

An Approach to Using A Regional Travel Demand Model for Park and Ride Forecasting

presented to

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presented by

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and

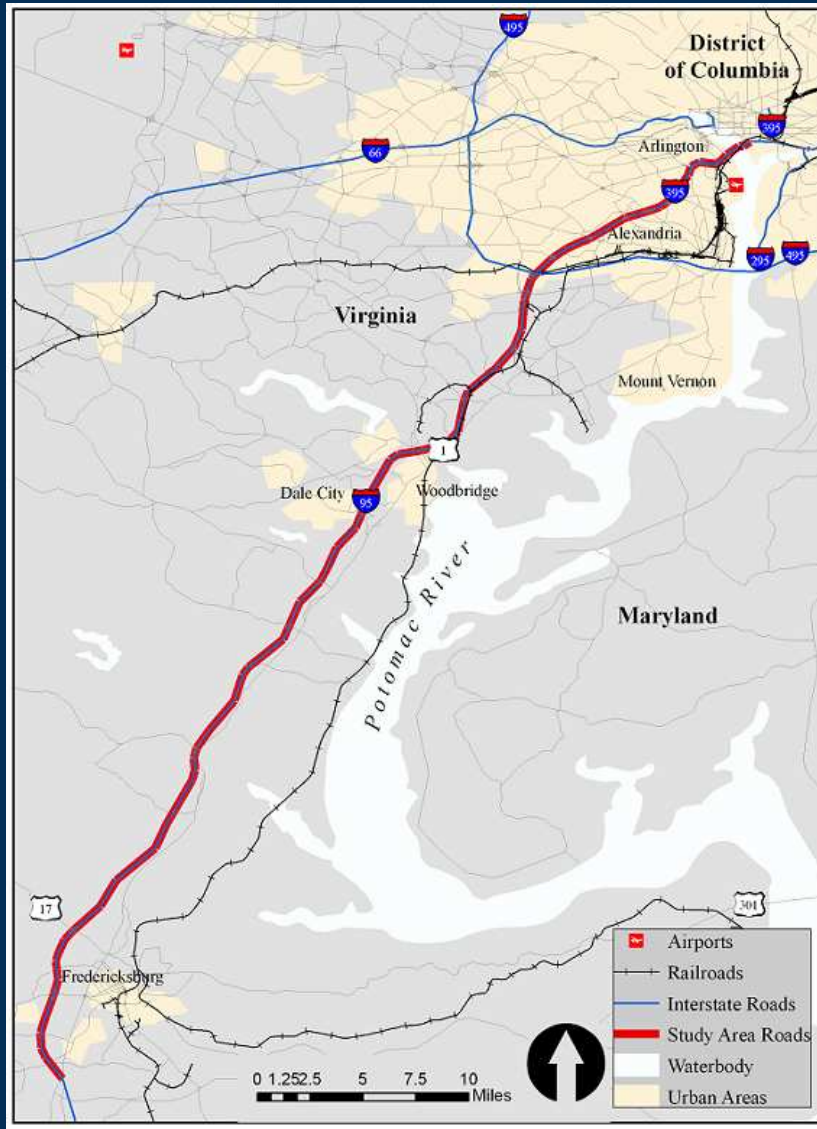
William G. Allen, P.E.

April 30, 2009

Transportation leadership you can trust.

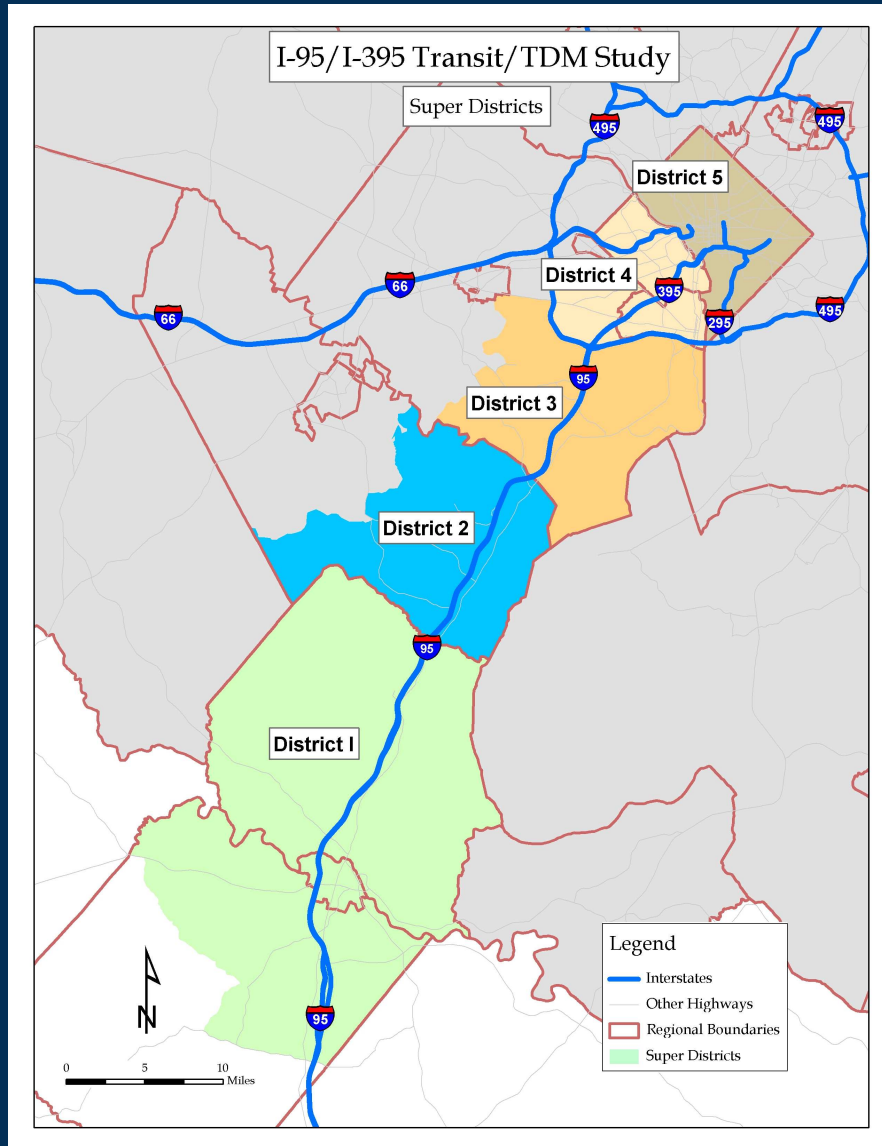
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Study Corridor



