valley with BRT

Hybla Valley with BRT and Metrorail

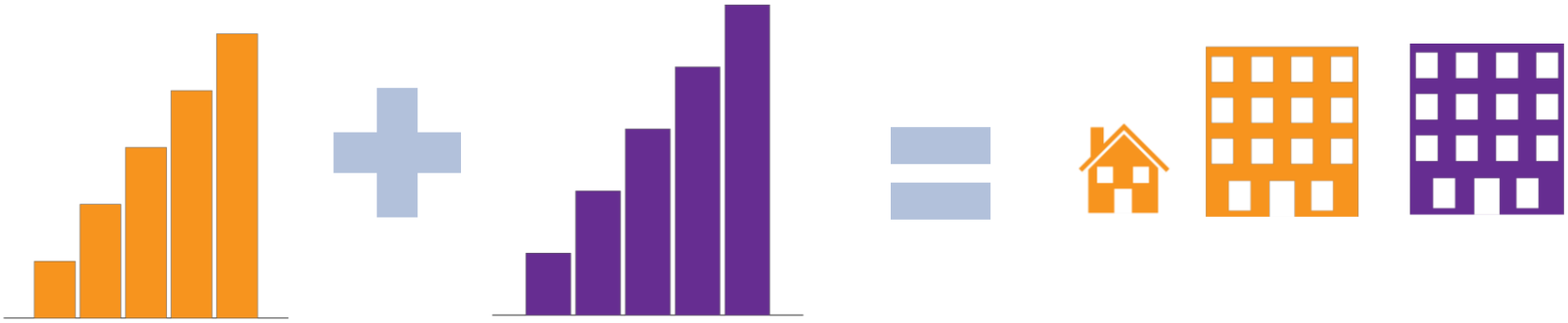
5. Key Considerations for Implementation

Population and employment growth

Traffic capacity

Phasing and funding of multimodal improvements

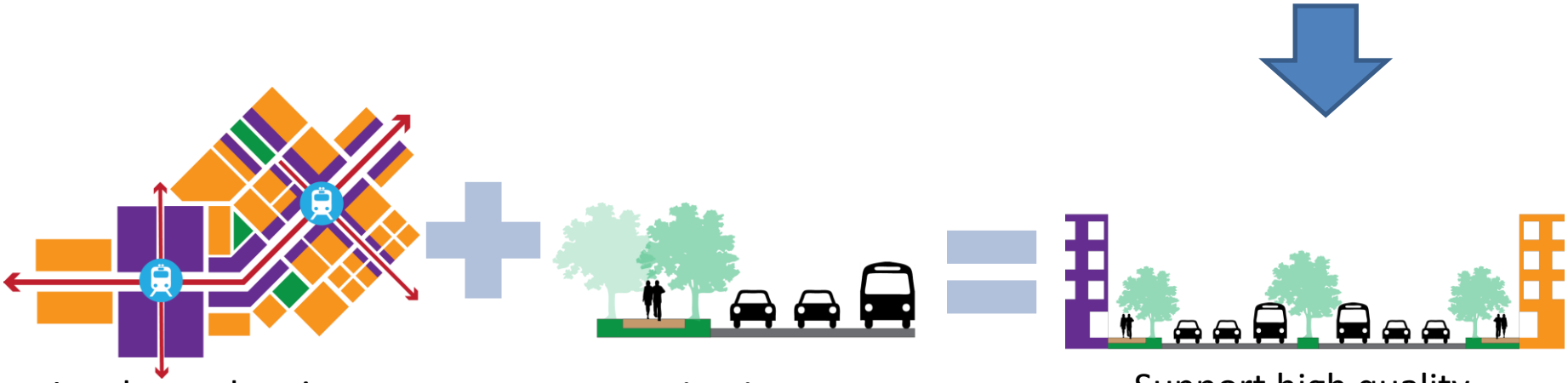
Transportation investment supports economic viability and vitality of the corridor



