2040 Demographic Forecasts and Implications for Transportation

Presentation to the Technical Advisory Group

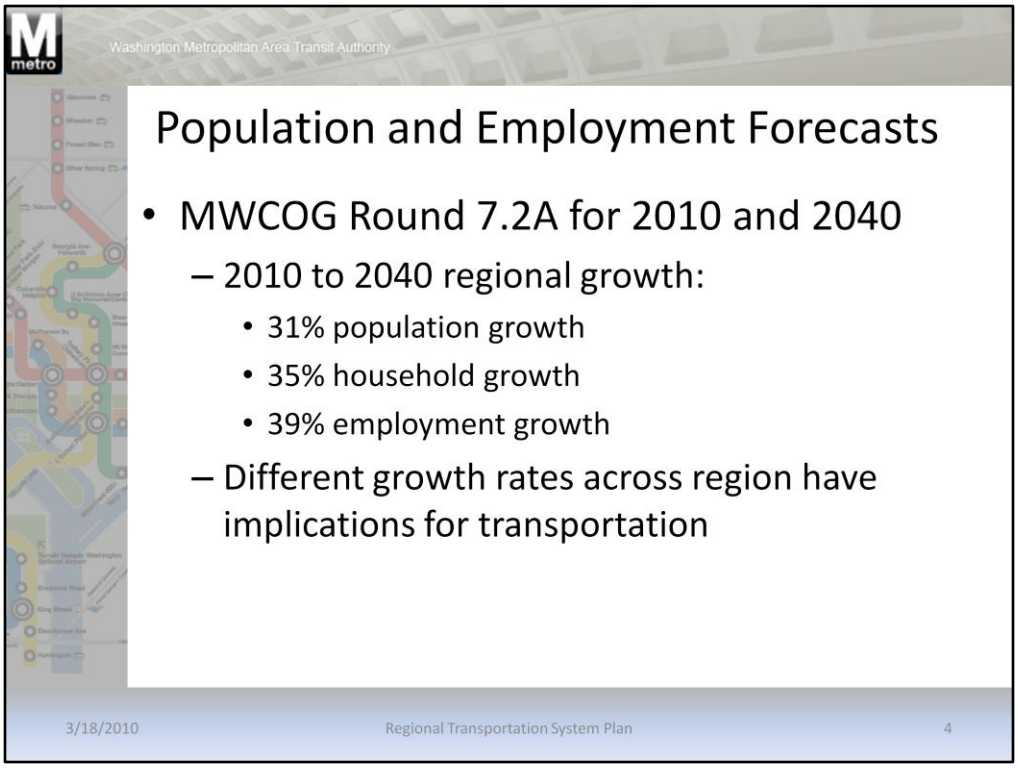
March 18, 2010

Overview of Presentation

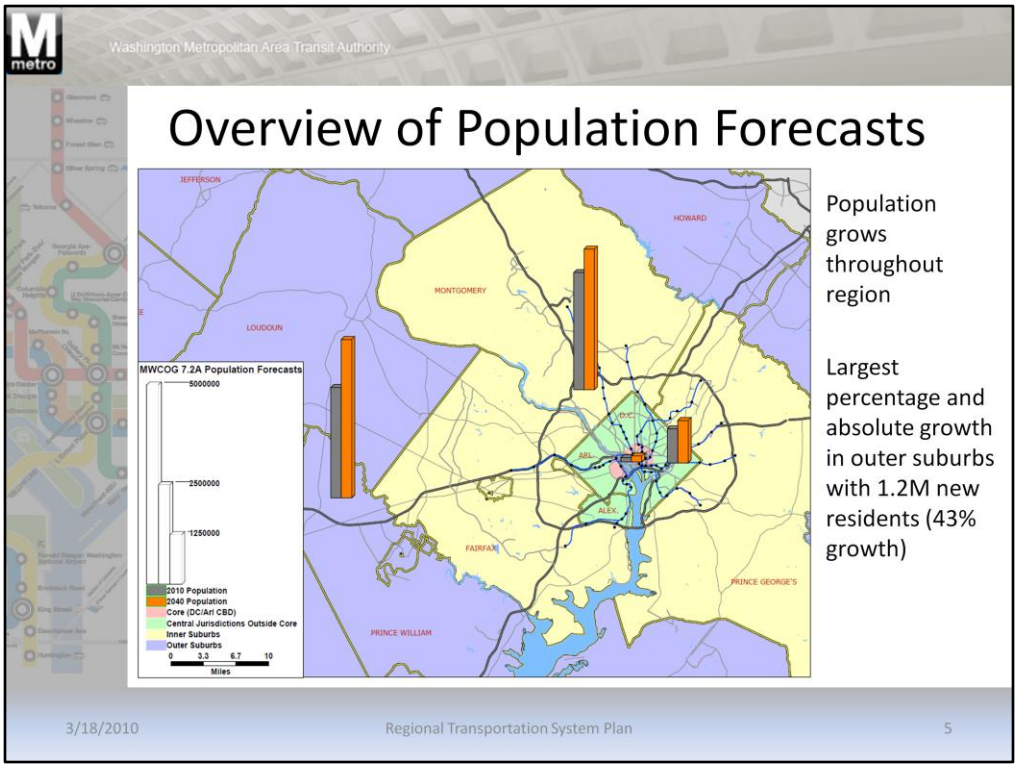
- MWCOG 2040 population and employment forecasts
- Demand for trip making in 2040
- Year 2040 CLRP transit ridership
- Year 2040 Initial Assessment of Measures of Effectiveness

