



Washington Metropolitan Area Transit Authority

# ConnectGreaterWashington: Can the Region Grow Differently?

Transportation Planning Board (TPB)  
Travel Forecasting Subcommittee  
July 17, 2015



*ConnectGreaterWashington:  
The 2040 Regional Transit System Plan*

# Alternatives Overview

- Project Purpose
- Model Basics
- Assumptions and Concepts
- Scenario Review
- What Did We Learn?
- Conclusions



# Why this study?

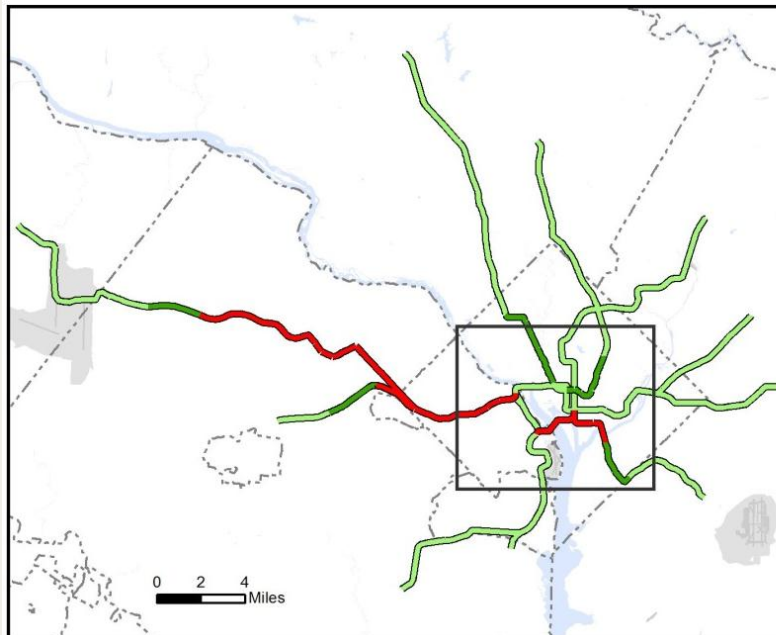
By 2040

- \$440M Metrorail operating subsidy
- 15% of Metrorail links over 100 passengers per car in the peak period and peak direction
- 14% increase in daily VMT (21% in the peak) compared to 2010
- 6% decrease in travel speeds in Compact









# Why this study?

## Because we can't afford this:

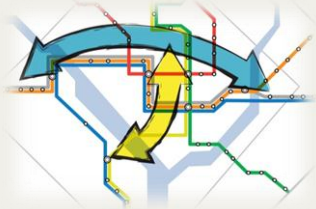


**2040 Metrorail  
Peak Period Passenger Loads  
(Baseline Condition - Unconstrained)**

-  Metrorail Station
- Peak Period Passenger Loads**
-  < 80 Passengers per Car
-  80 - 100 Passengers per Car
-  100 - 120 Passengers per Car
-  120 - 150 Passengers per Car
-  > 150 Passengers per Car



# ConnectGreaterWashington



New Metrorail lines in the core



Create network of high quality surface transit that connect across barriers



Improve commuter rail/bus frequency and span of service

AND  
/ OR



Better utilize station areas and along corridors with transit



Increase walkability of station areas and neighborhoods



Reduce free and low-cost parking supply



# Model Basics

- MWCOG Regional v2.3.52 regional travel demand model
  - Trip Generation
  - Trip Distribution
  - Highway Skimming
- WMATA Post Processor Model
  - Transit Skimming
  - Mode Choice
  - Transit Assignment
- Loop back to MWCOG regional model
  - Traffic Assignment