Population growth

Employment growth

Demand for new residential units and commercial space



Land use planning

Transportation investment

Support high quality community development

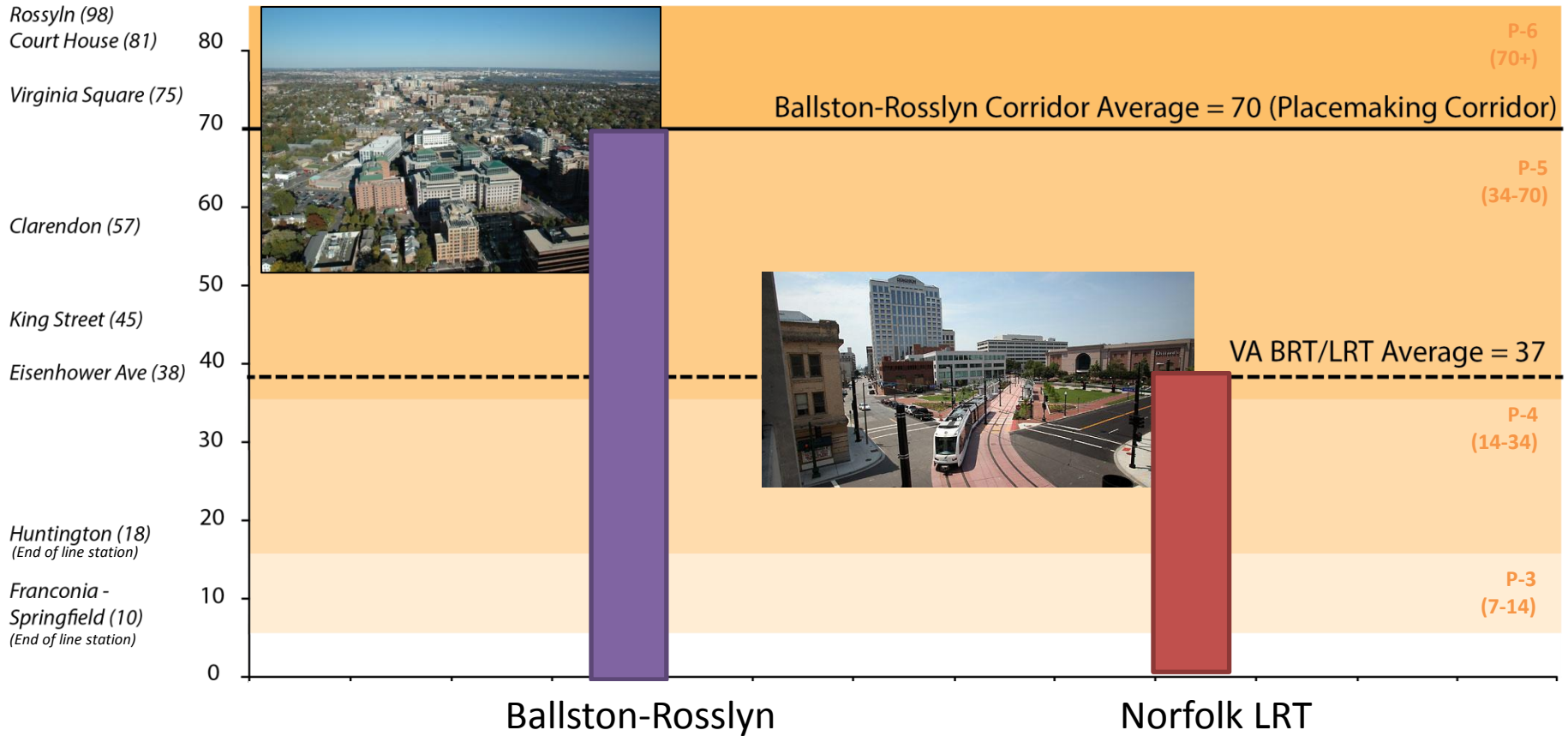
Example: Arlington County

Example: Alexandria, VA

Woodlawn: Transit Oriented Development Concept

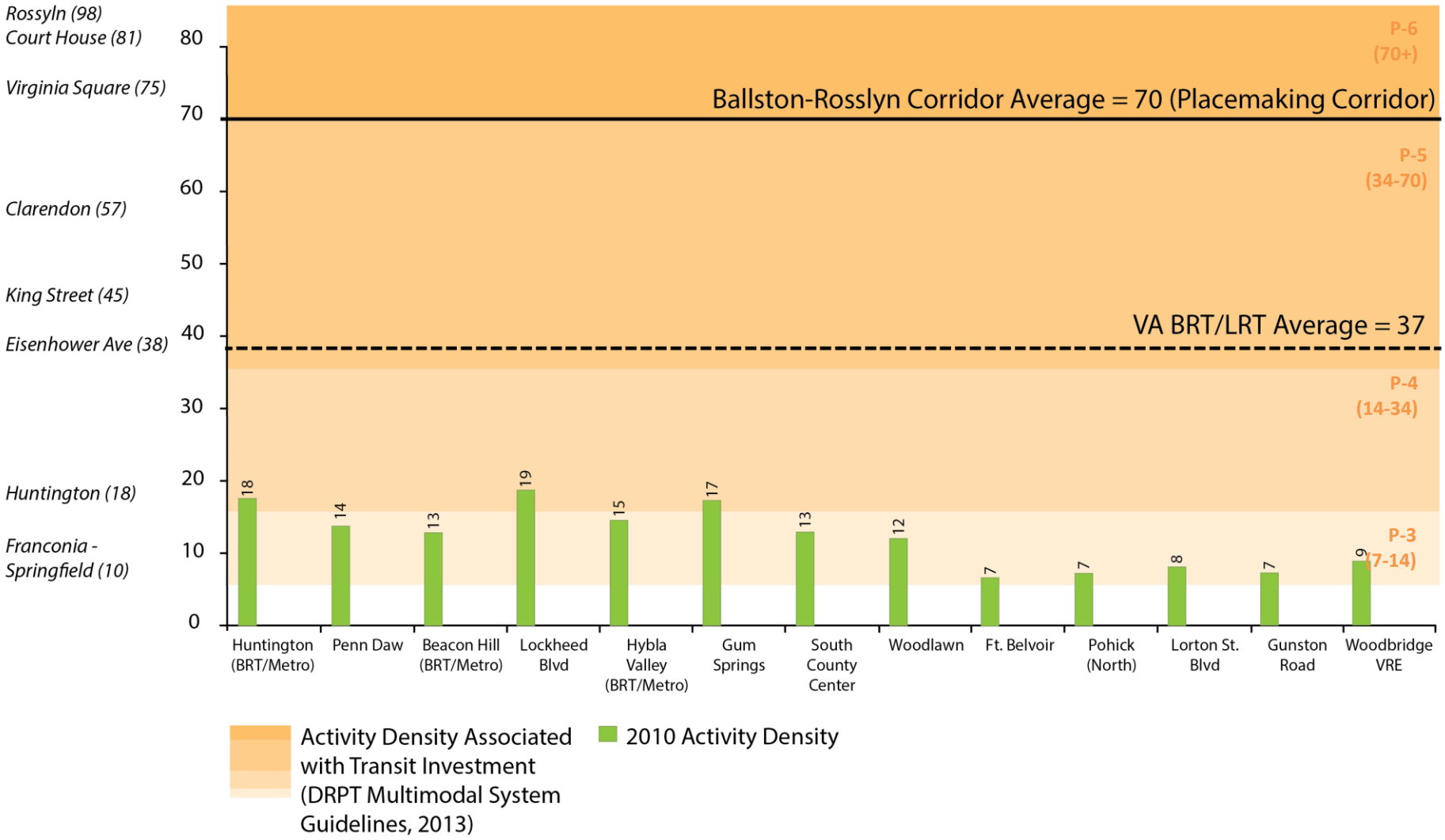
Artist's Rendering

Station Activity Density
(Population + Employment per Acre)

