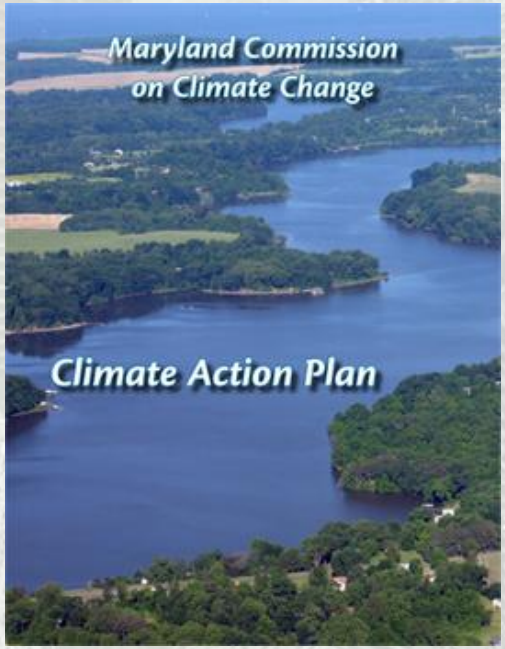
TRANSPORTATION AND CLIMATE CHANGE IN MARYLAND

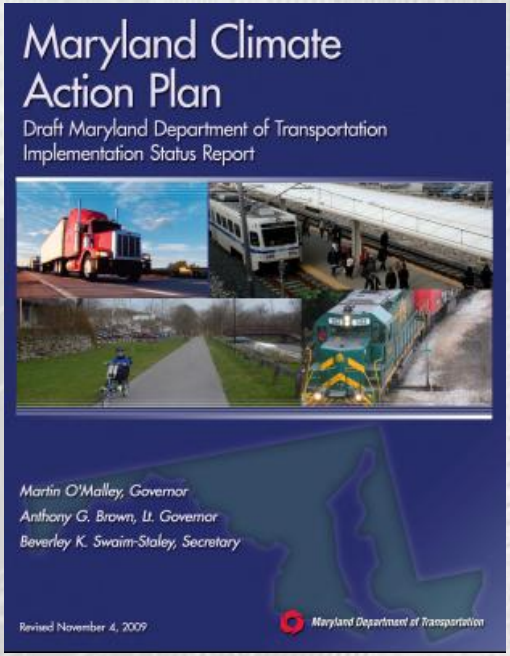
Don Halligan

Maryland Department of Transportation
Office of Planning & Capital Programming

Climate Change Milestones:

- April 2007 - Executive Order;
- January 2008 - Report from the Climate Change Commission;
- May 2009 – GHG Emission Reduction Act
- November 2009 – Climate Action Plan Implementation Status Report, MDOT