MWCOG Round 7.2A Forecasts

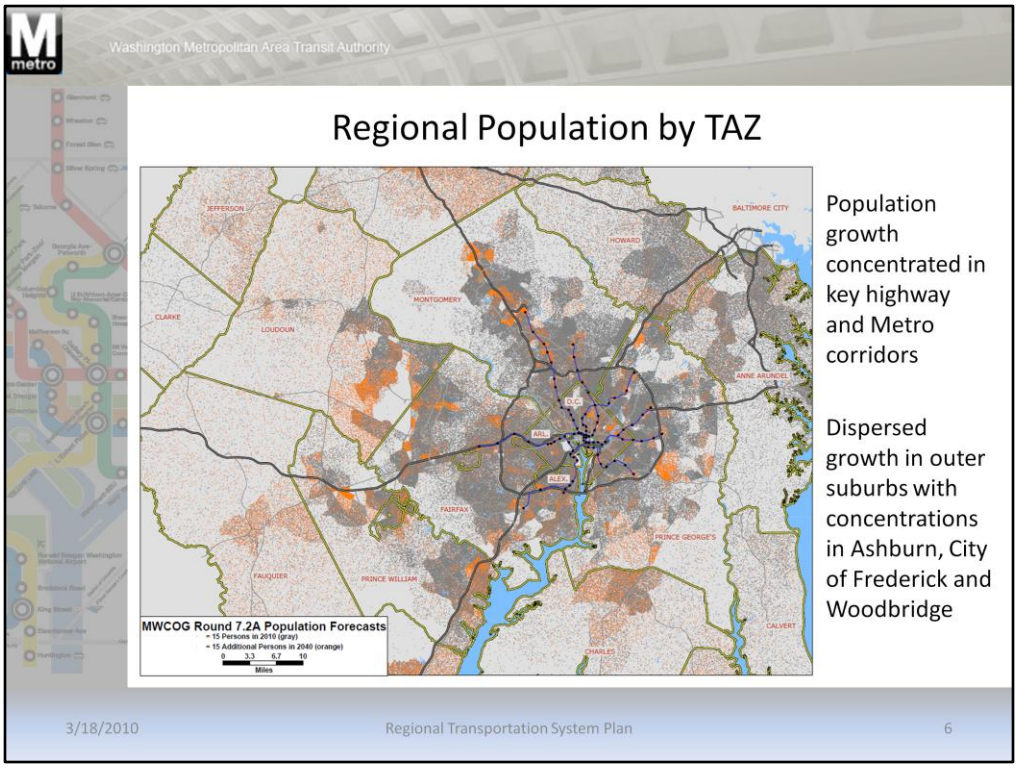
2040 POPULATION AND EMPLOYMENT TRENDS



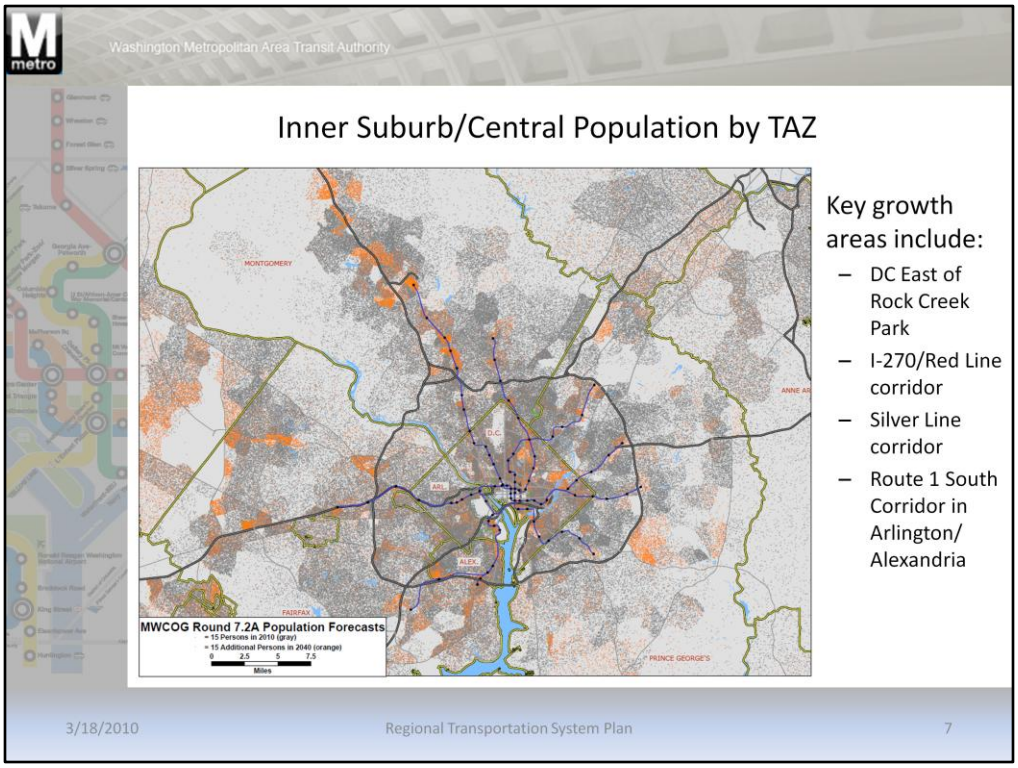
Using the MWCOG Round 7.2A cooperative land use model, we forecast the population and employment growth for the region between 2010 and 2040.



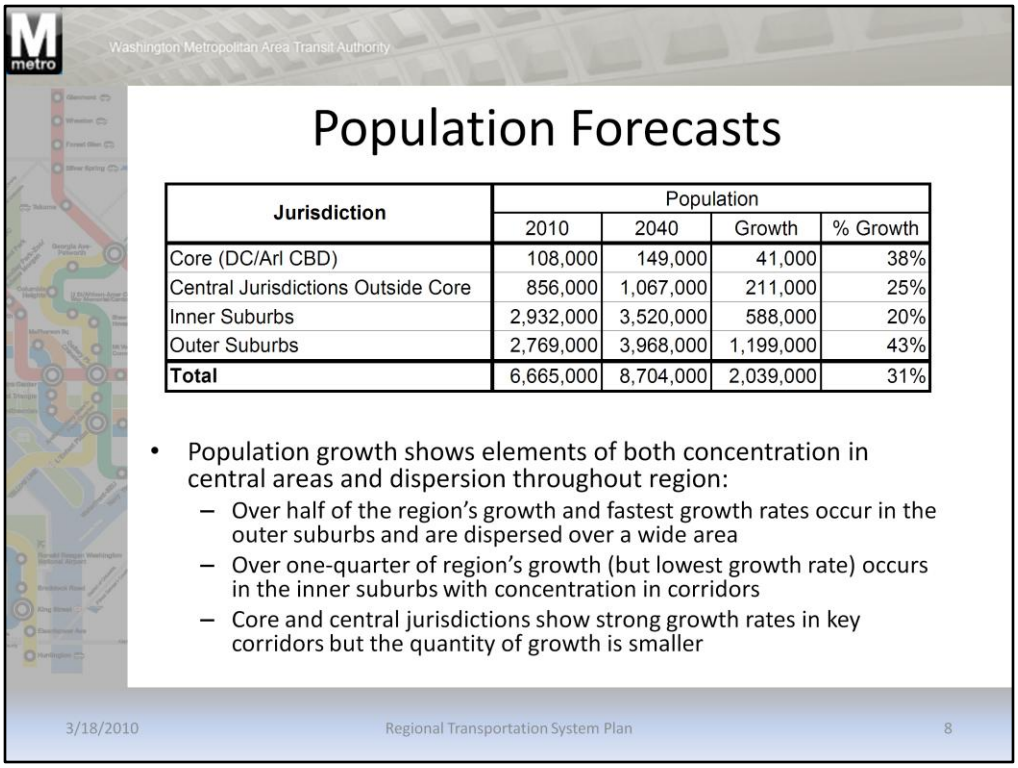
We see that a significant portion of the region's growth is occurring primarily in the outer suburbs in the year 2040.