- Approximately 60 mile Corridor
- Pentagon North End
- Fredericksburg South End
- Currently HOV Facility
 - Dale City to Pentagon
 - Peak Direction
 - Barrier Separated
- Future HOT Facility
 - Extend to Fredericksburg
 - Additional Lane

Study Corridor Travel Characteristics

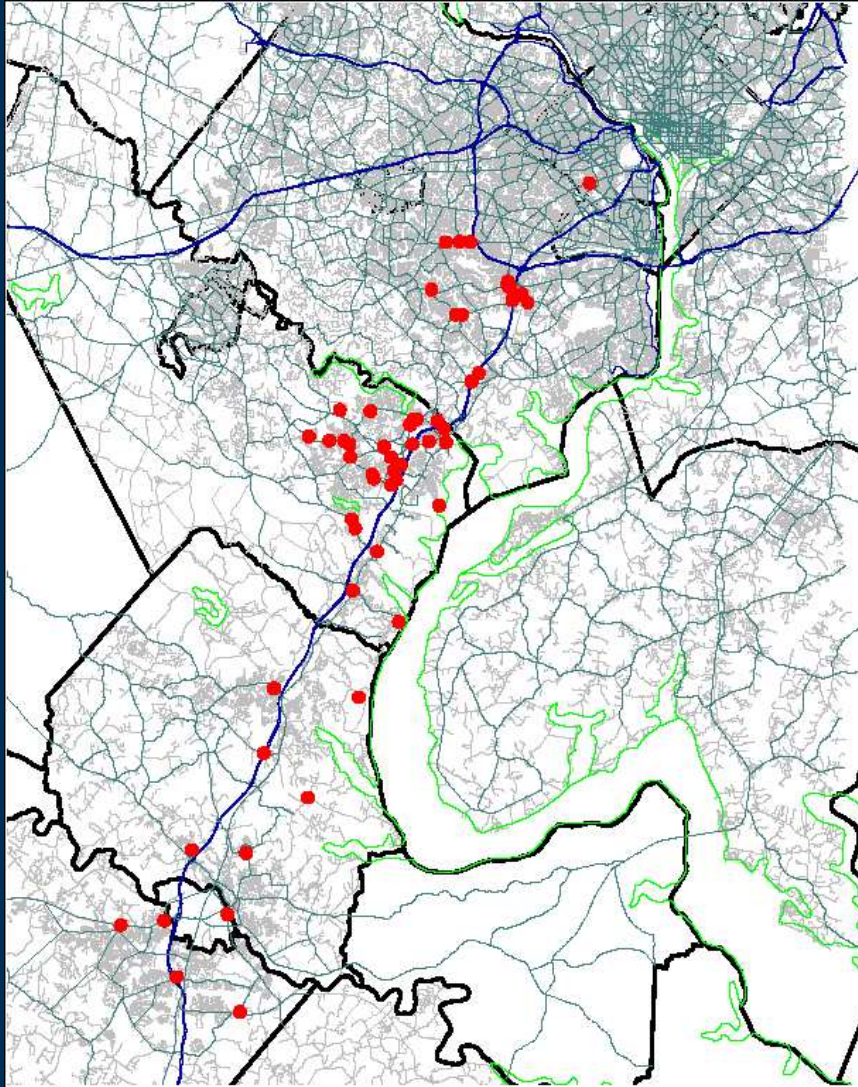


- 970,000 HBW Trips Daily In the Corridor (Super Districts 1 to 4)
- Approximately 25% of the Regional HBW Trips
- In Corridor 33% HBW – Transit & HOV
- 40% of Total HBW Bound for the Core (District 4 & 5)
- Core Destination 60% HBW – Transit & HOV

Corridor Modes

- **Bus**
- **Commuter Rail**
- **Heavy Rail**
- **Van Pools**
- **Single and Low Occupancy**
- **High Occupancy 3+**
 - **Traditional Carpool**
 - **Informal Carpool**