# Land Use and Transit Assumptions

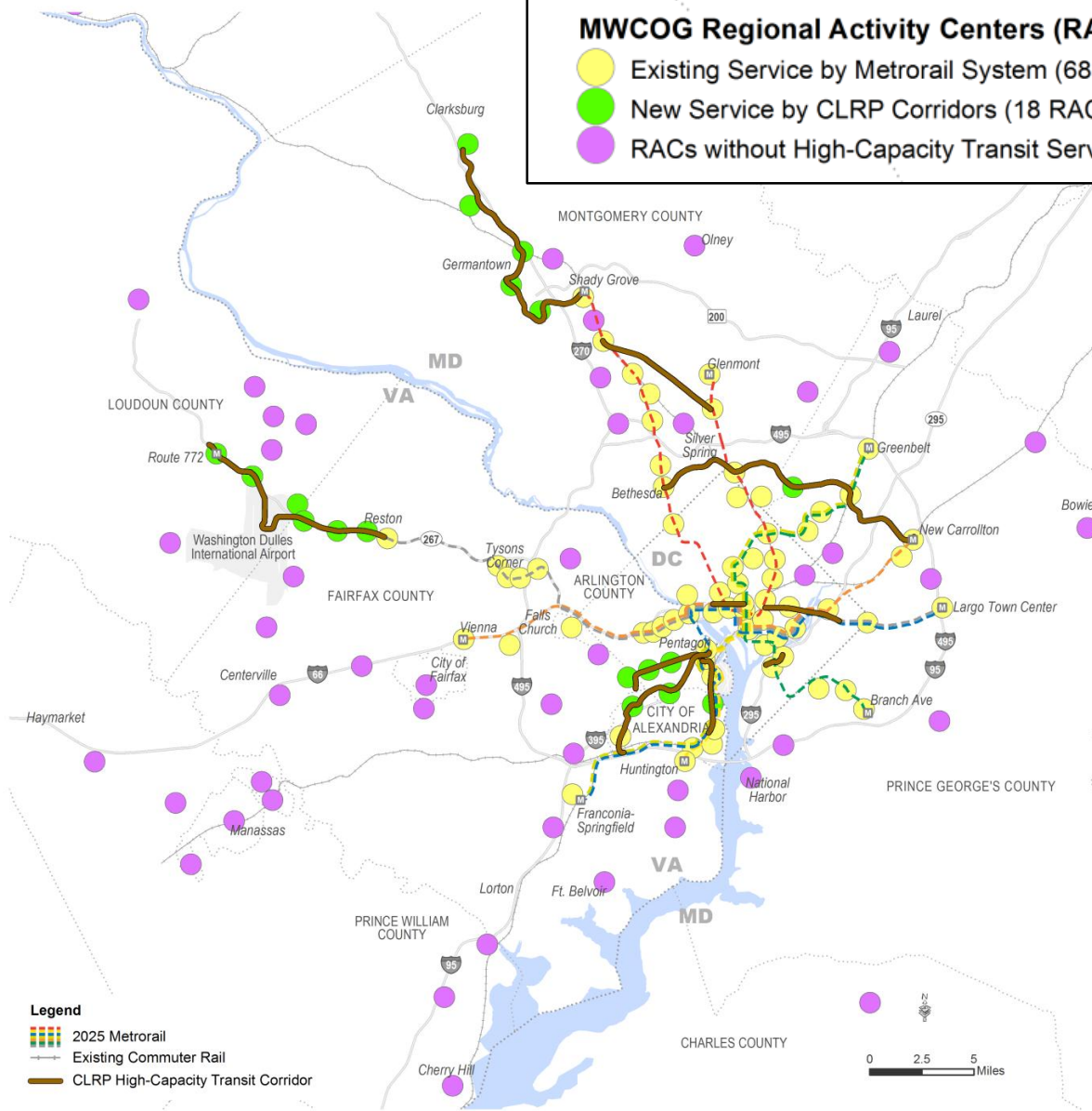
- Maintain the draft Round 8.3 regional totals
- Allow TAZ and jurisdictional totals to vary
- Not developing optimal land use
- Only shift development growth forecast for after 2020
- 2040 base transit network = existing transit system + 2013 CLRP + Metro 2025.



# Starting Concepts

## MWCOG Regional Activity Centers (RACs)

- Existing Service by Metrorail System (68 RACs)
- New Service by CLRP Corridors (18 RACs)
- RACs without High-Capacity Transit Service (55 RACs)



- Legend**
- 2025 Metrorail
  - Existing Commuter Rail
  - CLRP High-Capacity Transit Corridor