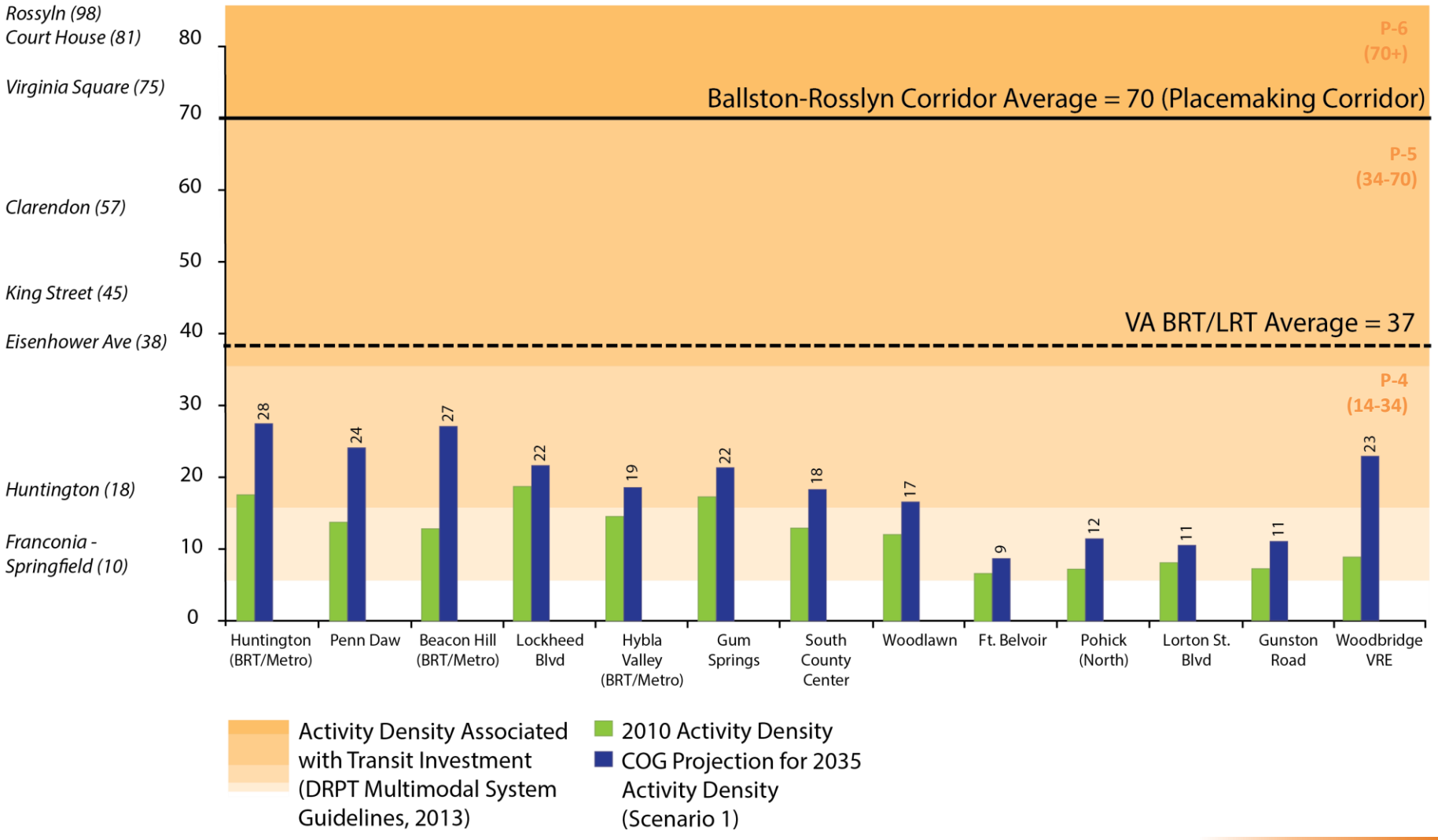


Activity Density Associated with Transit Investment (DRPT Multimodal System Guidelines, 2013)

Station Activity Density Levels



Station Activity Density Levels