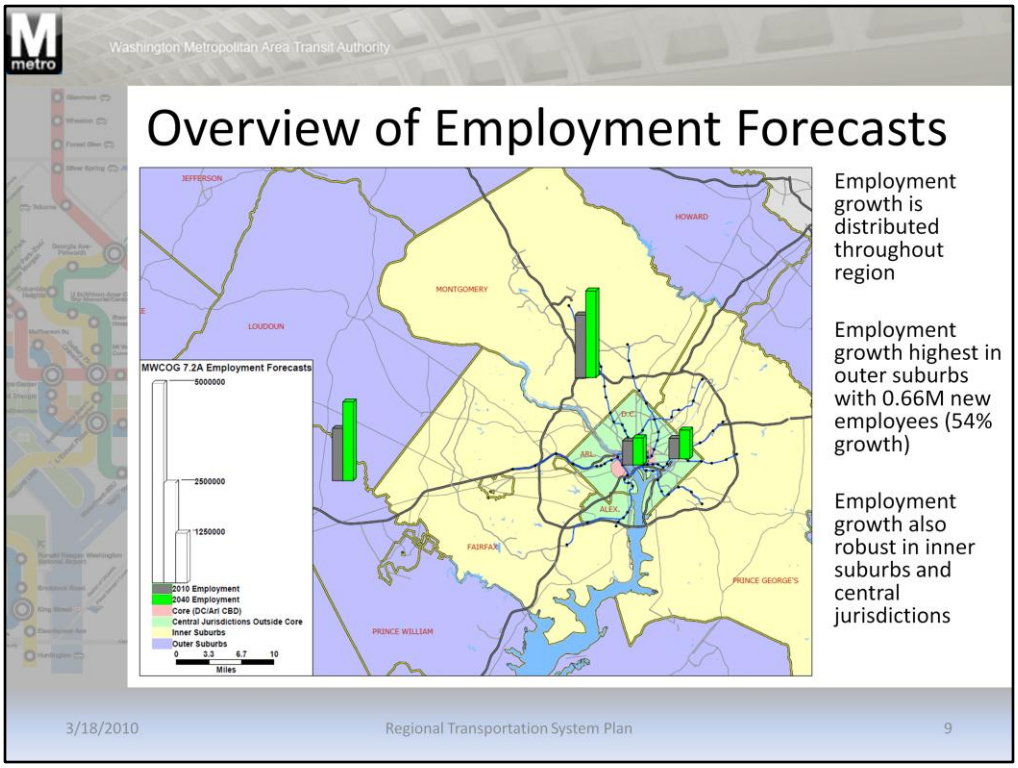
High concentrations of population growth in the outer suburbs are occurring in cities like Ashburn, Frederick, and Woodbridge, Virginia. Additionally, population growth is considerably concentrated near highways and Metrorail Stations .



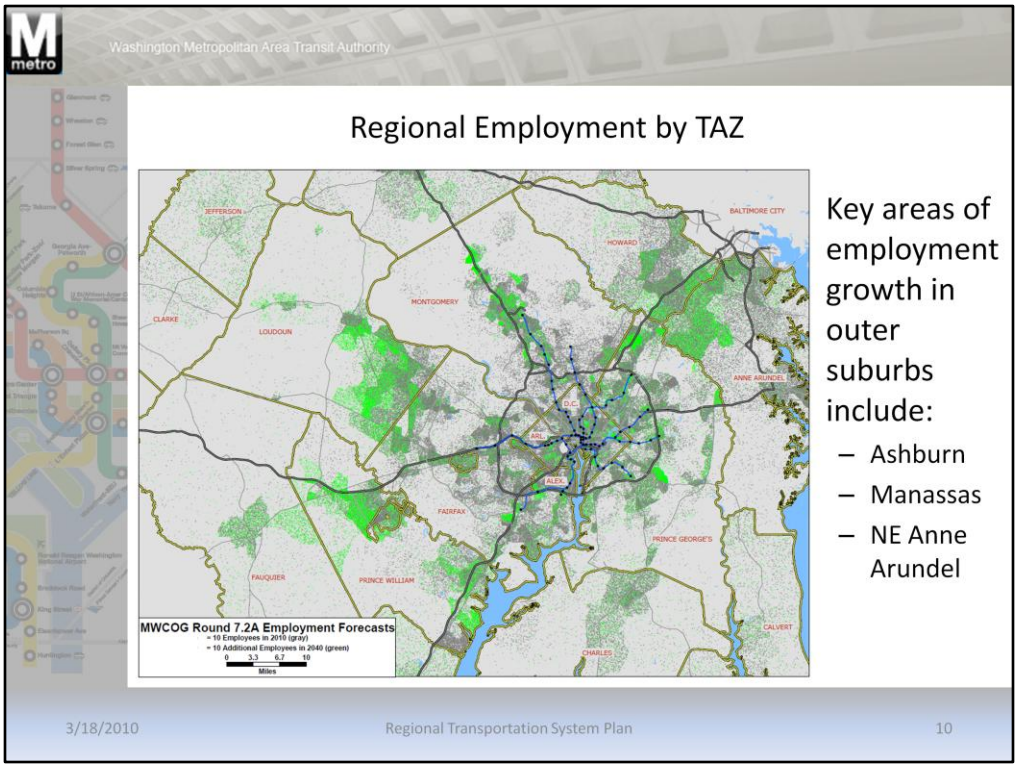
Inner suburbs are also forecast to increase in population around the Silver Line Corridor, Route 1 South in Arlington and Alexandria, Virginia and in the District East of Rock Creek Park.



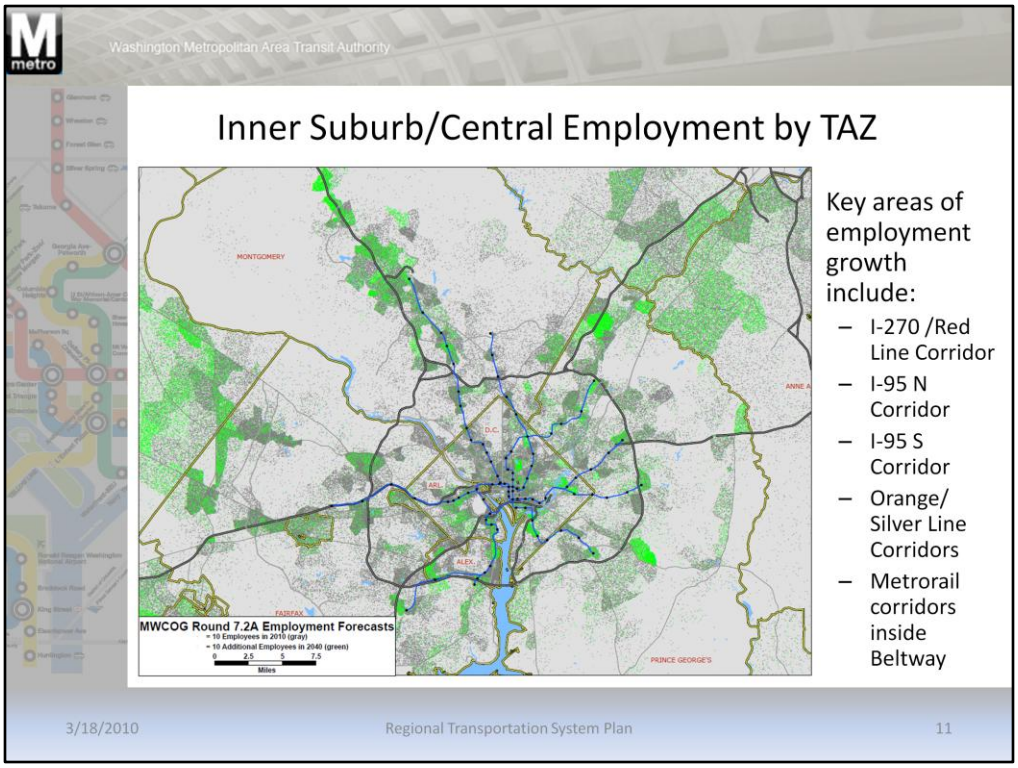
Although population increases occur in the core and central jurisdictions and the inner suburbs, the outer suburbs will experience over half of the region's growth.