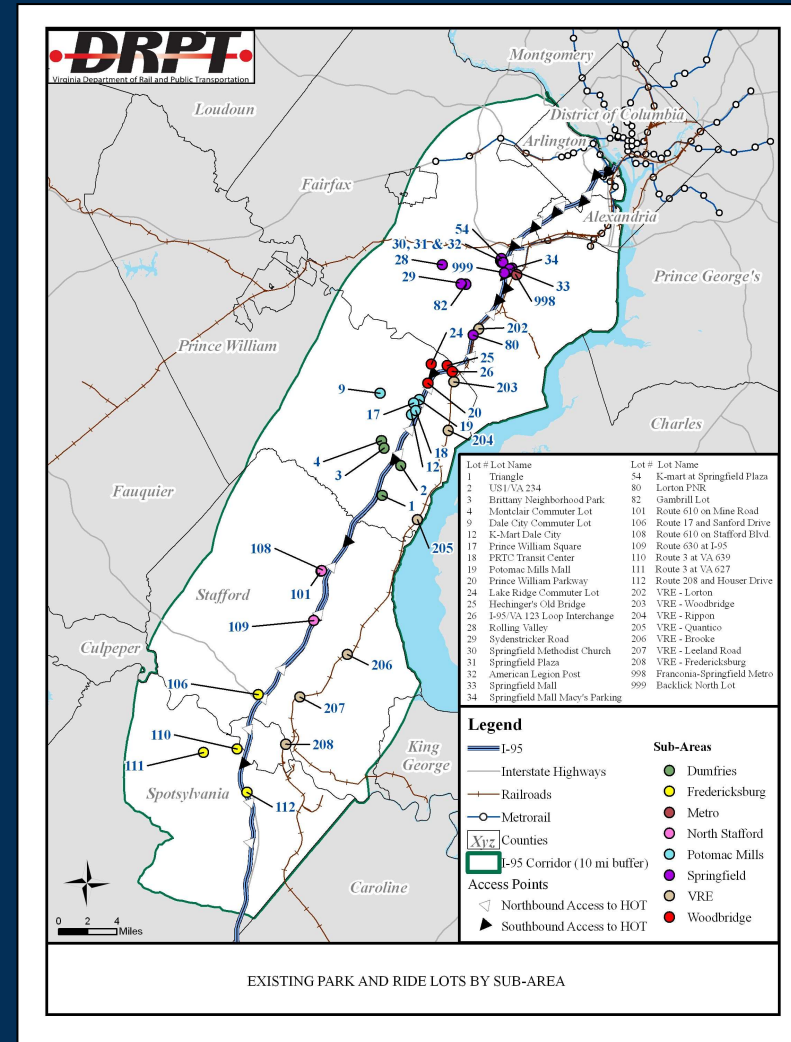
PNR Characteristics



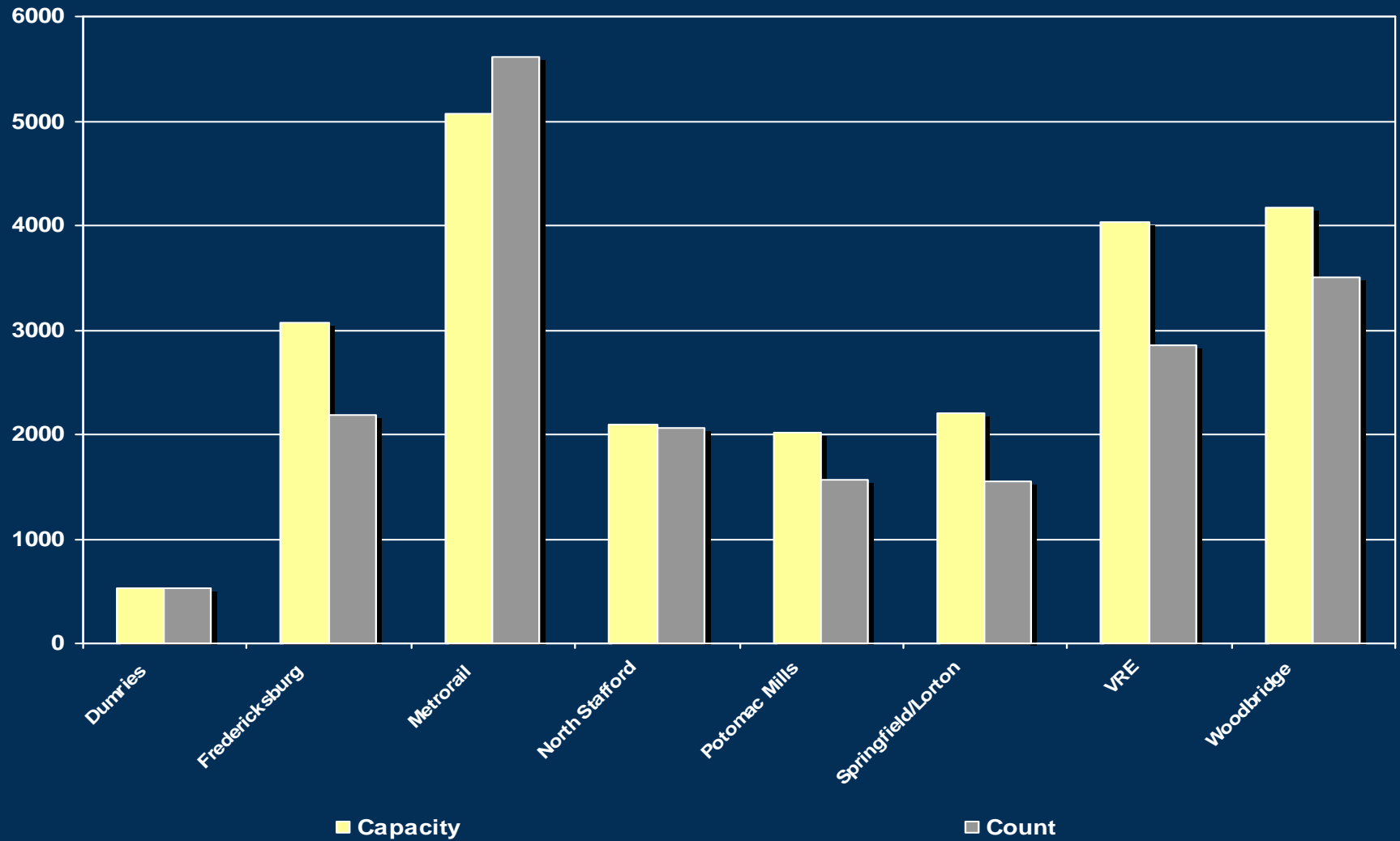
- 39 PNR Lots
- 8 Subarea PNR Districts
 - Area Based – Travelsheds
 - Mode Specific
- 19,850 Vehicles
- 23,180 Parking Spots
- 86% Utilization
- 30% Lots Over Capacity

Subarea PNR Analysis Districts

- Dumfries - 524 Spaces
- Fredericksburg - 3,073 Spaces
- North Stafford - 2,100 Spaces
- Potomac Mills - 2,012 Spaces
- Springfield/Lorton - 2,202 Spaces
- Woodbridge - 4,177 Spaces
- VRE - 4,024 Spaces
- Metro - 5,069 Spaces



Subarea Utilization Year 2006



Study Overview

- **Virginia Department of Rail and Public Transportation**
- **Transit & TDM Services/Programs to be Funded by HOT Facility Revenues**
- **Focus on Carpool, Vanpool, and Transit Services**
- **Determine the Park-and-Ride (PNR) Needs Along Corridor**
- **Develop Recommendations for New and Expanded PNR Facilities**

Challenges

- **Transit Needs Assessment**
- **High HOV & Transit Model Share**
- **HOV 3+ Facility to HOT Facility**
- **MWCOG Region & GWRC Region**
- **Travel Demand Forecast Model**
- **How to Develop PNR forecast - Credible**

Stakeholders

- **Virginia Department of Rail and Public Transportation**
- **Flour-Transurban**
- **Transit Advisor Committee (TAC)**
 - Washington Metropolitan Area Transit Authority (WMATA)
 - Potomac Rapphannock Transit Commission (PRTC)
 - George Washington Region Council (GWRC)
 - Washington Metropolitan Council of Governments (MWCOG)
 - City of Alexandria
 - Fairfax County
 - Arlington County
 - Stafford County
 - Virginia Department of Transportation

Toolbox

- **MWCOG/TPB Regional Travel Demand Forecast Model**
- **WMATA Post-Processor Mode Choice Model**
- **GWRC/FAMPO Travel Demand Forecast Model**
- **VDOT PNR Survey**
 - **Count & Space Inventory (year 2001 & 2006)**
 - **Geo-coded Users to Home End (year 2001)**

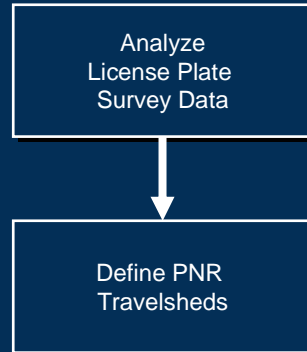
Process

- **Consistent Results**
 - Travel Demand Forecast
 - PNR Needs
- **Stakeholder Agreement**
- **Mature Corridor**
- **Mode Choice Model**