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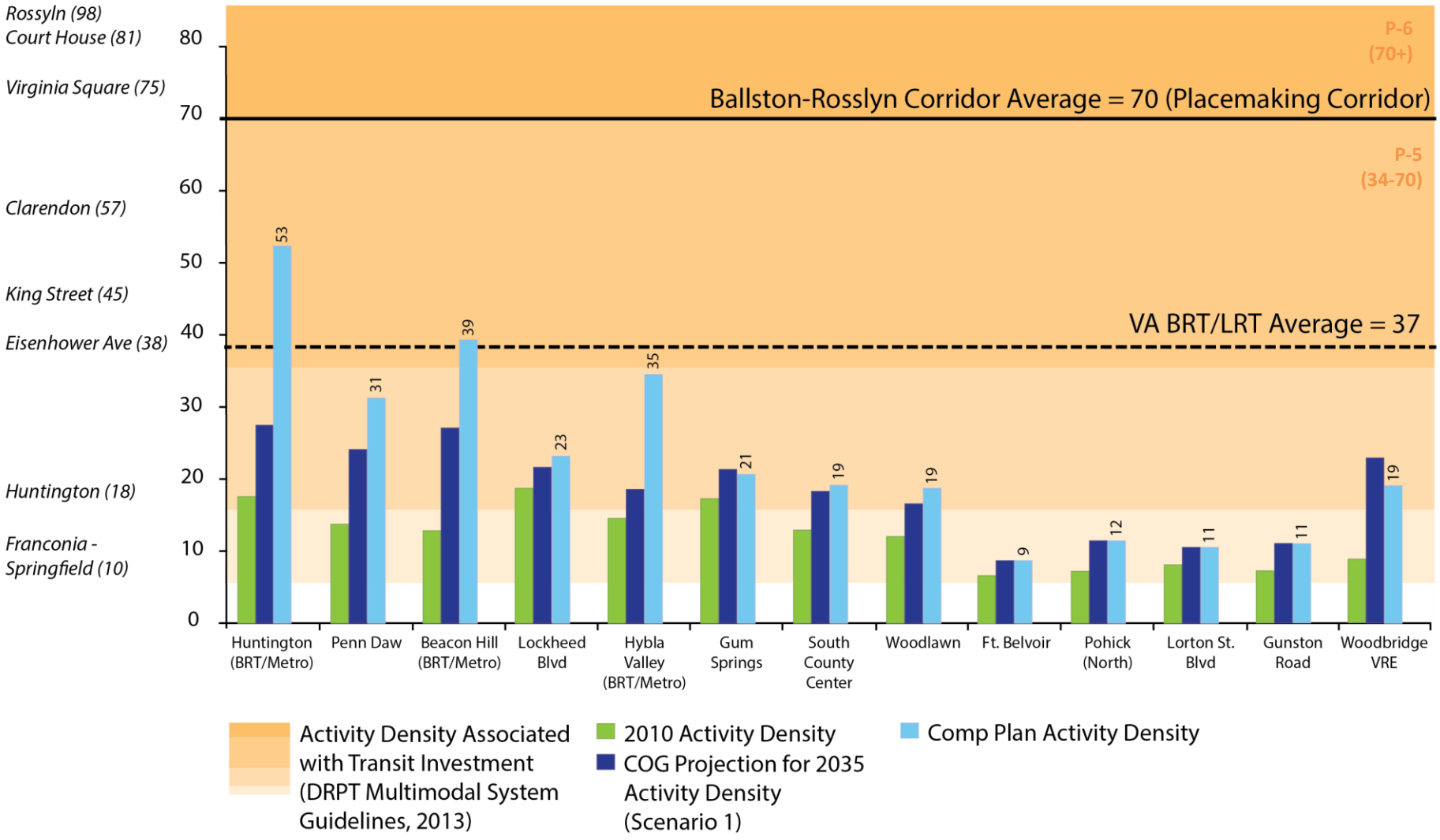
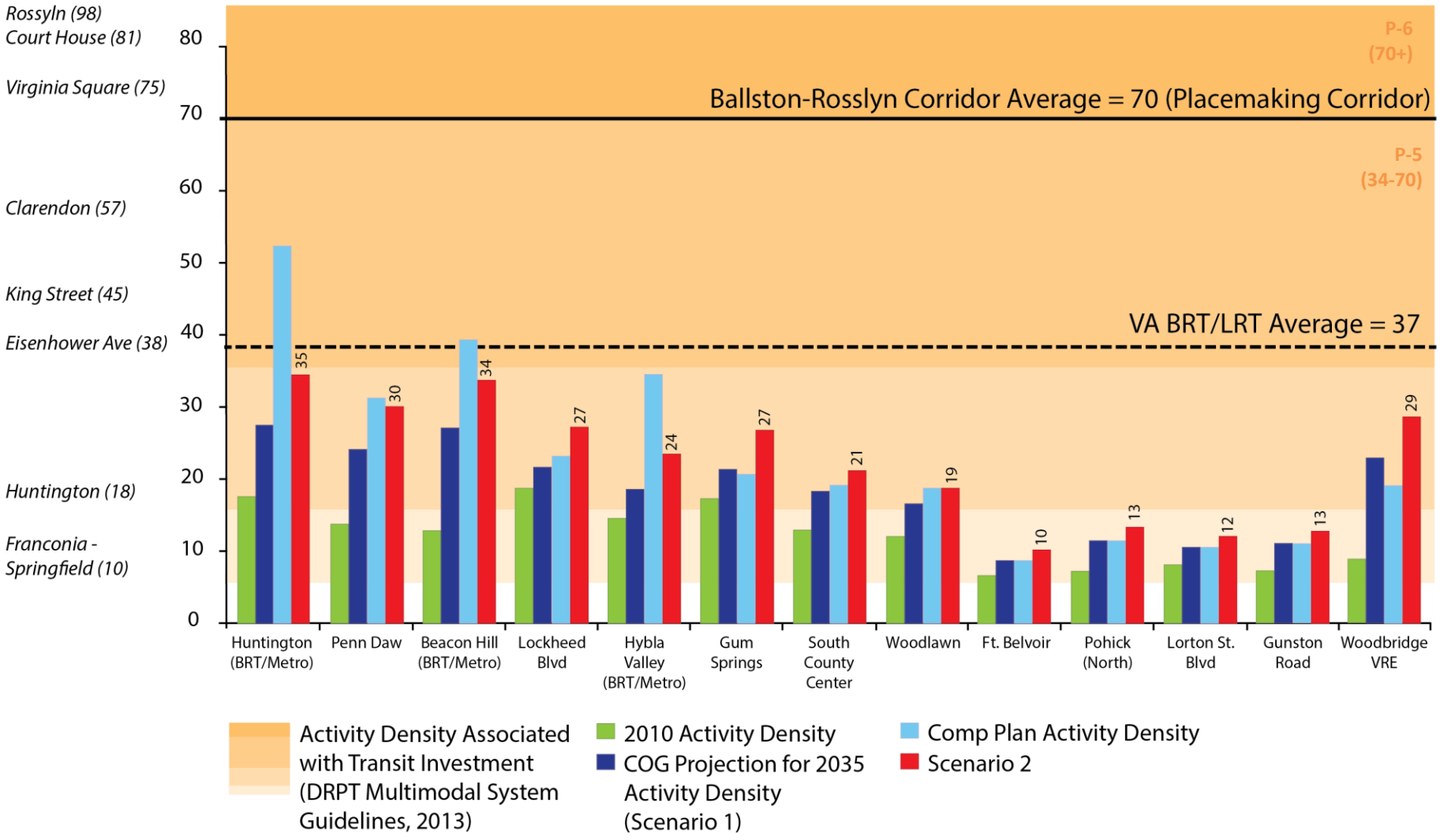
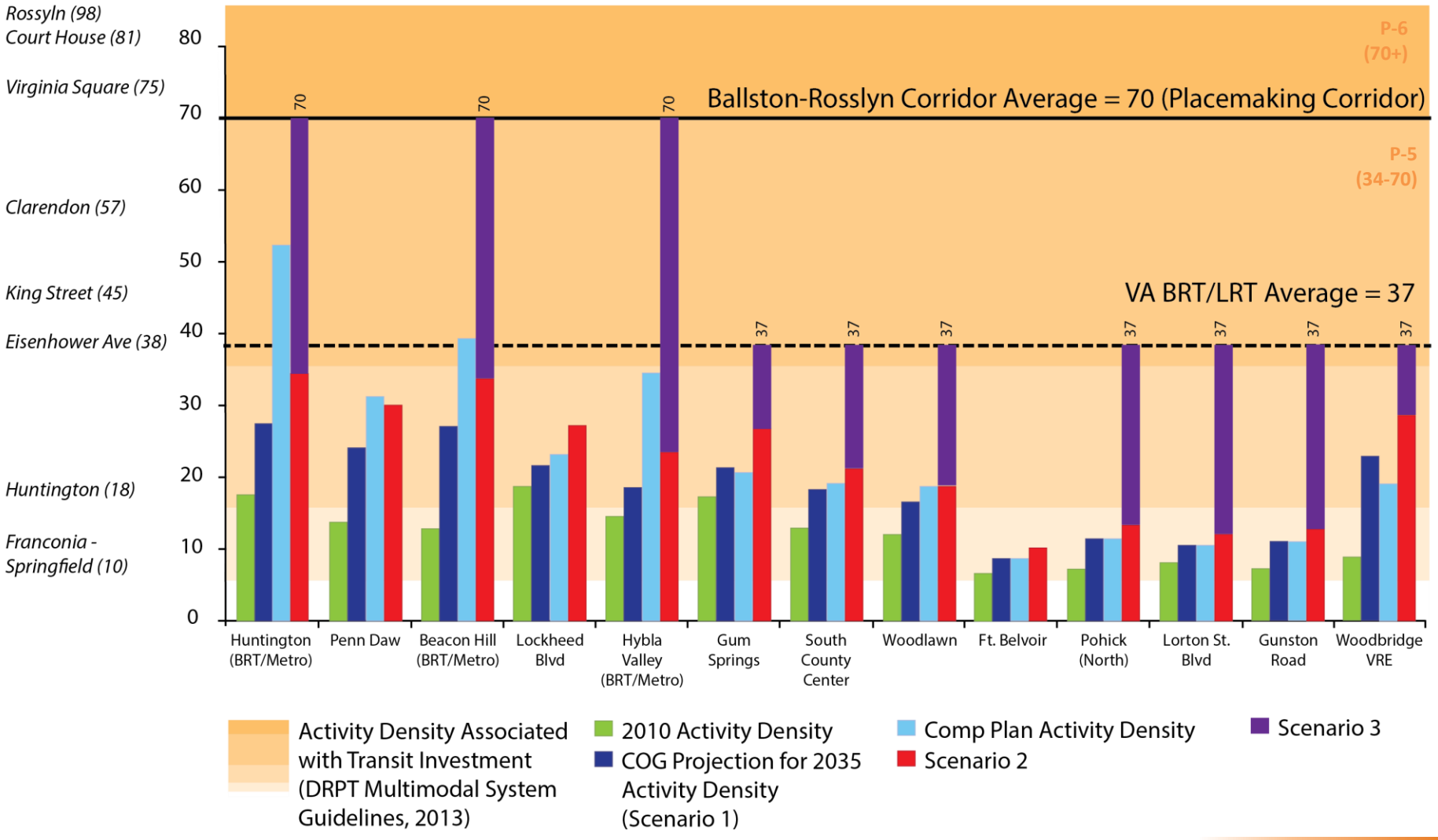