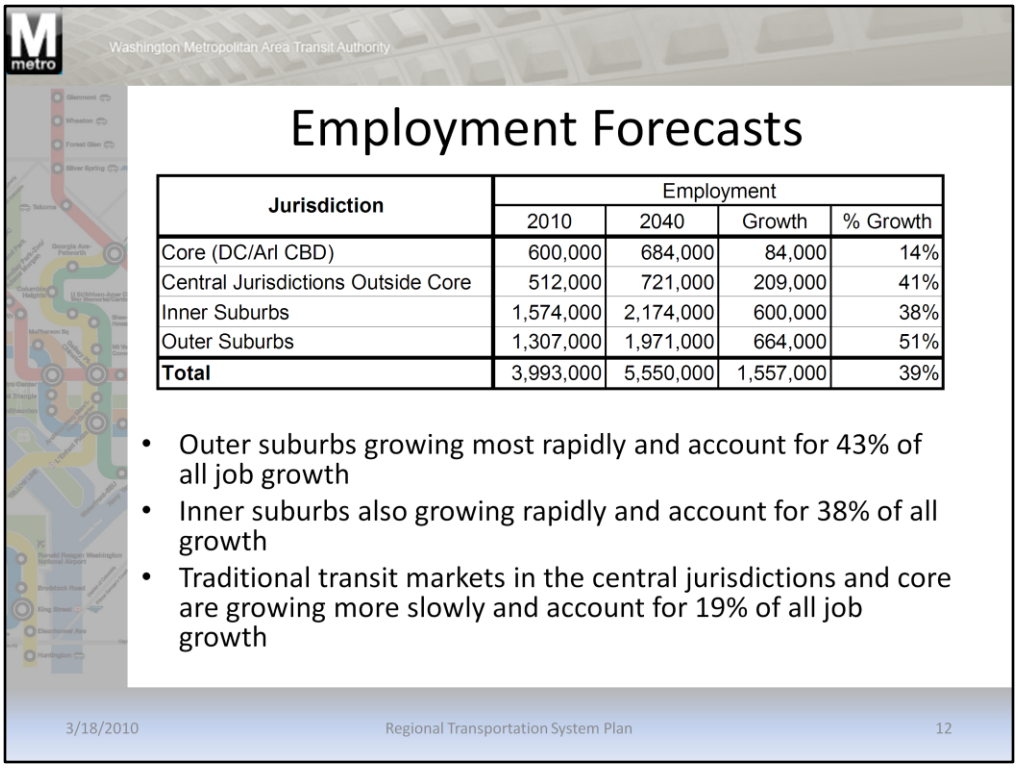
The region will experience a significant employment growth in 2040 with over half of it concentrated in the outer suburbs.



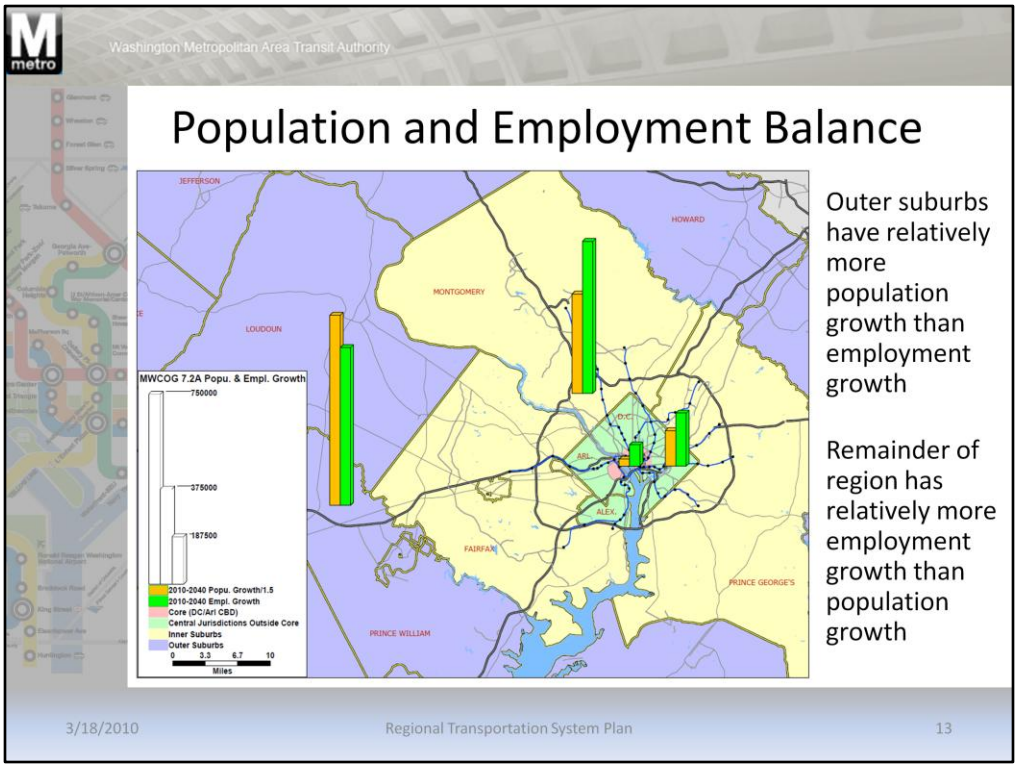
Employment areas in the outer suburbs of Ashburn and Manassas, Virginia and Anne Arundel County will be key job centers in 2040.



Metrorail corridors inside the beltway, along the Silver/Orange Lines and along major interstates will become major employment centers.

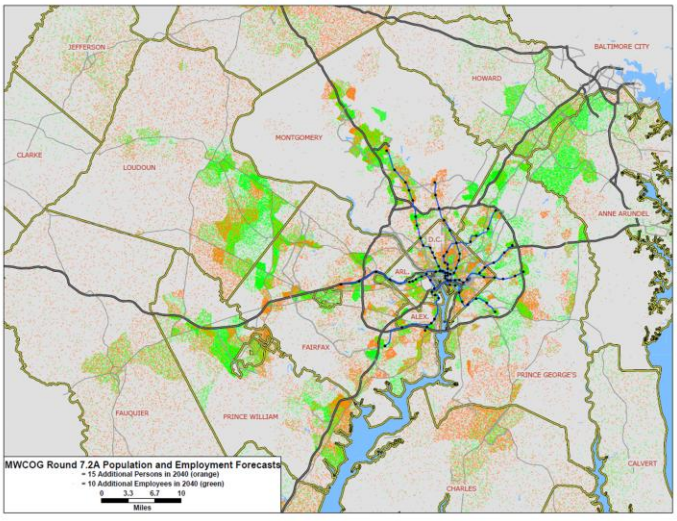


Traditional transit markets in the core will experience steady growth at a slower rate than the inner and outer suburbs.



The outer suburbs will experience more population growth while the remainder of the region will have more employment growth.