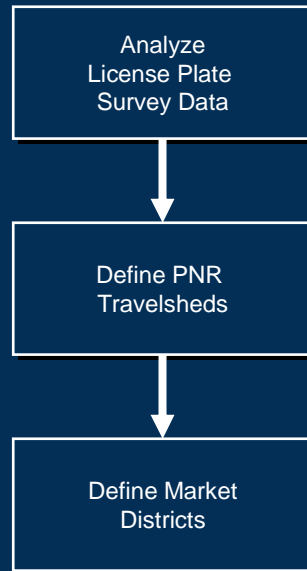
Process

Analyze
License Plate
Survey Data

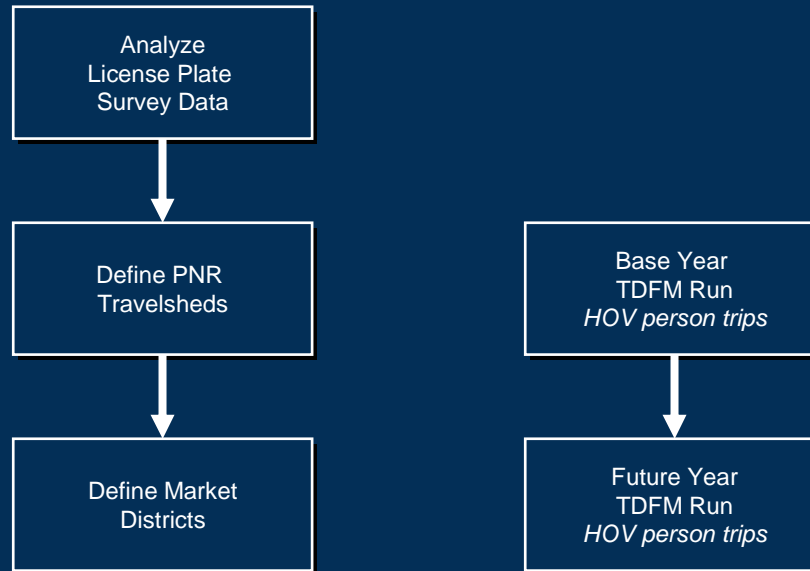
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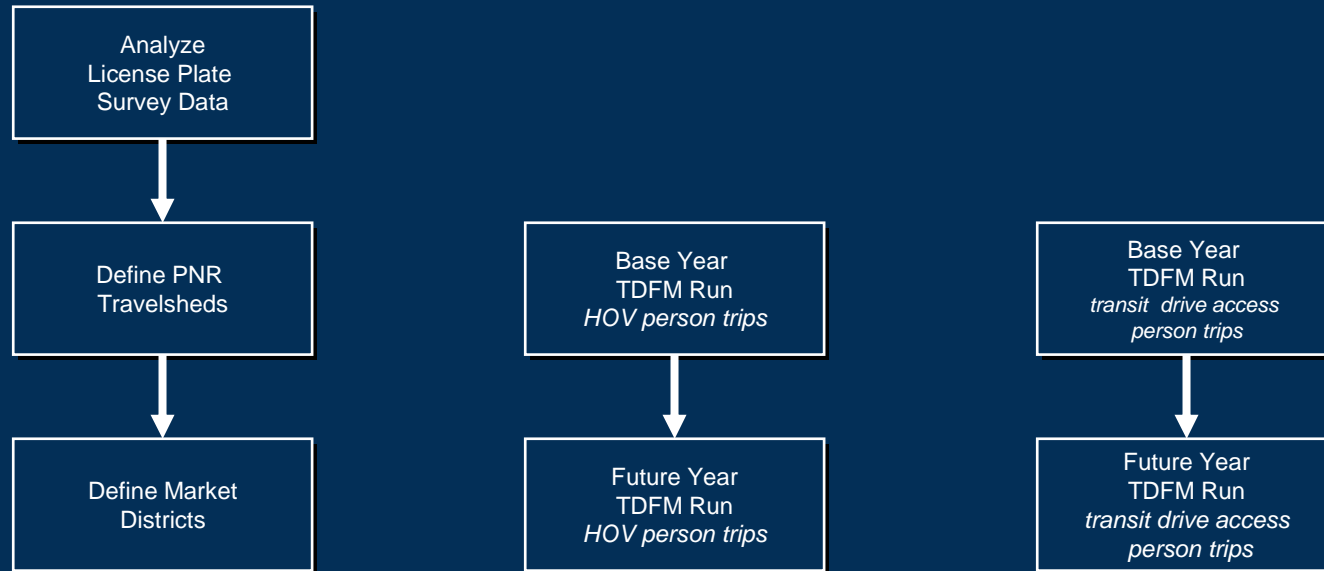