ConnectGreaterWashington:  
2040 Regional Transit System Plan



# Starting Concepts



## Activity Center Place Types



Urban Centers

**Examples:**  
Downtown DC,  
Bethesda,  
Tysons East



Dense Mixed-Use Centers

**Examples:**  
Shirlington,  
Columbia Heights,  
Silver Spring



Suburban Multi-Use Centers

**Examples:**  
City of Falls  
Church,  
Fairfax City,  
Greenbelt Metro



Close-In & Urbanizing Centers

**Examples:**  
Columbia Pike,  
Rhode Island Avenue,  
West Hyattsville  
Metro



Revitalizing Urban Centers

**Examples:**  
Prince George's Plaza,  
Landmark/Van Dorn,  
Minnesota Avenue

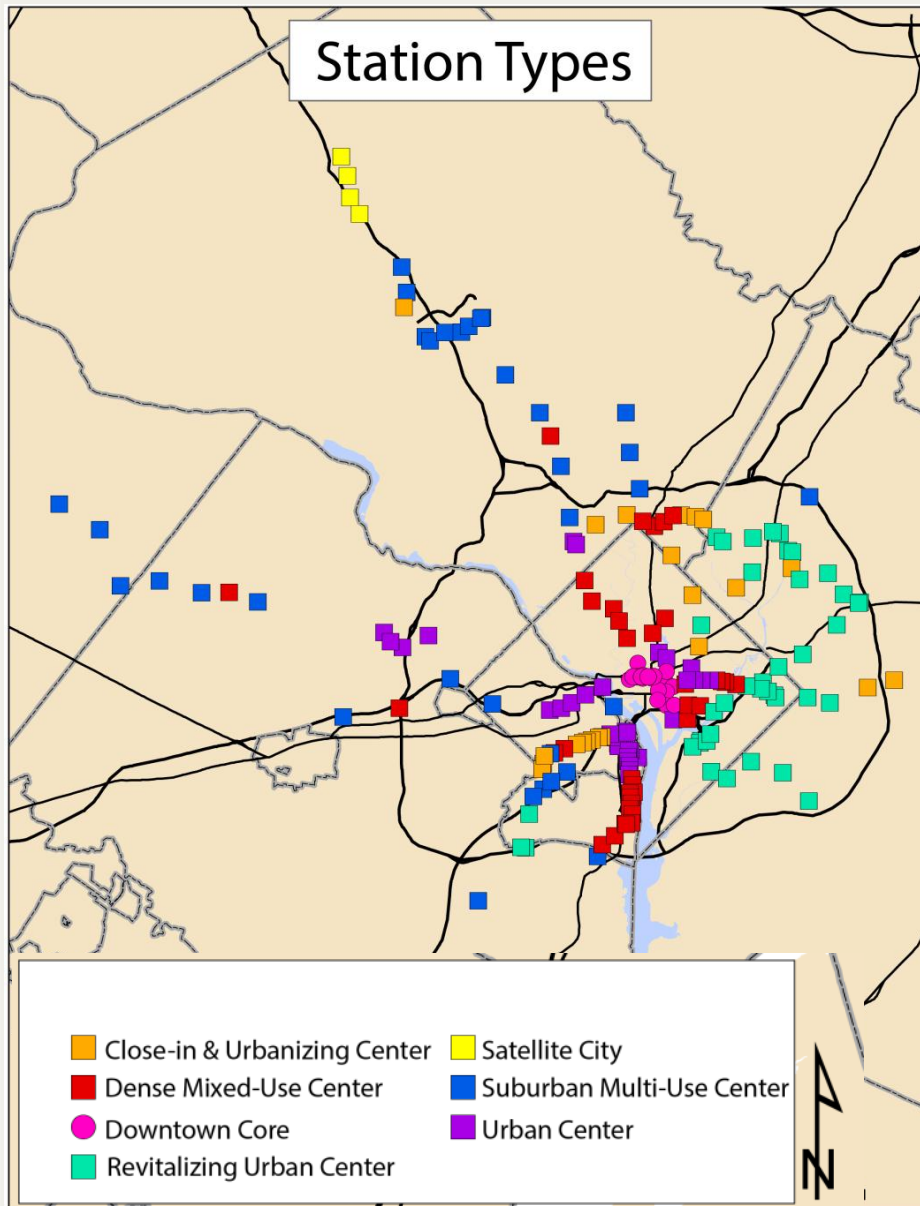


Satellite Cities

**Examples:**  
Downtown Frederick,  
City of Manassas,  
Bowie Town Center

# Starting Concepts

Station Types



Station Place Type	Representative Station	Population + Employment Density (per square mile)
Suburban Multi-Use Center	Huntington	18,600
Revitalizing Urban Center	H St/42 <sup>nd</sup> St	23,000
Satellite City	Cloverleaf	23,700
Close-in & Urbanizing Center	Takoma	25,000
Dense Mixed-Use Center	White Flint	73,600
Urban Center	Bethesda	133,100
Downtown Core	K St/22 <sup>nd</sup> St	224,000