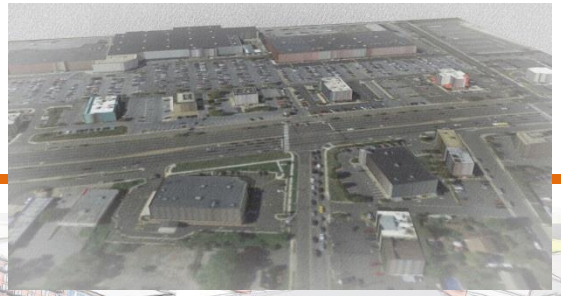
Station Activity Density Levels



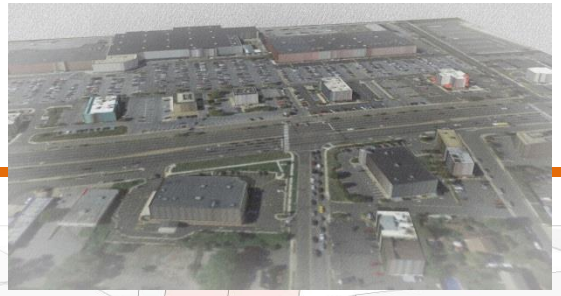
Station Activity Density Levels



Beacon Hill Scenario 2



Beacon Hill Scenario 3



Woodbridge Scenario 2

Traffic Capacity

Growth Scenarios and Roadway Requirements

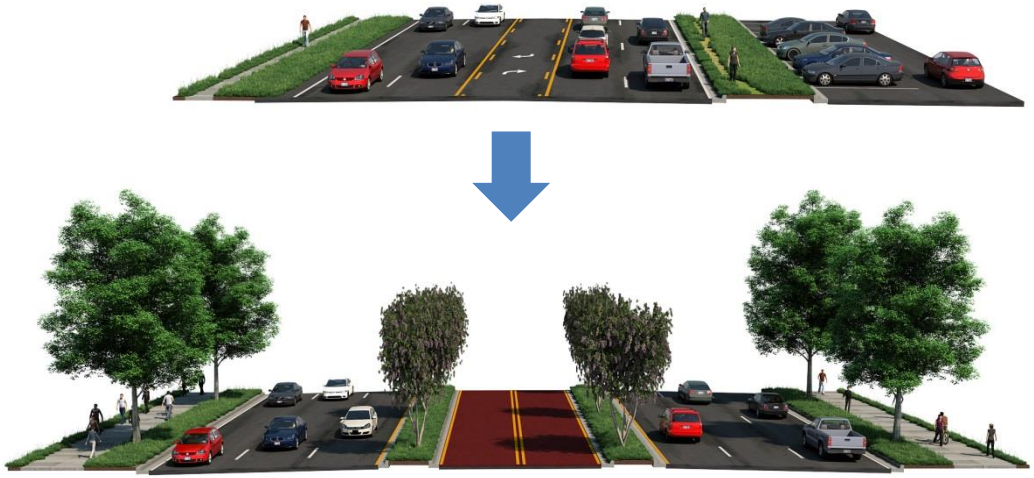
Traffic Analysis Approach

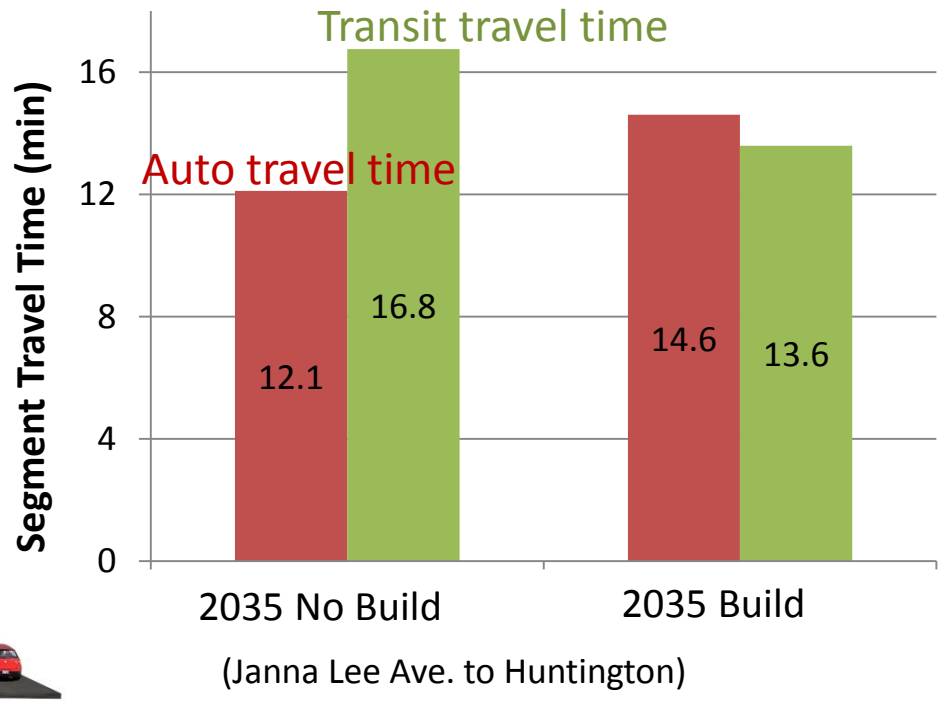
- Purpose:
  - Assess potential “worst case” traffic impacts and define need for roadway and intersection capacity
- Measures:
  - Intersection Level of Service (LOS)
  - Theoretical additional roadway capacity needed
  - Theoretical local street capacity + increased transit share + walk and bike trips

Traffic Analysis Findings: **Scenario 1**

Addition of median transit lanes:

- Improves transit travel time
- Increases automobile travel time
- Does not degrade intersection performance
- Left turns impacted



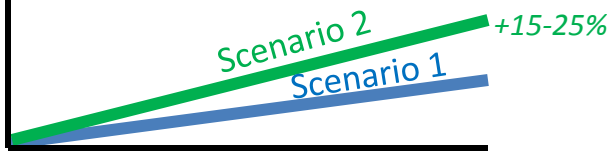


Traffic Analysis Findings: **Scenarios 2 and 3**

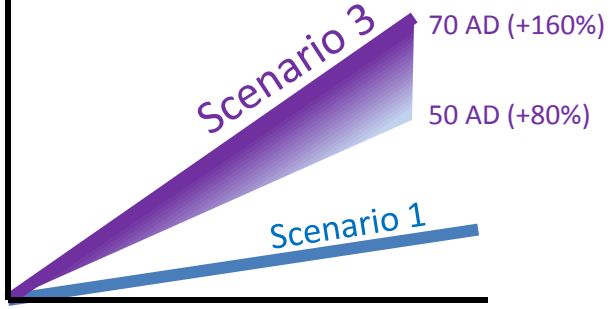
Street Infrastructure Required to Accommodate Growth

For highest density proposed station areas: Beacon Hill and Hybla Valley		
Scenario 2		
Share of trips: transit, walk, bike, internal, and peak spreading	***20%***	***25%***
Widen Route 1	**From 6 lanes to 8 lanes**	**From 6 lanes To 8 lanes**
OR		
Add parallel local streets	**One new 2-lane street**	**One new 2-lane street**
Scenario 3		
Share of trips: transit, walk, bike, internal, and peak spreading	***25%***	***40% to 50%***
Widen Route 1	**From 6 lanes to 12 lanes**	**From 6 lanes to 10 lanes**
OR		
Add parallel local streets	**Six new 2-lane streets**	**Three new 2-lane streets**

Population and employment Growth +15-25% over Scenario 1

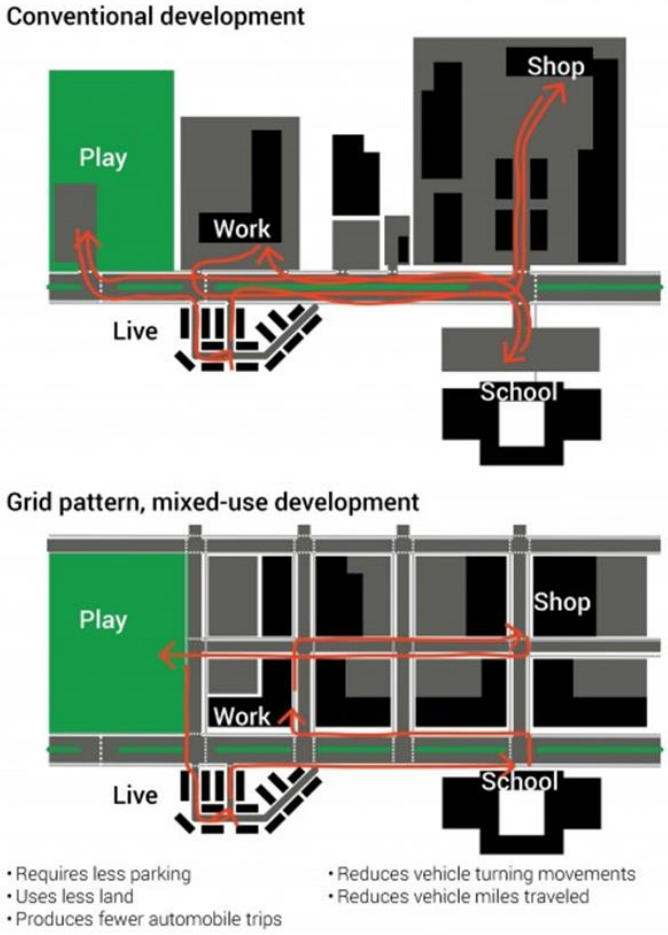


Population and employment growth up to 160% over Scenario 1



Traffic Analysis Conclusions

- Major growth is anticipated in the Route 1 corridor in all scenarios, including COG 2035 forecast
- To accommodate growth, recommended Route 1 transportation investment must be complemented by other major features (roads, schools, public safety, parks):
  - Network of local streets
  - Mixed use development
  - Walkable, pedestrian friendly environment
- Metrorail supportive growth levels require significantly more infrastructure investment than BRT levels