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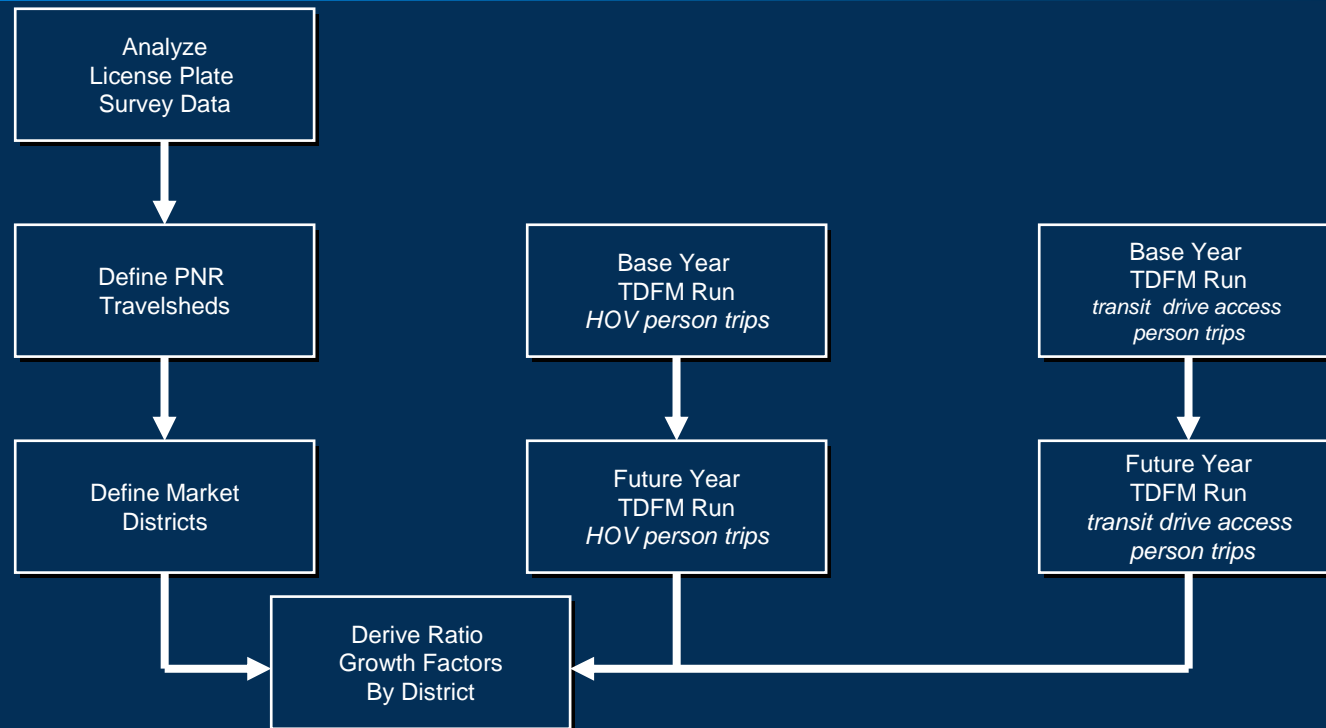
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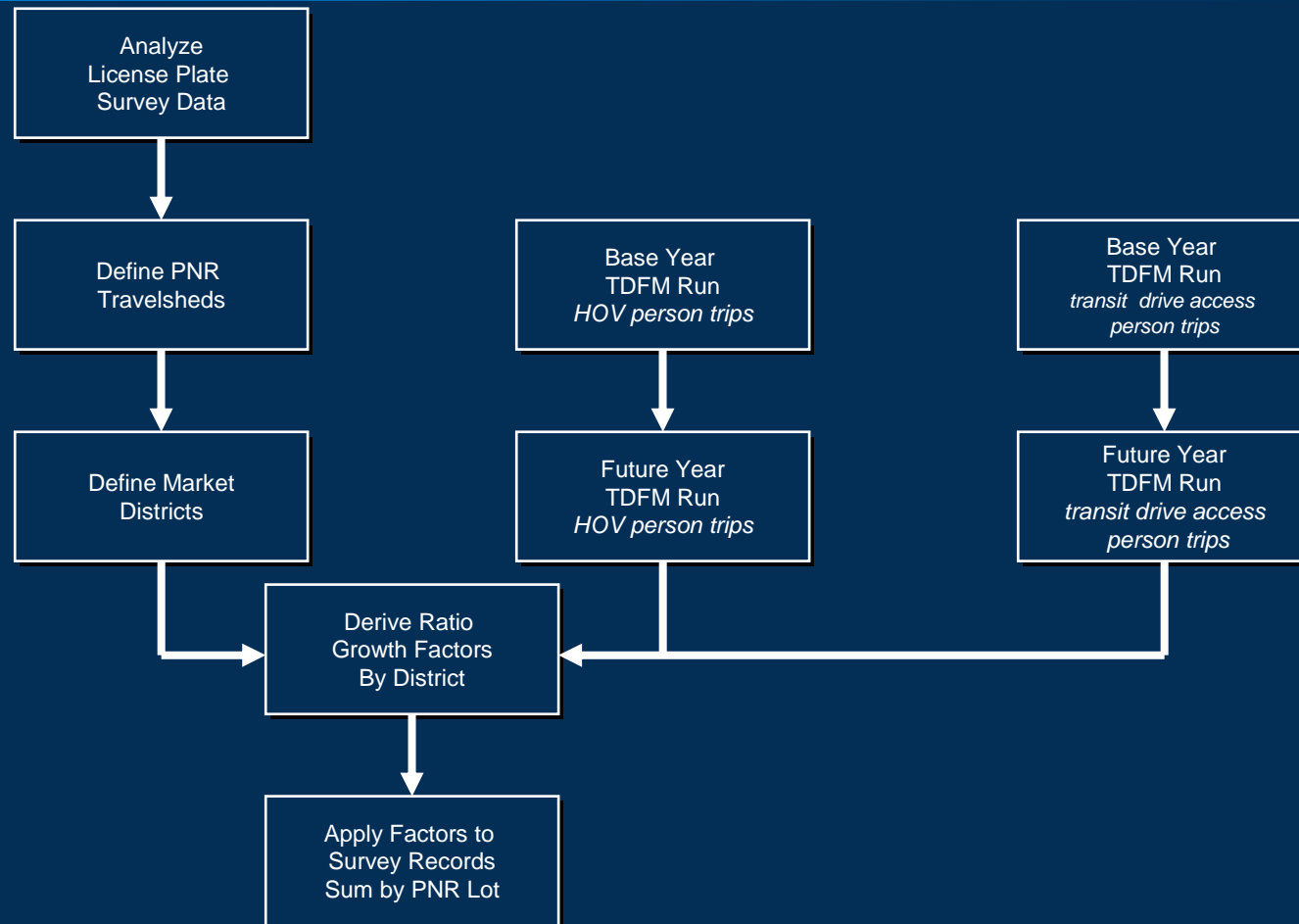