# Summary of Scenarios

<b>Goal</b> <b>Land Use</b>	<b>Efficient Transit System</b>	<b>Reduce Metrorail Operating Subsidy</b>	<b>Maintain 2010 Travel Times (Highway and Transit)</b>
<b>Draft Round 8.3</b>	A Prime	B Prime	C Prime
<b>Maintain Jurisdictional Totals</b>	A1	B1	C1
<b>Maintain Regional Totals</b>	A2	B2	C2



# Measures of Effectiveness

Goal 1: Enhance environment and safety

Goal 2: Facilitate transit-oriented, mixed use communities

Goal 3: Maximize transit availability and access

Goal 4: Accommodate/encourage ridership

Goal 5: Financially viable transit

Change in highway travel times between specific RACs

Jobs/HH within 1/2 mile of high-quality transit

Average trip length by mode (distance and time)

Link loads by direction and time of day – peak and off-peak direction

Change in Property Tax Revenues (total and by jurisdiction)

Metrorail Operating Subsidy (total and by state)

Lost growth to congestion

Vehicle miles traveled (VMT)

Transit Utilization - passenger miles per seat mile (all modes)

Mode share for trips that begin or end in RACs



# Scenario A: Efficient Transit

Goal: Optimize transit system, limit crowding

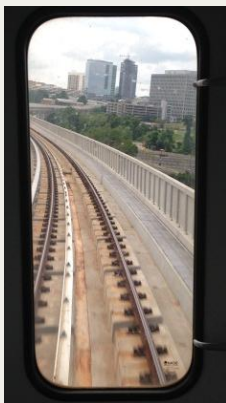