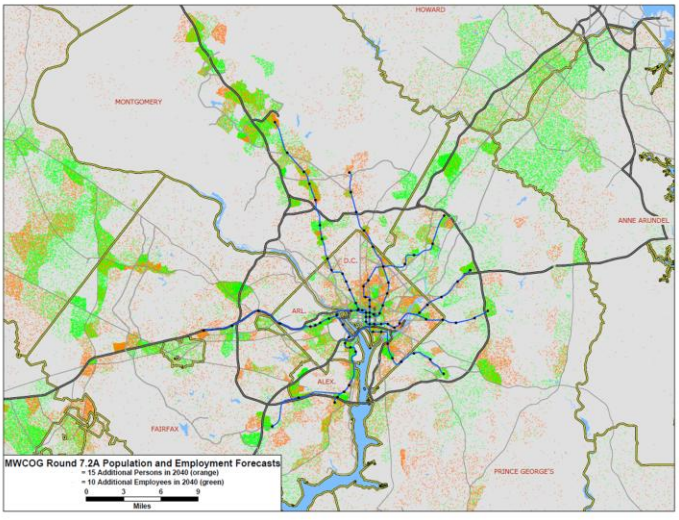
Regional Balance of Population and Employment Growth



Population growth throughout outer suburbs

Employment concentrations in Ashburn, Manassas, I-95S and I-95N Corridors

Inner Suburb/Central Balance of Population and Employment Growth



Strong population growth in DC East of Rock Creek Park and selected locations along Metrorail

Employment growth in DC Core, I-95N, I-270/ Red Line, Orange/Silver Lines, VA-28

Balance of Population and Employment

Jurisdiction	Employment-Population* Balance			
	2010	2040	Growth	% Growth
Core (DC/Arl CBD)	528,000	585,000	57,000	11%
Central Jurisdictions Outside Core	-59,000	10,000	68,000	-117%
Inner Suburbs	-381,000	-173,000	208,000	-55%
Outer Suburbs	-539,000	-674,000	-135,000	25%
Total	-450,000	-253,000	198,000	-44%

*Defined as Employment-(Population/1.5)

- Core growing moderately between 2010 and 2040 as a net *importer* of workers from other areas
- Balance in central jurisdictions will shift from being a net *exporter* workers in 2010 to being a net *importer* workers in 2040
- Inner suburbs will be a net *exporter* of workers in both 2010 and 2040 but this number will be much smaller in the future
- Outer suburbs will grow between 2010 and 2040 as a net *exporter* of workers

Demographics and the impact on travel demand

YEAR 2040 TRIP-MAKING

Implication of demographics on travel

- Demographic growth has a direct impact on travel patterns
- Strong demographic growth in suburban areas result in dramatic shifts in travel patterns over what is seen today

Key Work Trip Travel Growth Areas

Markets	2008 to 2040 Growth in Weekday Home-Based Work Trips	Percent
Traditional Commute to Core	86,000	12%
Commute to Central Juris.	153,000	41%
Reverse Commute	62,000	35%
Central Circulation	76,000	39%
Suburb-Suburb	1,236,000	45%

- Traditional commute to core
  - growing at modest rate / direct impact on core capacity issues
- Commute to central jurisdictions
  - growing rapidly / may contribute to core capacity issues
- Reverse commute and central circulation
  - moderate to high growth
- Suburb-to-suburb
  - key growth market

Impacts on Work Trip Travel Patterns

Summary of Home-Based Work (HBW) Weekday Person Trips by 4 Districts: Growth from 2008 to 2040

		Employment Location				
		Core	Central Jurisdictions Outside Core	Inner Suburbs	Outer Suburbs	Total
Residence Location	Core (DC/Arl CBD)	6,000	8,000	6,000	1,000	21,000
	Central Jurisdictions Outside Core	31,000	70,000	39,000	8,000	148,000
	Inner Suburbs	27,000	91,000	332,000	61,000	511,000
	Outer Suburbs	28,000	62,000	243,000	600,000	933,000
	Total	92,000	231,000	620,000	670,000	1,613,000

Summary of Home-Based Work (HBW) Weekday Person Trips by 4 Districts: % Growth from 2008 to 2040

		Employment Location				
		Core	Central Jurisdictions Outside Core	Inner Suburbs	Outer Suburbs	Total
Residence Location	Core (DC/Arl CBD)	24%	50%	43%	33%	36%
	Central Jurisdictions Outside Core	13%	41%	31%	50%	27%
	Inner Suburbs	7%	32%	30%	43%	26%
	Outer Suburbs	27%	71%	62%	54%	55%
	Total	12%	41%	37%	53%	38%

Impacts on Non-Work Trip Travel Patterns

Summary of Non-Work Weekday Person Trips by 4 Districts: Growth from 2008 to 2040

		Attraction Location				
		Core	Central Jurisdictions Outside Core	Inner Suburbs	Outer Suburbs	Total
Production Location	Core (DC/Arl CBD)	35,000	16,000	2,000	3,000	56,000
	Central Jurisdictions Outside Core	71,000	331,000	83,000	8,000	493,000
	Inner Suburbs	-10,000	91,000	1,802,000	173,000	2,056,000
	Outer Suburbs	8,000	31,000	203,000	3,204,000	3,446,000
	Total	104,000	469,000	2,090,000	3,388,000	6,051,000

Summary of Non-Work Weekday Person Trips by 4 Districts: % Growth from 2008 to 2040

		Attraction Location				
		Core	Central Jurisdictions Outside Core	Inner Suburbs	Outer Suburbs	Total
Production Location	Core (DC/Arl CBD)	23%	28%	13%	300%	25%
	Central Jurisdictions Outside Core	17%	22%	12%	28%	19%
	Inner Suburbs	-4%	11%	23%	26%	21%
	Outer Suburbs	38%	42%	29%	46%	45%
	Total	12%	19%	23%	45%	30%

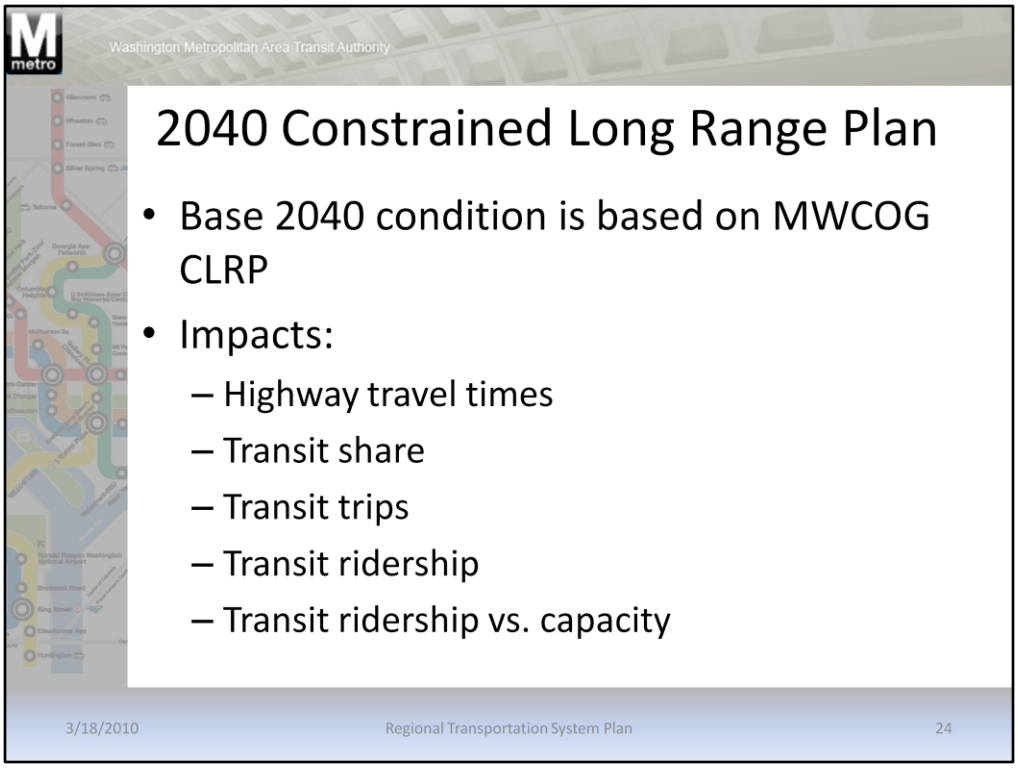
- Non-work trip making increases by 6.1M trips/day as compared to work trip growth of 1.6M trips/day
- Highest growth in outer suburbs, consistent with population forecasts