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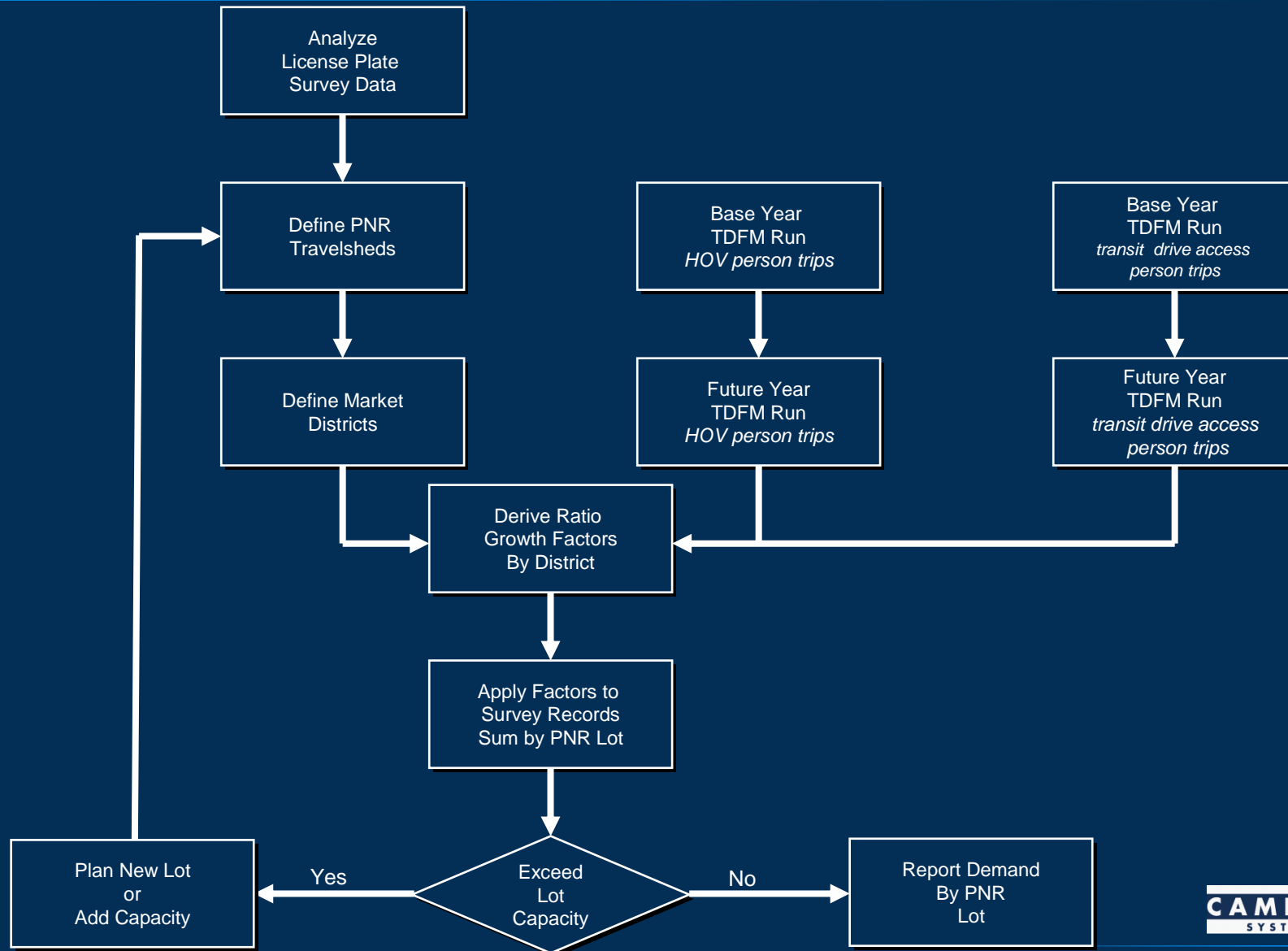
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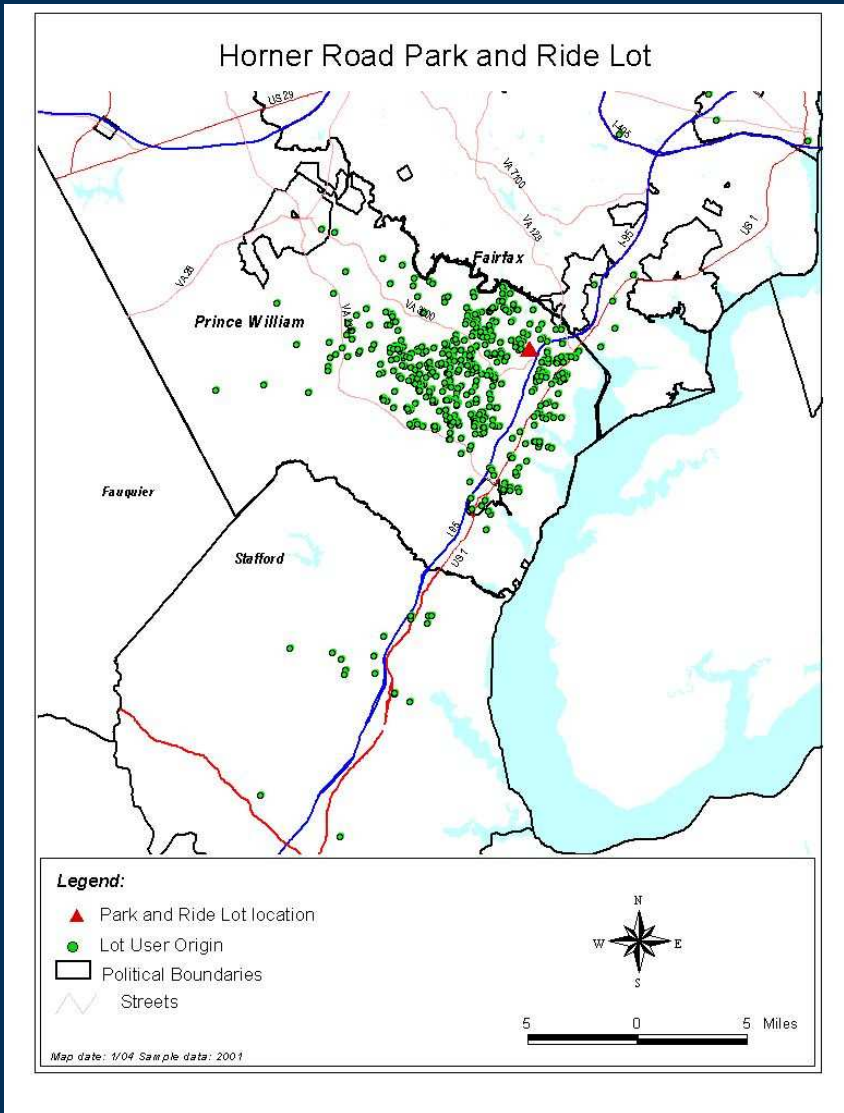
Process Notes