## Approach



Mixed use



Short trips



Reverse commute



Park & ride



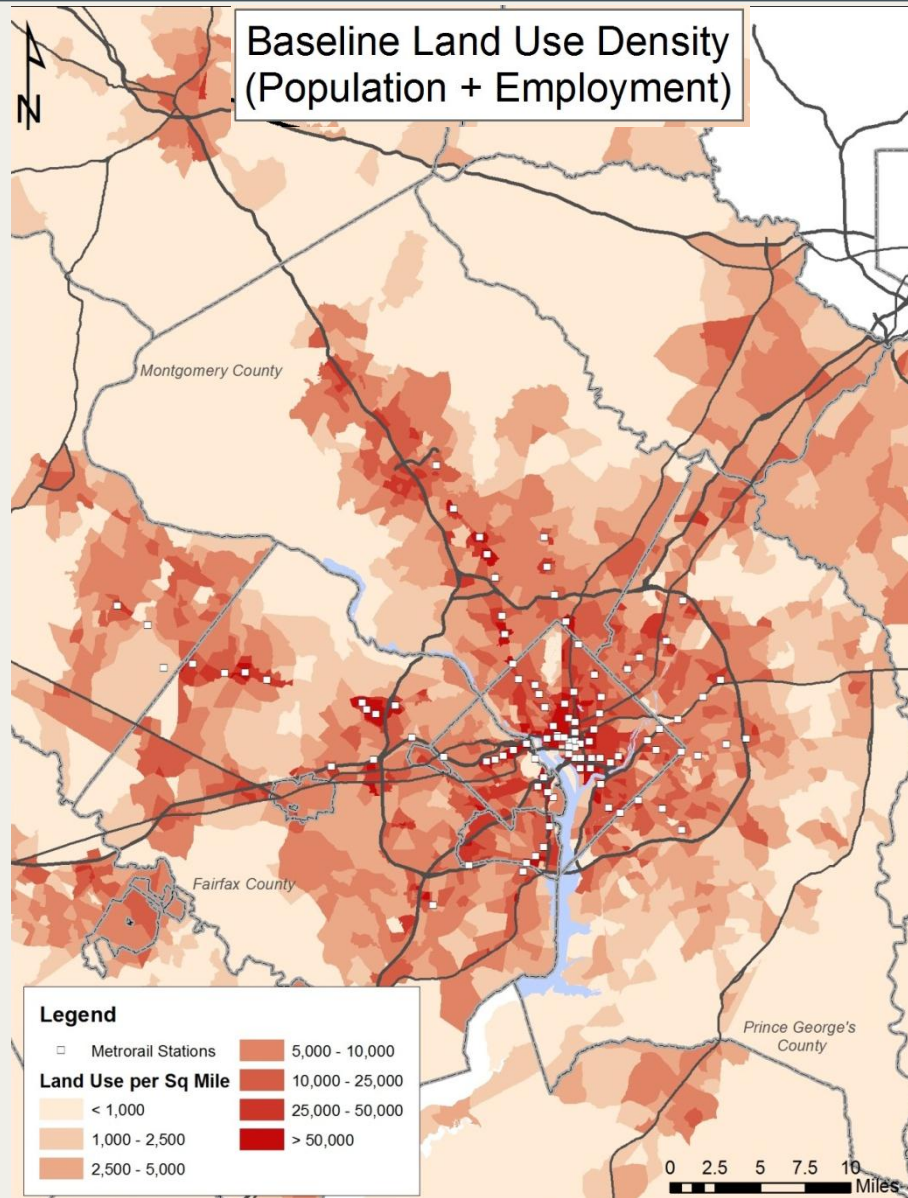
Reverse-peak direction fares



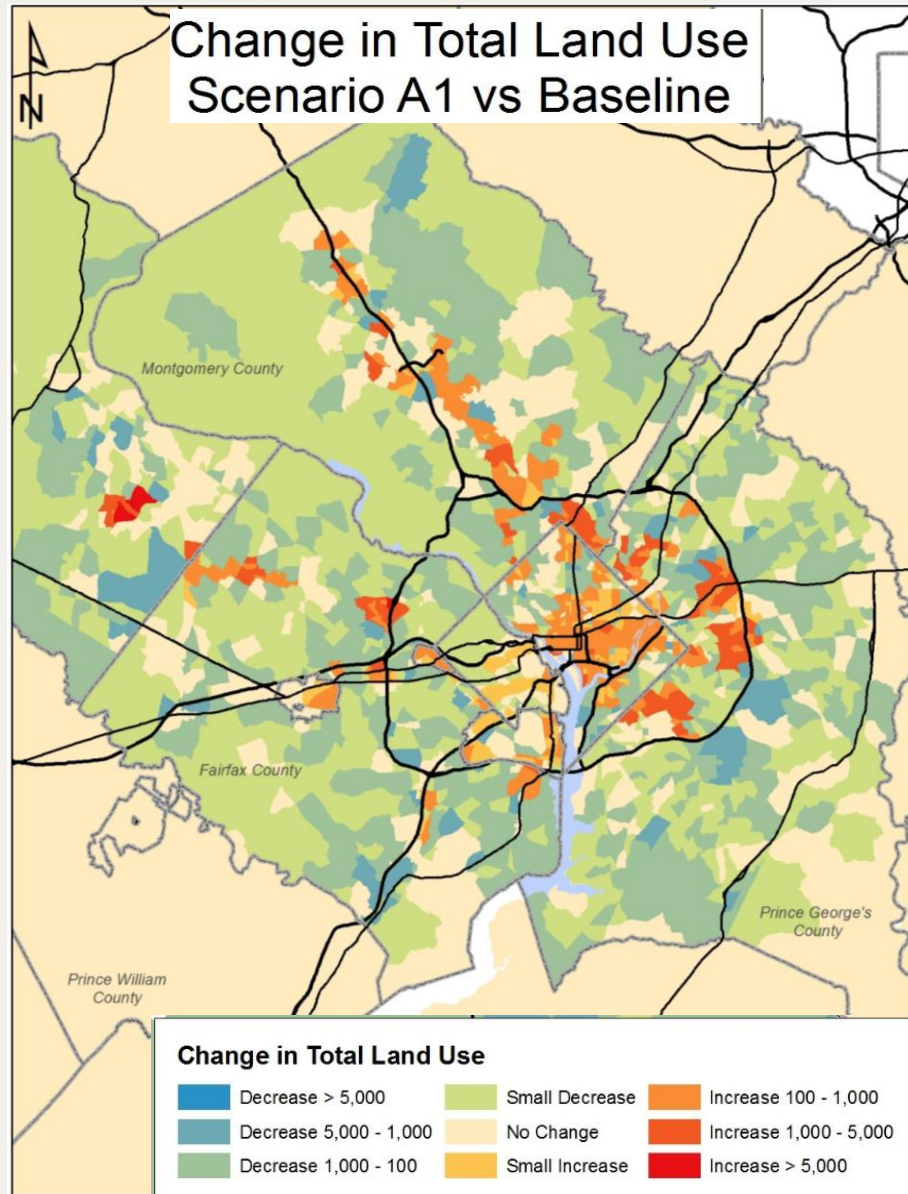
Walkability



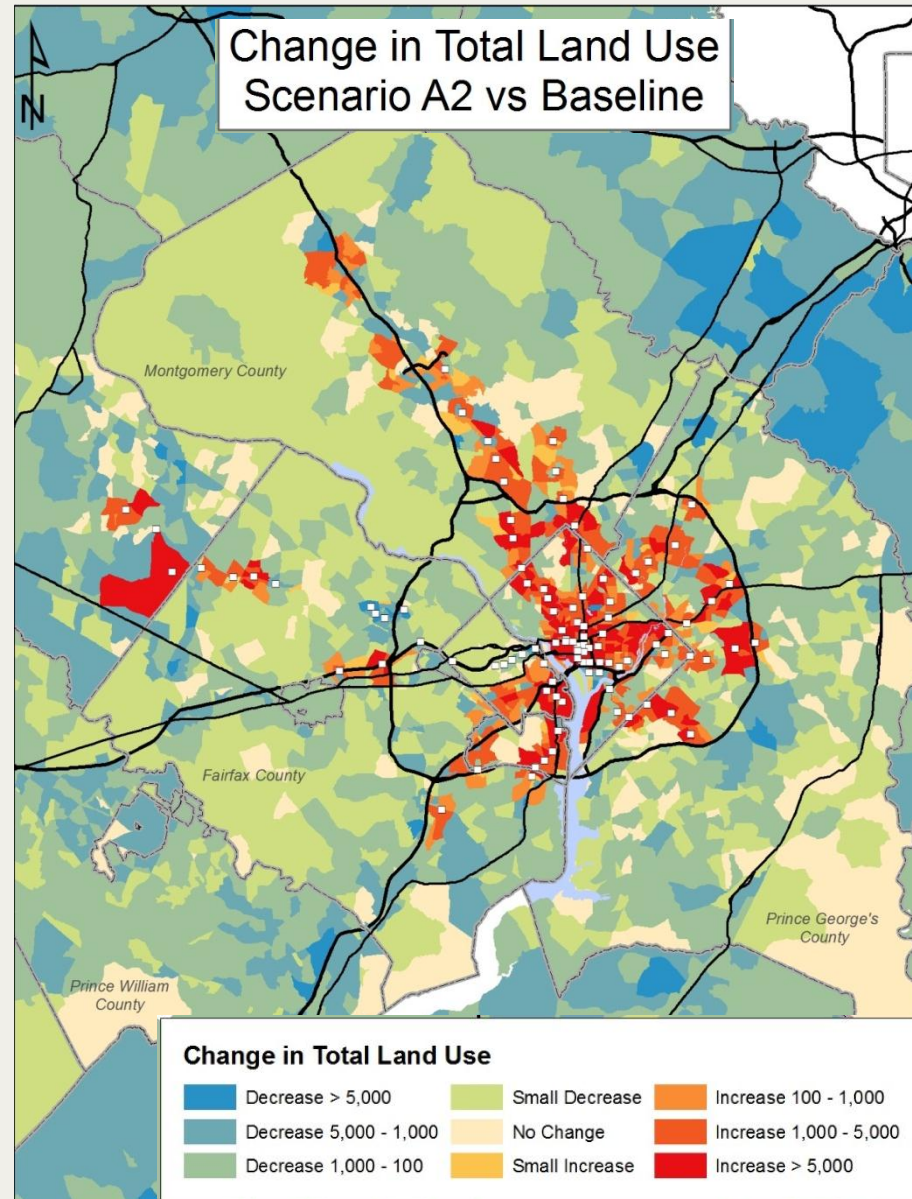
# 2040 Base Land Use Density



# Scenario A1: Efficient Transit



# Scenario A2: Efficient Transit



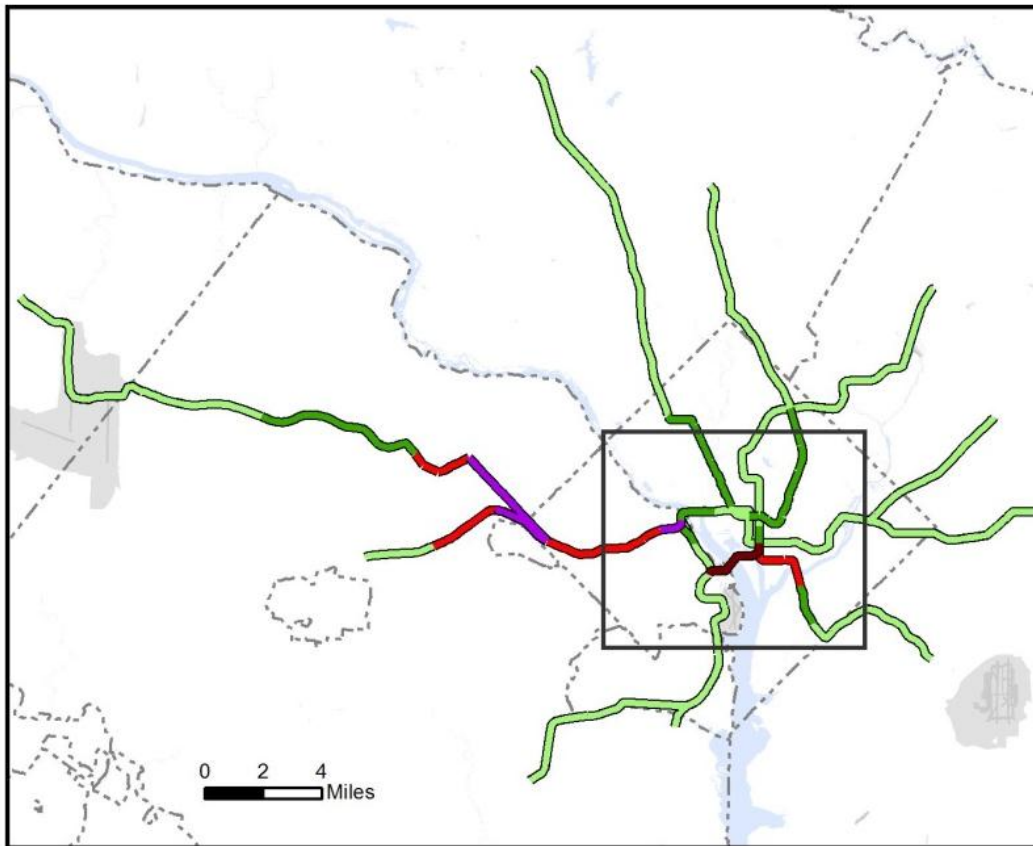


# A1 and A2 Key Measures

Measure (Comparison Year)	Comparison Year Data	Scenario A1	Scenario A2
Land Use Shifts	2040 Round 8.3	35,000 HH / 30,000 jobs	322,200 HH / 712,300 jobs
Jobs within 45 min of households	1.339M (2040)	1.383M	2.563M
Metrorail Operating Subsidy	\$440.6M (2040 C)	\$383.8M	(\$269.3M)
Transit Mode Share	7.7% (2040 U)	8.4%	14.5%
Change in Property Tax Revenues in Compact	-- 2040	\$-12.46M	\$1.56B
Metrorail/Transit Ridership	1.55M / 2.66M (2040U)	1.87M / 3.19M	2.65M / 4.47M
Peak Person Hours Traveled on Congested Metrorail	41,600 (2040U)	47,600	221,100
Peak Person Hours Traveled on Congested Buses	39,150 (2040U)	54,900	78,500
Daily VMT	170.3M (2010)	215.2M	171.4M
Highway Travel Times (13 OD pairs)	552 min (2010)	854 min	516 min
Congested Person Miles Traveled Autos	30.1M (2040C)	45.8M	21.3M