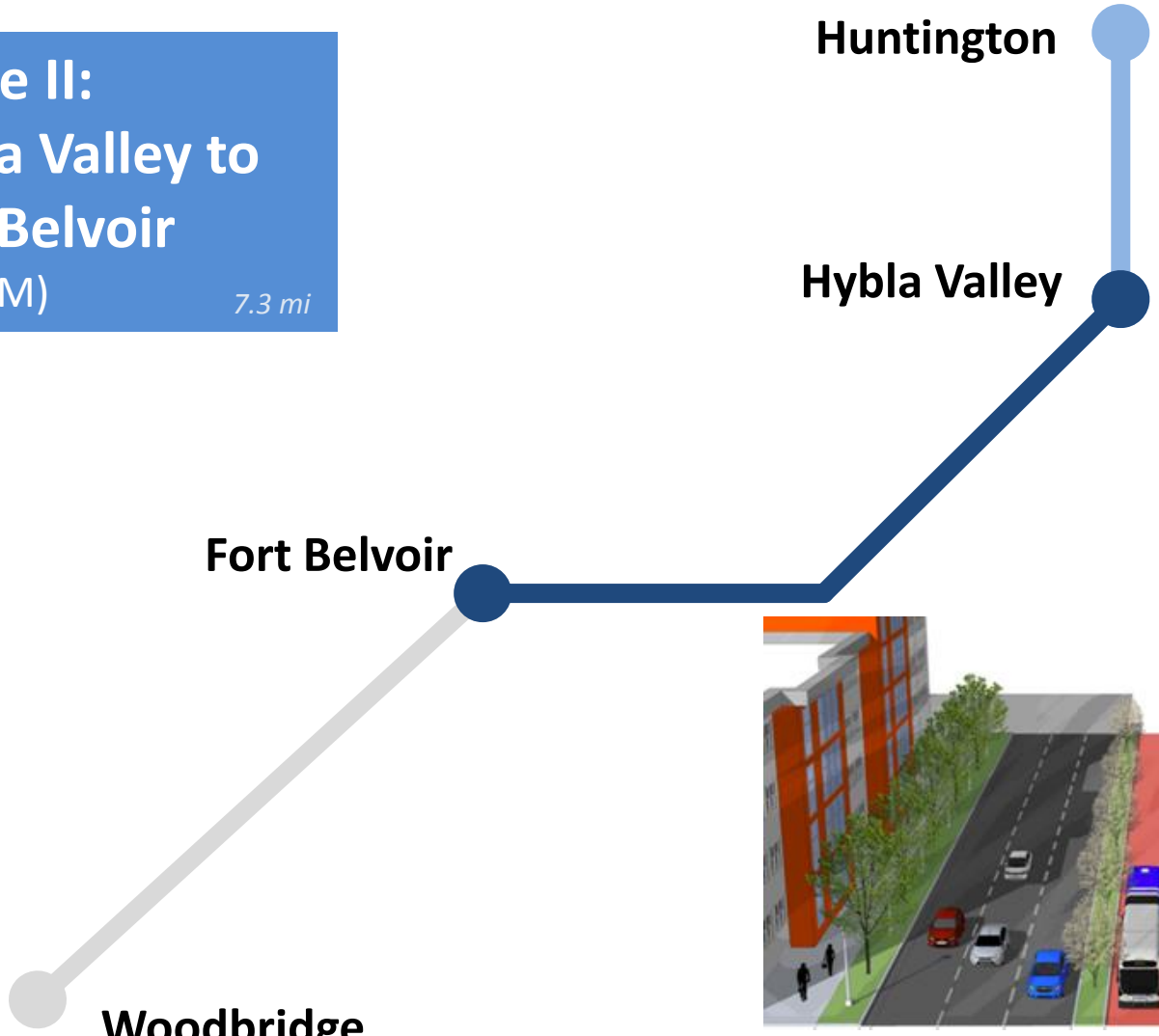
Project Phasing and Funding

Phasing and Implementation Approach

Phase I: Huntington to Hybla Valley
($306 M) *3.1 mi*

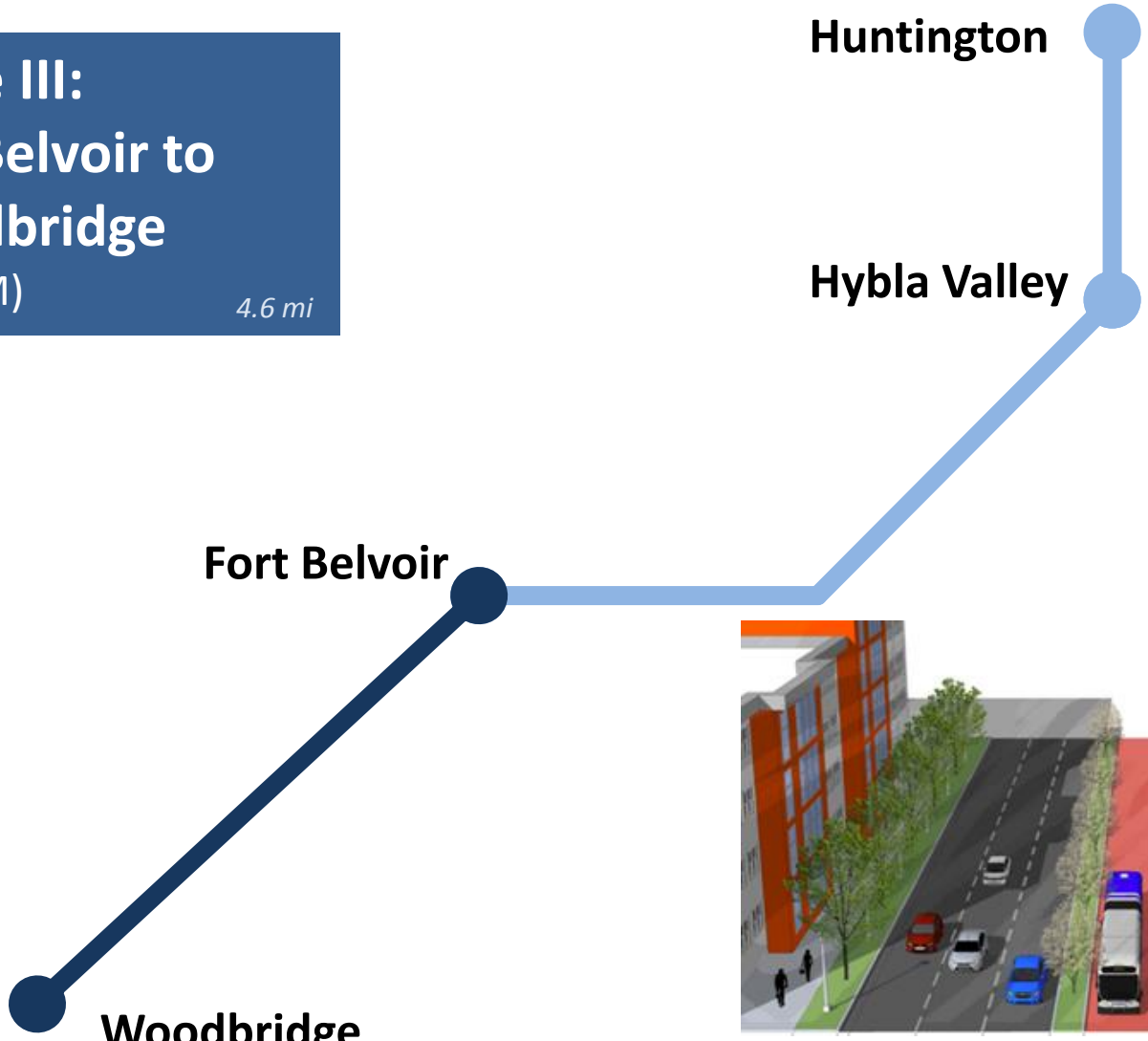
Phasing and Implementation Approach

Phase II:
Hybla Valley to Fort Belvoir
($224 M) *7.3 mi*



Phasing and Implementation Approach

Phase III:
Fort Belvoir to Woodbridge
($472 M)
4.6 mi



Phasing and Implementation Approach

Phase IV: Metrorail Yellow Line Extension to Hybla Valley*
($1.46 B) *3.1 mi*

**Huntington*

**Hybla Valley*

**Fort Belvoir*

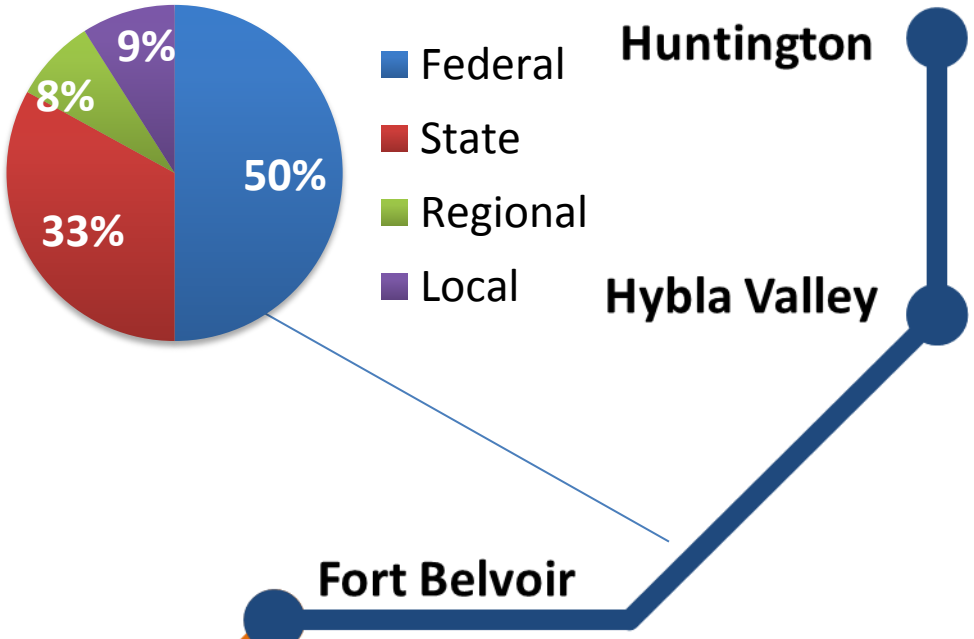