- **Survey - Defined Parking Sheds by Lot**
- **Aggregated MWCOCG Zones to Districts**
- **50+ Districts Linked to Parking Sheds**
- **Aggregated Parking Sheds to Subarea Analysis Regions**
- **Linked Growth in Transit Drive Access and HOV to Districts**

Keys to Process

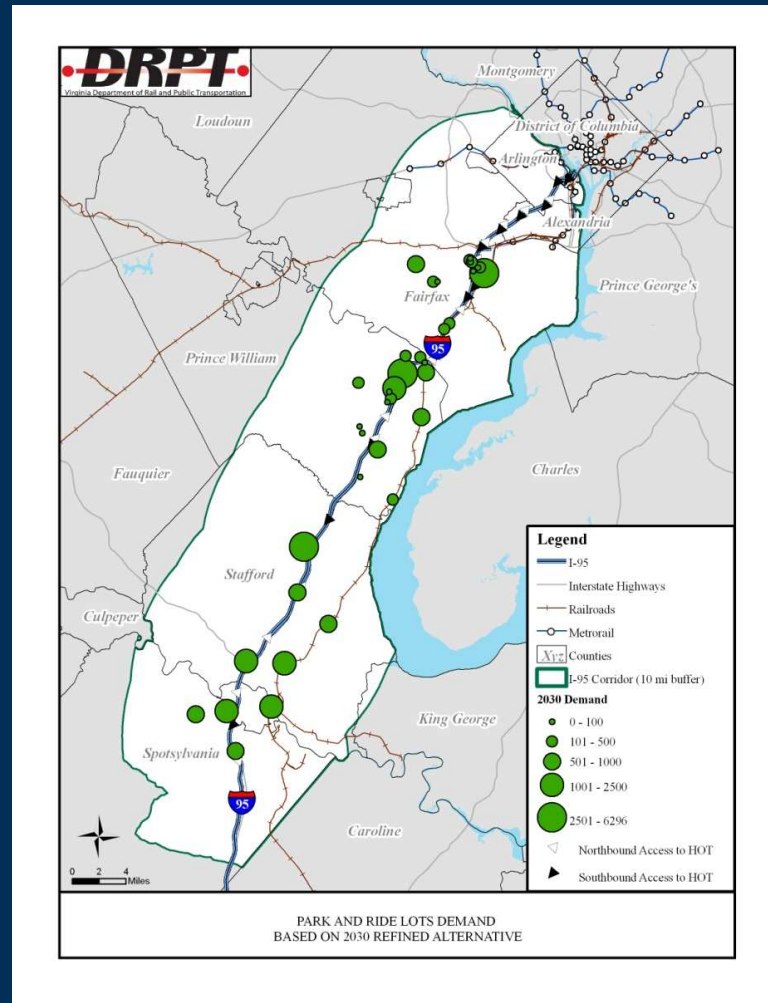
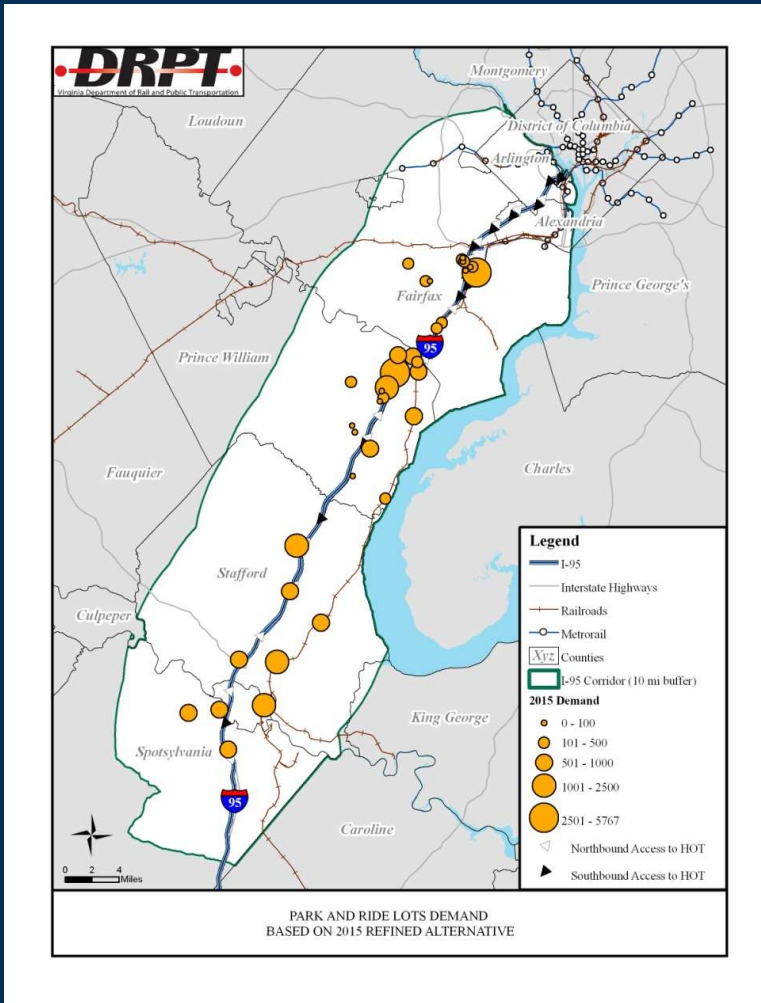
- License Plate Survey
- Department of Motor Vehicles (DMV)
- No Communication with Users
- Geocoding Users by Lot
- Development of Parking Sheds