Key Trends in Trip-Making for 2040

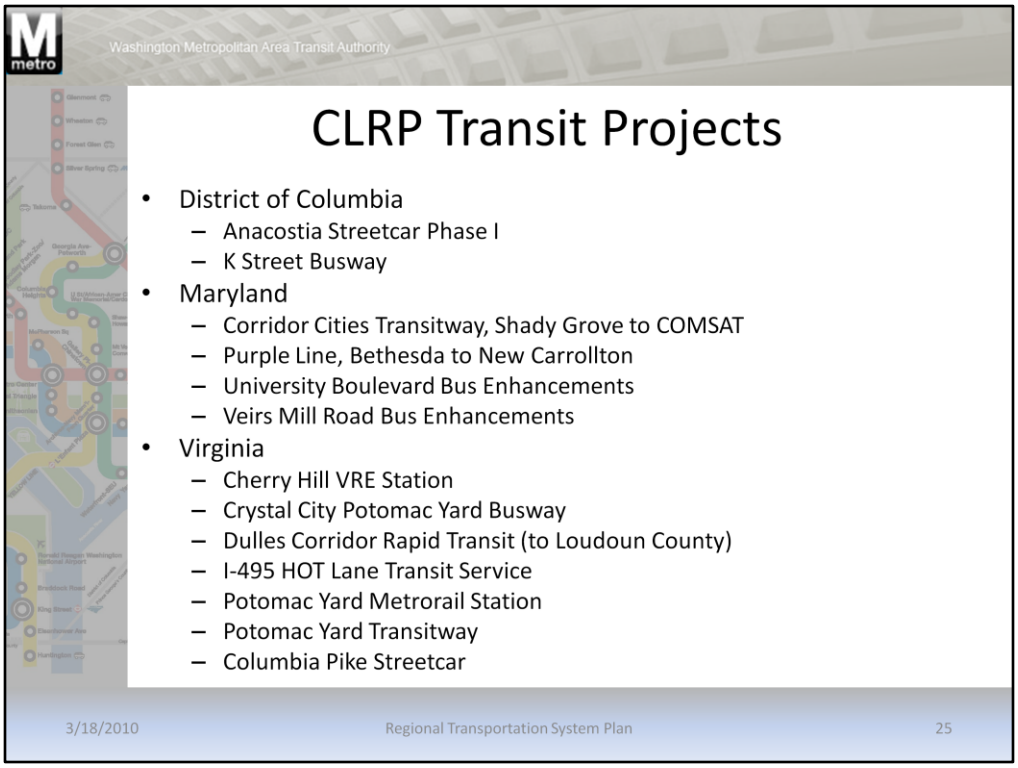
- Increased dispersion of travel patterns
- Moderate growth in traditional commutes to DC Core – a key Metro market
- Growth in travel within central jurisdictions – highlights the opportunities for circulators
- Highest growth in travel to suburban destinations – highlights the need for developing transit solutions for these areas

Year 2040 Base Case Analysis

2040 CONSTRAINED LONG-RANGE PLAN



The base case analysis for the RTSP 2040 utilizes the 2040 Constrained Long Range Plan (CLRP).



The base case analysis includes all of the regional projects above which are in the 2040 CLRP.

Modeled 2008 and 2040 Roadway Speeds

Summary of Average Daily Weekday Speed (MPH) by 4 Districts: 2008

		Attraction Location				
		Core	Central Jurisdictions Outside Core	Inner Suburbs	Outer Suburbs	Region-wide
Production Location	Core (DC/Arl CBD)	18	19	25	33	22
	Central Jurisdictions Outside Core	15	17	24	32	20
	Inner Suburbs	18	20	23	31	23
	Outer Suburbs	25	27	25	28	27
	Region-wide	19	21	24	28	24

Summary of Average Daily Weekday Speed (MPH) by 4 Districts: 2040

		Attraction Location				
		Core	Central Jurisdictions Outside Core	Inner Suburbs	Outer Suburbs	Region-wide
Production Location	Core (DC/Arl CBD)	15	17	24	31	21
	Central Jurisdictions Outside Core	14	16	22	30	19
	Inner Suburbs	17	18	21	27	21
	Outer Suburbs	22	23	22	23	22
	Region-wide	18	19	21	24	22

- Highway speeds decline across region between 2008 and 2040 as facilities become more congested

Modeled 2008 and 2040 Roadway Speeds

Summary of Average Daily Weekday Speed (MPH) by 4 Districts: % Growth from 2008 to 2040

		Attraction Location				
		Core	Central Jurisdictions Outside Core	Inner Suburbs	Outer Suburbs	Region-wide
Production Location	Core (DC/Arl CBD)	-12%	-11%	-6%	-6%	-4%
	Central Jurisdictions Outside Core	-6%	-7%	-5%	-8%	-5%
	Inner Suburbs	-4%	-7%	-8%	-11%	-7%
	Outer Suburbs	-11%	-15%	-14%	-18%	-16%
	Region-wide	-5%	-7%	-10%	-17%	-11%

- Congestion increases most notable in outer suburbs to all destinations

Modeled 2008 and 2040 Transit Shares

Summary of Weekday Transit Share by 4 Districts: 2008

		Attraction Location				
		Core	Central Jurisdictions Outside Core	Inner Suburbs	Outer Suburbs	Region-wide
Production Location	Core (DC/Arl CBD)	27%	40%	43%	0%	31%
	Central Jurisdictions Outside Core	78%	7%	5%	0%	16%
	Inner Suburbs	68%	7%	1%	0%	4%
	Outer Suburbs	39%	5%	0%	0%	1%
	Region-wide	63%	7%	1%	0%	4%