\* (C) Constrained (U) Unconstrained Metrorail Capacity

# Scenario A1: Peak Metrorail Usage



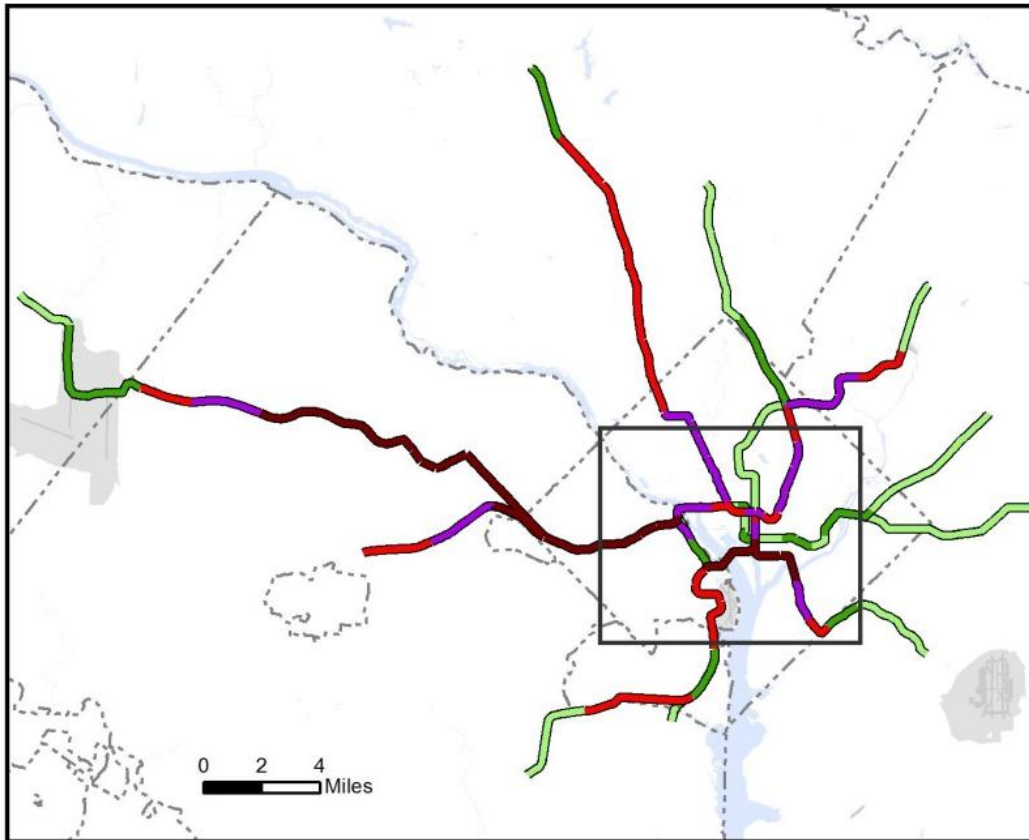
## 2040 Metrorail Peak Period Passenger Loads (Policy Scenario A1)

 Metrorail Station


### Peak Period Passenger Loads

-  < 80 Passengers per Car
-  80 - 100 Passengers per Car
-  100 - 120 Passengers per Car
-  120 - 150 Passengers per Car
-  > 150 Passengers per Car

# Scenario A2: Peak Metrorail Usage



## 2040 Metrorail Peak Period Passenger Loads (Policy Scenario A2)

 Metrorail Station

### Peak Period Passenger Loads

-  < 80 Passengers per Car
-  80 - 100 Passengers per Car
-  100 - 120 Passengers per Car
-  120 - 150 Passengers per Car
-  > 150 Passengers per Car

# Other Conclusions

- To realize more robust benefits by 2040
  - Need significant policy shifts and/or regional land use changes (B2, A2)
  - Simple, easy interventions didn't move the needle much (A')
- Targeting cost of specific driving trips had greater impact than peanut butter approach
- Telework, alternate work hours had a significant (negative) impact on ridership/revenue
- Place types limited ability to better balance jobs and population in the region

# Final Thoughts

The region does not need to accept the status quo



Transit expansion was found necessary through most scenarios we tested. But growing smarter provides the resources to make it possible.