Parking Sheds

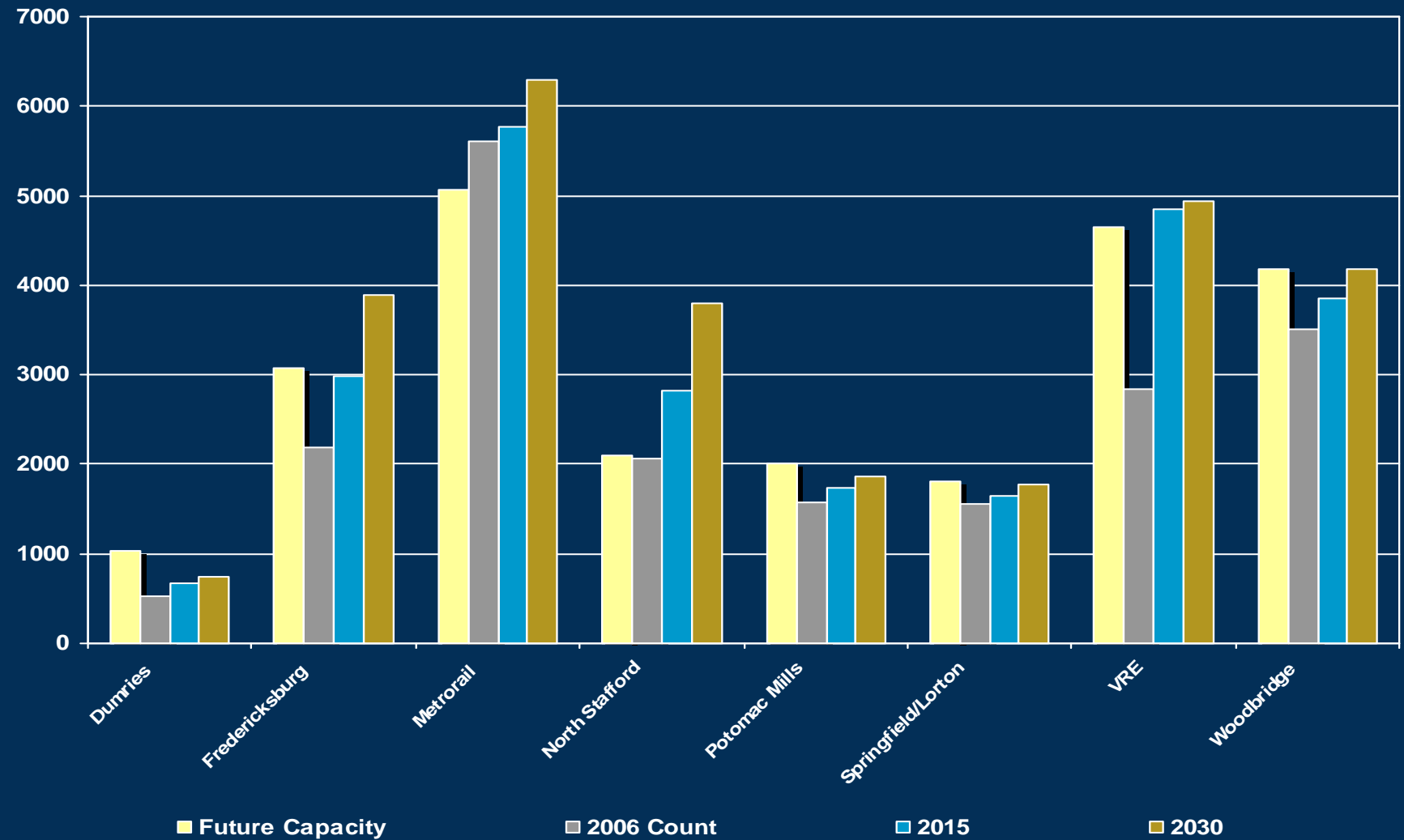


- Users Home Location
- Develop Parking Sheds
- Grouped in Parking Districts
- 8 Subareas For Needs Assessment

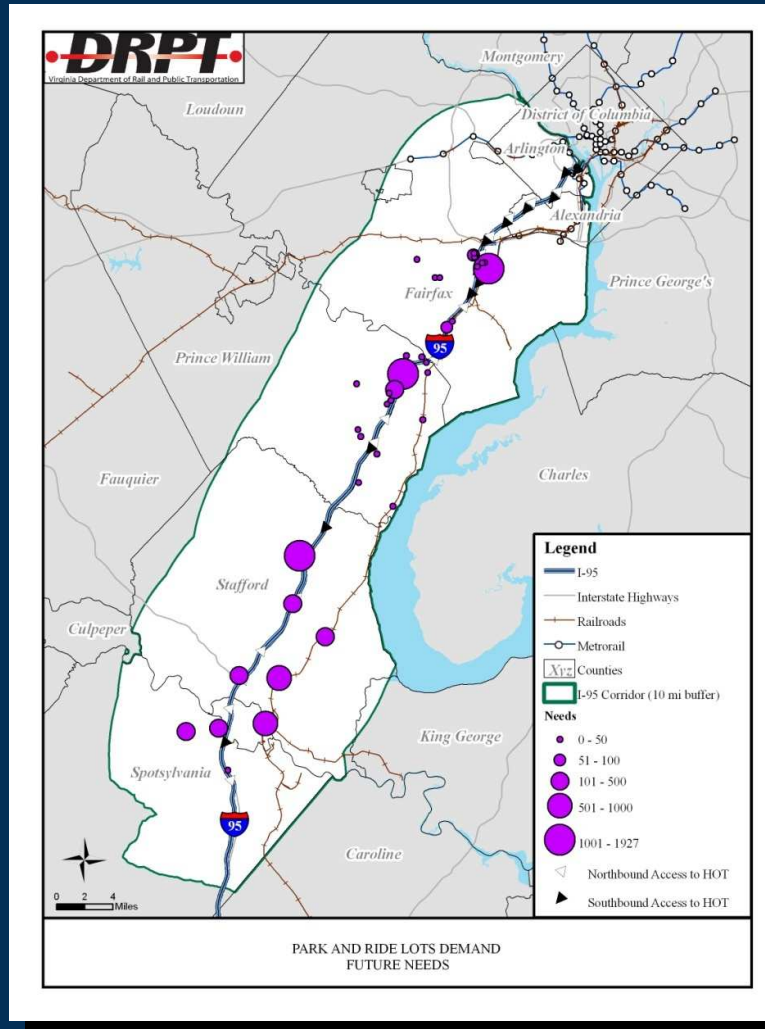
PNR Demand Forecast



Demand Summary by Subarea



Final Needs and Allocation



- Provide parking for the proposed in-line bus transit stations.
- Address Areas with the largest difference between forecasted demand and forecasted capacity.
- Minimize partial funding of park and ride lots and thereby minimize disruptions at that facilities.
- 90% Utilization Goal

Recommendations

Subarea Districts	Forecast Demand		Parking Proposed			Percentage of Identified Need that is Funded (Spaces)
	2015 (Spaces)	2030 (Spaces)	Refined Alternative (Spaces)	Fiscally-Constrained Refined Alternative (Spaces)	Non-Funded Needs (Spaces)	
Dumfries	700	700	500 ^a	0	500	0%
Fredericksburg	3,000	3,900	1,250	475	775	38%
Franconia-Springfield Metro Station	5,800	6,300	1,925 ^a	0	1,925	0%
North Stafford	2,800	3,800	2,125	2,125	0	100%
Potomac Mills	1,700	1,900	500	250	250	50%
Springfield/Lorton	1,900	2,100	450	450	0	100%
VRE	4,900	4,900	1,500	1,500	0	100%
Woodbridge	3,900	4,200	1,450	1,200	250	83%
Total Demand	24,700	27,800	9,700	6,000	3,700	62%

^a Designates need that was identified by the TAC rather than through the analytical tool.

Positive & Negatives

- **Process Made the Best Use of Model and Survey (+)**
- **Results More Credible than Using Only One Data Source (+)**
- **Addressed Both Transit and Carpools (+)**
- **Quick, Easy, Simple, and Understandable (+)**
- **Relates Mainly to Existing Lots (-)**

Addressing New Lots

- **Identified Need**
 - Higher Demand
 - Unable to Expand any Current Lots in Subarea
- **Find Feasible Location**
 - Near Current Lots
 - Near Freeway Facility
- **Allocate Users for Capacity and Needs**

Conclusions

- **Combining Models and Survey Data Worked Well**
- **Survey Provided Specific Data on Existing Demand**
- **Model Provided Reasonable Growth Rates at District Level**
- **Estimates Credible and Received Well**

Questions?