Summary of Weekday Transit Share by 4 Districts: 2040

		Attraction Location				
		Core	Central Jurisdictions Outside Core	Inner Suburbs	Outer Suburbs	Region-wide
Production Location	Core (DC/Arl CBD)	30%	48%	50%	0%	35%
	Central Jurisdictions Outside Core	82%	8%	7%	0%	17%
	Inner Suburbs	79%	9%	2%	0%	4%
	Outer Suburbs	54%	10%	1%	0%	1%
	Region-wide	70%	9%	2%	0%	4%

- Transit improvements coupled with increased roadway congestion result in substantial increases in transit shares in individual markets.
- Regional program of projects succeeds in holding transit share constant despite dispersion of population and employment

Modeled 2008 and 2040 Transit Trips

Summary of Weekday Linked Transit Person Trips by 4 Districts: 2008

		Attraction Location				
		Core	Central Jurisdictions Outside Core	Inner Suburbs	Outer Suburbs	Total
Production Location	Core (DC/Arl CBD)	38,000	21,000	9,000	<500	68,000
	Central Jurisdictions Outside Core	290,000	106,000	38,000	<500	434,000
	Inner Suburbs	267,000	73,000	109,000	<500	449,000
	Outer Suburbs	35,000	8,000	4,000	1,000	48,000
	Total	630,000	208,000	160,000	1,000	999,000

Summary of Weekday Linked Transit Person Trips by 4 Districts: 2040

		Attraction Location				
		Core	Central Jurisdictions Outside Core	Inner Suburbs	Outer Suburbs	Total
Production Location	Core (DC/Arl CBD)	50,000	32,000	13,000	<500	95,000
	Central Jurisdictions Outside Core	345,000	158,000	56,000	<500	559,000
	Inner Suburbs	298,000	104,000	184,000	1,000	587,000
	Outer Suburbs	56,000	24,000	18,000	3,000	101,000
	Total	749,000	318,000	271,000	4,000	1,342,000

- Growth in trip making and transit share leads to strong growth in transit ridership throughout region

Modeled 2008 and 2040 Transit Trips

Summary of Weekday Linked Transit Person Trips by 4 Districts: Growth from 2008 to 2040

		Attraction Location				
		Core	Central Jurisdictions Outside Core	Inner Suburbs	Outer Suburbs	Total
Production Location	Core (DC/Arl CBD)	12,000	11,000	4,000	<500	27,000
	Central Jurisdictions Outside Core	55,000	52,000	18,000	<500	125,000
	Inner Suburbs	31,000	31,000	75,000	1,000	138,000
	Outer Suburbs	21,000	16,000	14,000	2,000	53,000
	Total	119,000	110,000	111,000	3,000	343,000

Summary of Weekday Linked Transit Person Trips by 4 Districts: % Growth from 2008 to 2040

		Attraction Location				
		Core	Central Jurisdictions Outside Core	Inner Suburbs	Outer Suburbs	Total
Production Location	Core (DC/Arl CBD)	32%	52%	44%	---	40%
	Central Jurisdictions Outside Core	19%	49%	47%	---	29%
	Inner Suburbs	12%	42%	69%	---	31%
	Outer Suburbs	60%	200%	350%	200%	110%
	Total	19%	53%	69%	300%	34%

- Regional transit trip making to grow by 34%
- Travel to core to grows by 19%
- Travel to non-core areas to grow even faster

Year 2040 Base Case Analysis

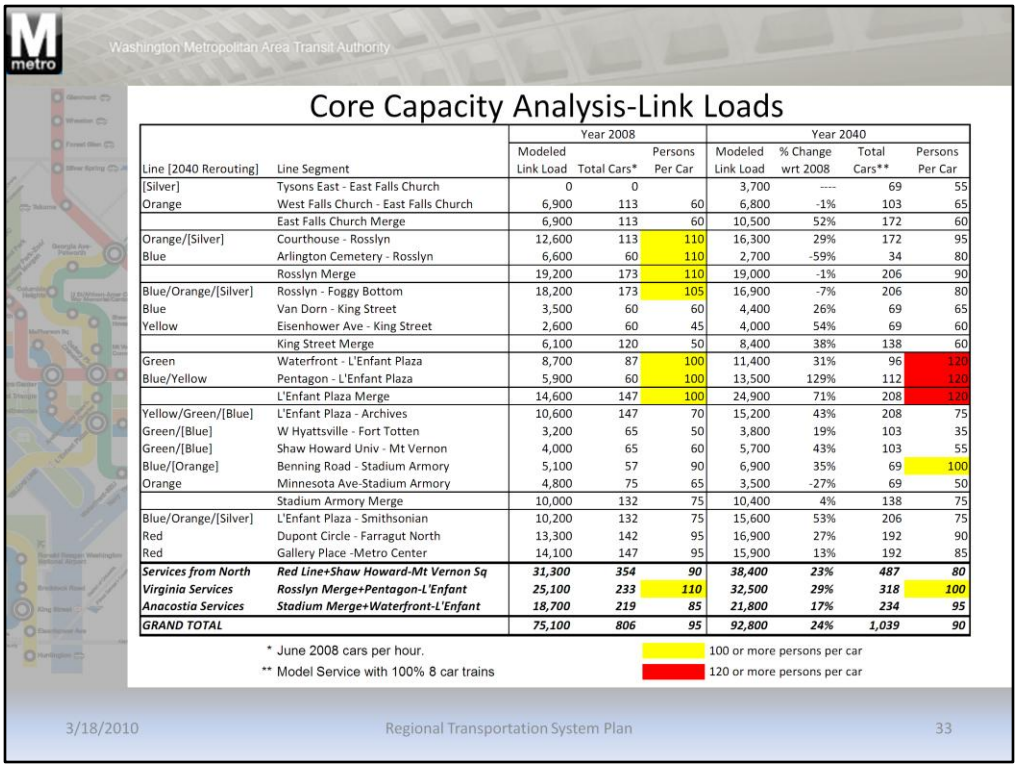
YEAR 2040 TRANSIT RIDERSHIP

Modeled 2008 and 2040 Transit Boardings

Ridership Summary by Operator	2008 Modeled Weekday Boardings	2040 Modeled Weekday Boardings	Growth % from 2008 to 2040
Metrorail	786,000	1,029,000	31%
Commuter Rail***	43,000	53,000	25%
Metrobus - District of Columbia	240,000	259,000	8%
Metrobus - Maryland	138,000	169,000	23%
Metrobus - Virgina	84,000	101,000	20%
New Premium Transit	0	54,000	--
Other Bus Operators	136,000	197,000	45%
TOTAL TRANSIT BOARDINGS	**1,426,000**	**1,861,000**	**31%**