**Woodbridge*

**Contingent upon future land use*

Transit Funding by Geographic Segment

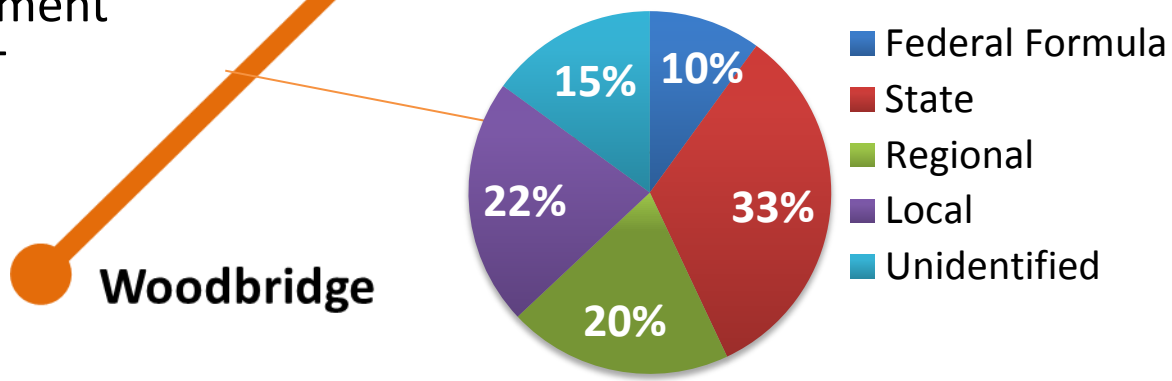
Phase I+II : Huntington to Fort Belvoir

- **Potentially competitive for federal New Starts/Small Starts funding**
- Highest population and employment
- Highest ridership potential



Phase III: Fort Belvoir to Woodbridge

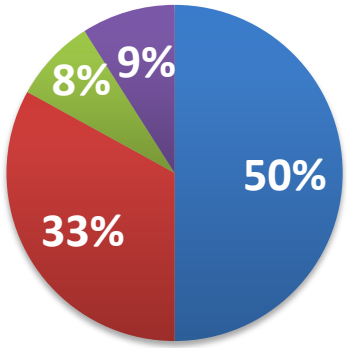
- Less competitive for federal funding
- Lower population and employment
- Consistent with planned VDOT widening