*** 2008 Observed Commuter Rail boardings adjusted to exclude MARC trips from outside the modeling area.

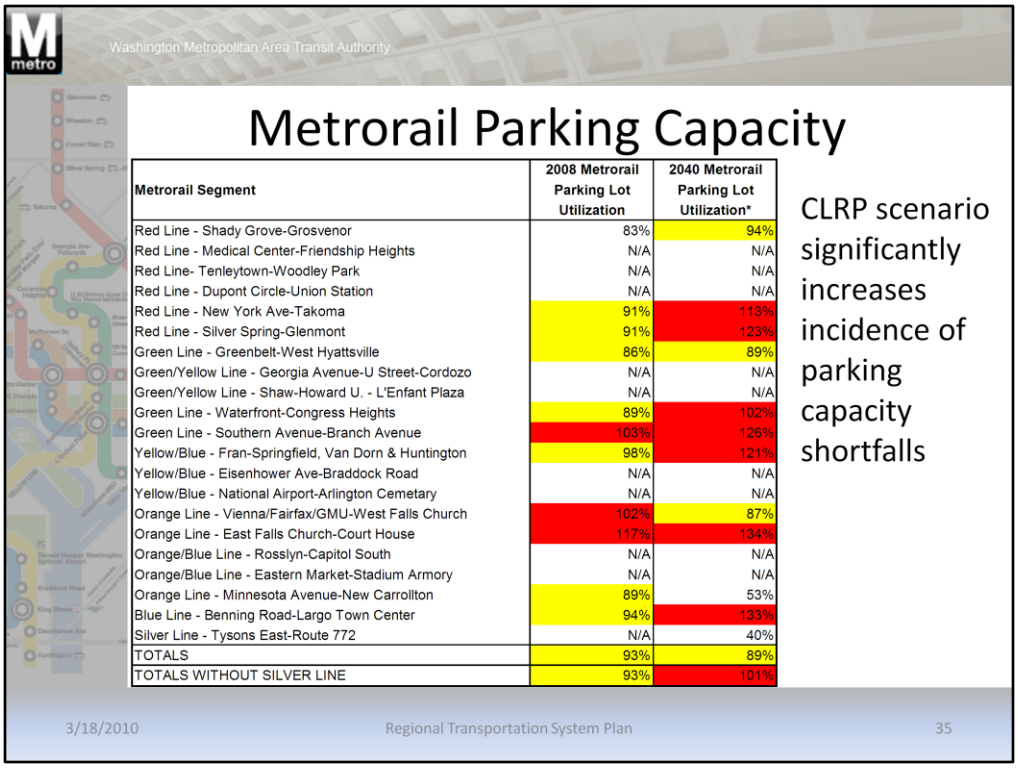
- Boardings grow less rapidly than transit trips suggesting that new services provide more direct trips and reduce transferring



This graphic shows the change in the number of persons per car between 2008 and 2040. We will experience 120 or more persons per car on many of the Metrorail Lines by the year 2040.

2040 Core Capacity Analysis-Link Loads

- Transition to full 8 car trains (25% increase in capacity) allows Metrorail to keep up with demand on most lines
- Blue/Yellow merge will create capacity issues between Pentagon and L'Enfant
- Green Line growth and fewer peak trains lead to capacity problems

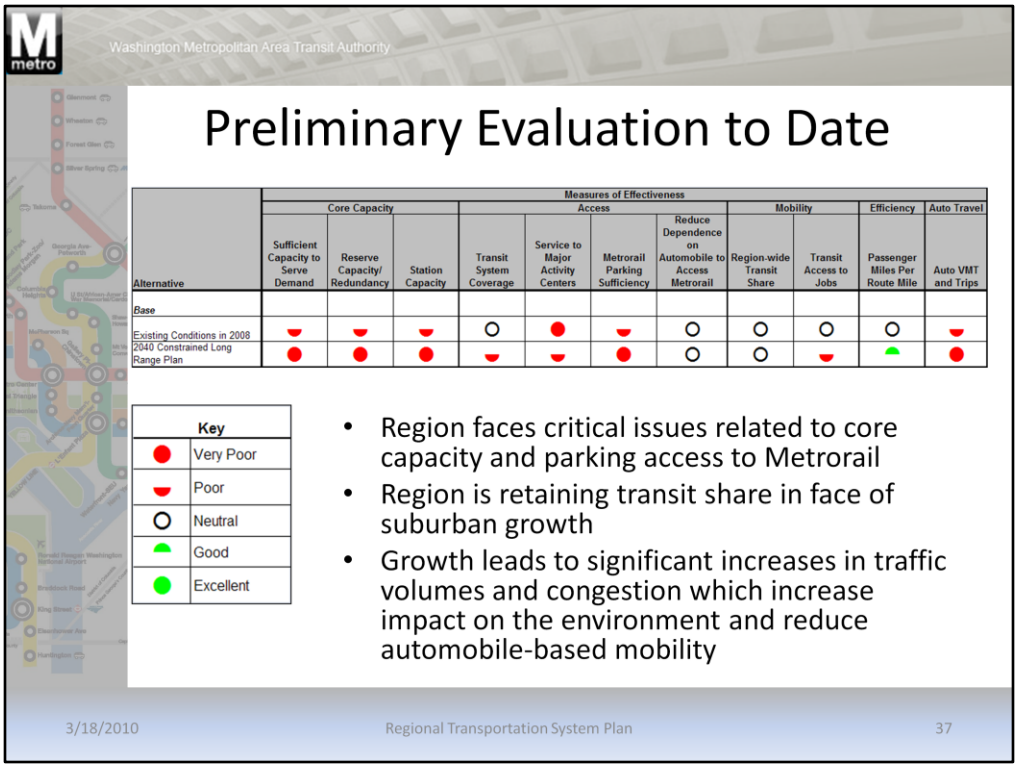


Metrorail Segment	2008 Metrorail Parking Lot Utilization	2040 Metrorail Parking Lot Utilization*
Red Line - Shady Grove-Grosvenor	83%	94%
Red Line - Medical Center-Friendship Heights	N/A	N/A
Red Line- Tenleytown-Woodley Park	N/A	N/A
Red Line - Dupont Circle-Union Station	N/A	N/A
Red Line - New York Ave-Takoma	91%	113%
Red Line - Silver Spring-Glenmont	91%	123%
Green Line - Greenbelt-West Hyattsville	86%	89%
Green/Yellow Line - Georgia Avenue-U Street-Cordozo	N/A	N/A
Green/Yellow Line - Shaw-Howard U. - L'Enfant Plaza	N/A	N/A
Green Line - Waterfront-Congress Heights	89%	102%
Green Line - Southern Avenue-Branch Avenue	103%	126%
Yellow/Blue - Fran-Springfield, Van Dorn & Huntington	98%	121%
Yellow/Blue - Eisenhower Ave-Braddock Road	N/A	N/A
Yellow/Blue - National Airport-Arlington Cemetary	N/A	N/A
Orange Line - Vienna/Fairfax/GMU-West Falls Church	102%	87%
Orange Line - East Falls Church-Court House	117%	134%
Orange/Blue Line - Rosslyn-Capitol South	N/A	N/A
Orange/Blue Line - Eastern Market-Stadium Armory	N/A	N/A
Orange Line - Minnesota Avenue-New Carrollton	89%	53%
Blue Line - Benning Road-Largo Town Center	94%	133%
Silver Line - Tysons East-Route 772	N/A	40%
TOTALS	93%	89%
TOTALS WITHOUT SILVER LINE	93%	101%

The increase in ridership by the year 2040 will also result in higher parking utilization at many Metrorail parking lots. One hundred percent utilization or higher is denoted by the red color and below 100% utilization is represented by the yellow color.

2008 and 2040 CLRP

INITIAL ANALYSIS OF MEASURES OF EFFECTIVENESS



From our preliminary analysis, we can see the Measures of Effectiveness (MOE's) of our existing conditions (2008) and the 2040 CLRP.