Transit Funding by Geographic Segment

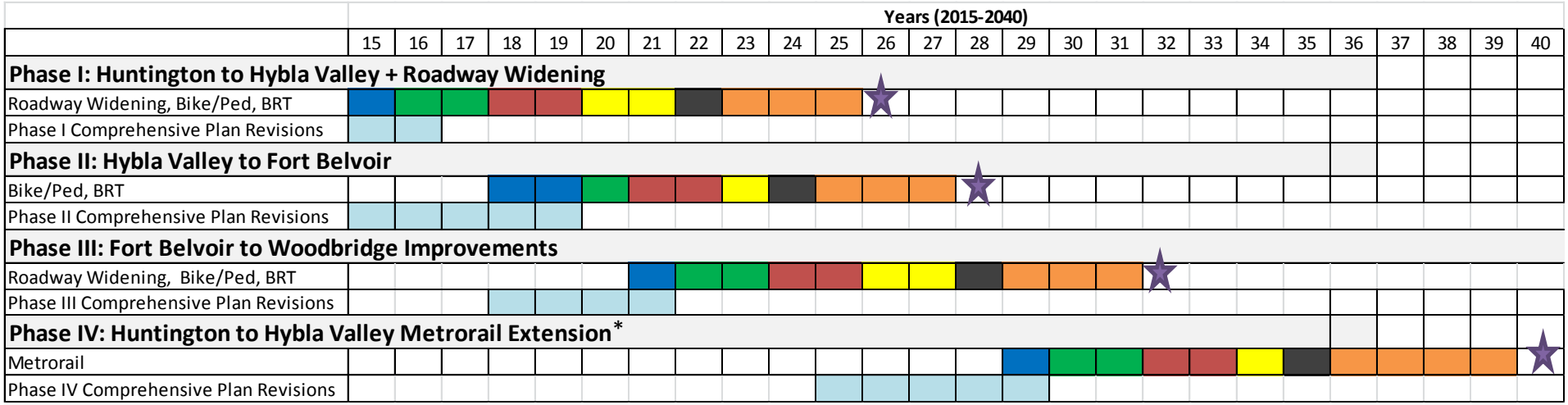
Phase IV: Huntington to Hybla Valley

- **Potentially competitive for federal New Starts funding in 2040**



Potential Implementation Timelines

Approach: BRT and Long-Term Metrorail Implementation (2040)



Note: Timelines assume a funding stream to support projects implementation.
*Contingent upon increased future land use density.

Legend: General Project Development Sequence

Comprehensive Plan	Planning	Scoping/ NEPA PE	Final Design	Right of Way	Utilities Relocation	Construction	Operation

Potential Implementation Timelines

	Years (2015-2040)																								
	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Phase I: Huntington to Hybla Valley + Roadway Widening																										
Roadway Widening, Bike/Ped, BRT												★														
Phase I Comprehensive Plan Revisions																										
Phase II: Hybla Valley to Fort Belvoir																										
Bike/Ped, BRT														★												
Phase II Comprehensive Plan Revisions																										
Phase III: Fort Belvoir to Woodbridge Improvements																										
Roadway Widening, Bike/Ped, BRT																		★								
Phase III Comprehensive Plan Revisions																										
Phase IV: Huntington to Hybla Valley Metrorail Extension*																										
Metrorail																										★
Phase IV Comprehensive Plan Revisions																										

Note: Timelines assume a funding stream to support projects implementation.

*Contingent upon increased future land use density.

Legend: General Project Development Sequence

Comprehensive Plan	Planning	Scoping/ NEPA PE	Final Design	Right of Way	Utilities Relocation	Construction	Operation ★

Typical New Starts Funding Steps/Sequence:

FTA SMALL STARTS PROJECT DEVELOPMENT PROCESS

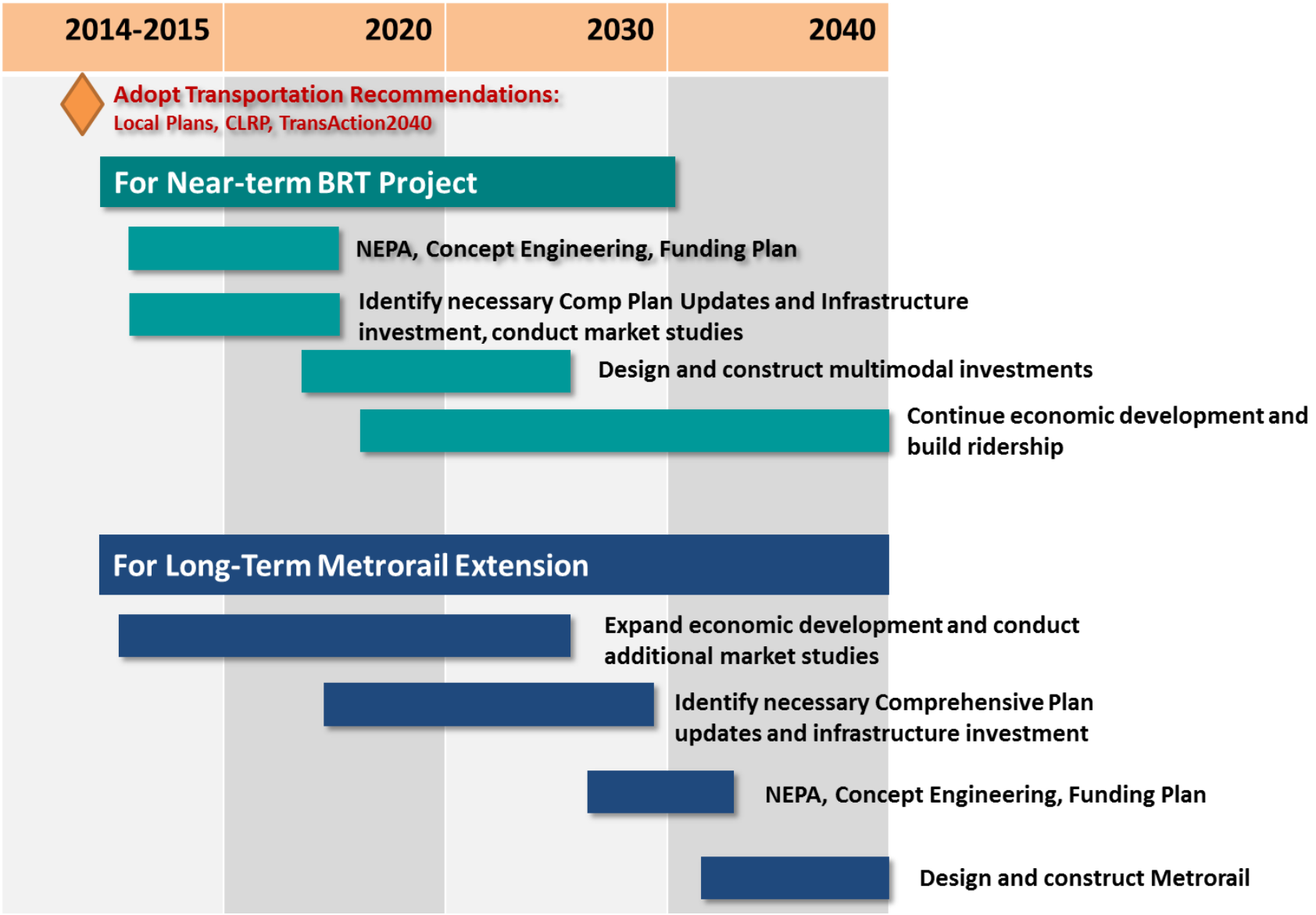
Under MAP-21: Project Development → Expedited Grant Agreement

FTA NEW STARTS PROJECT DEVELOPMENT PROCESS

Under MAP-21: Project Development → Engineering → Full Funding Grant Agreement

6. Next Steps

Action Plan for Implementation



Next Steps: Adopt Study Findings and Continue Toward Implementation

Coordination with public stakeholders and state and federal agencies

Process Overview

Study team completes Alternatives Analysis

Local and state officials adopt findings and recommendations

Conduct Market Studies, Identify Comprehensive Plan Updates

Project team completes environmental documentation and concept engineering

Project team refines cost estimates and funding plans

Questions?