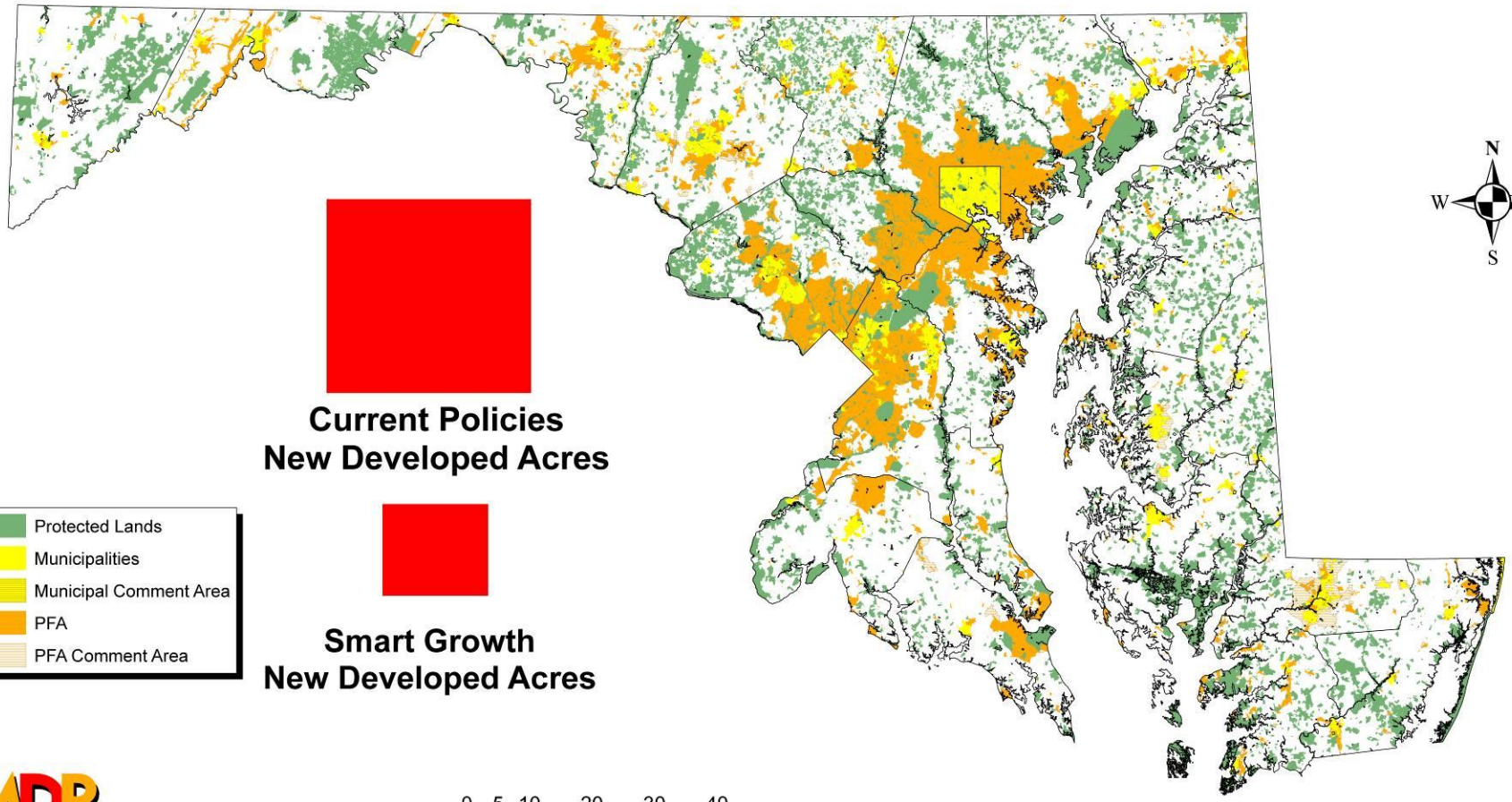




Maryland Basics:

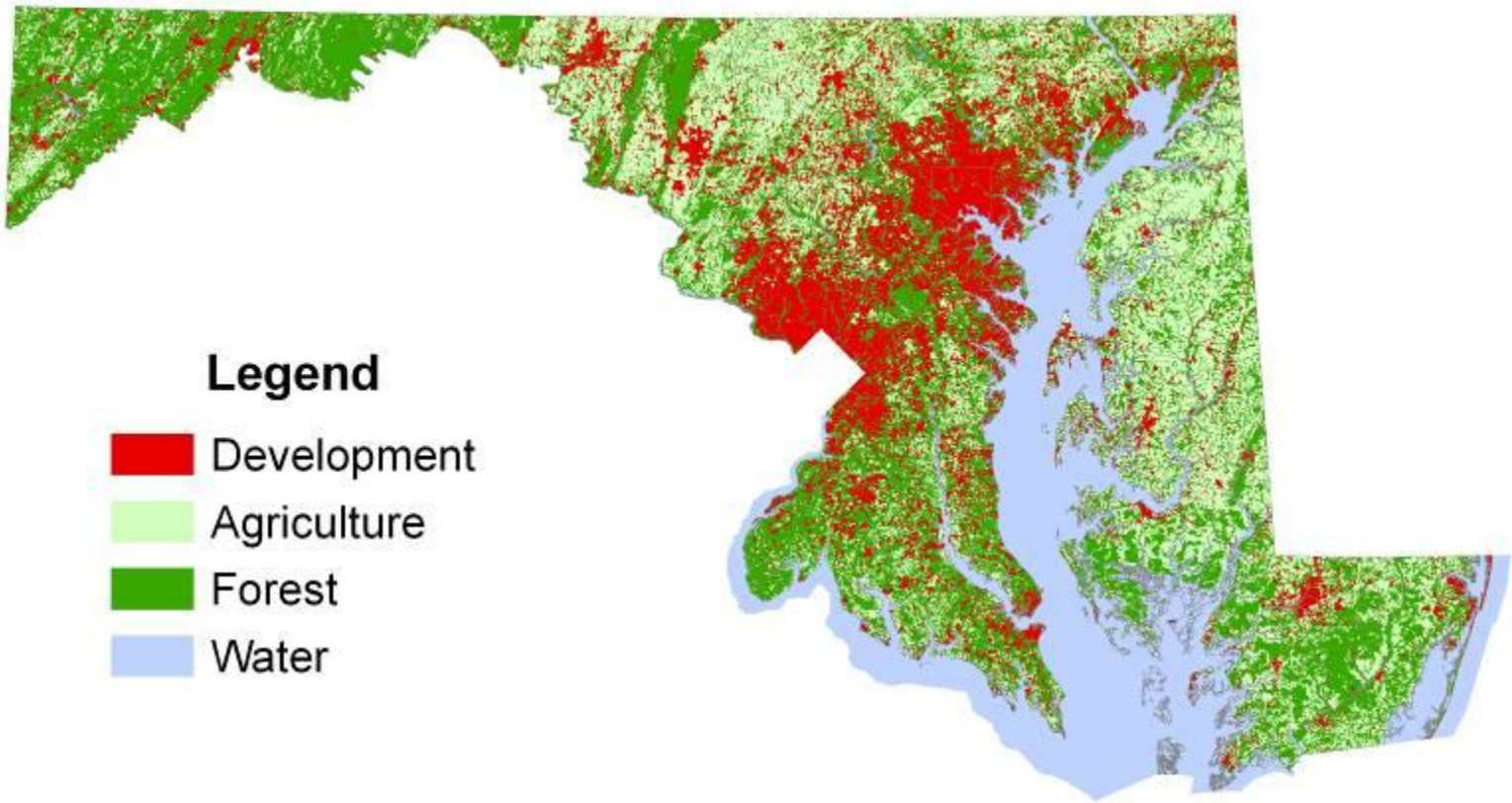
- Maryland has 4,360 miles of tidal shoreline
- Average temperature in College Park, MD has increased 2.4 since 1900
- Over the past 100 years, sea level in the Chesapeake Bay region has risen 1 foot
- 13 Islands have already been lost
- Future Projection: Sea level will rise an additional 2 – 3 feet by 2100

Maryland Priority Funding Areas / Protected Lands
and
New Potential Developed Acres by 2030

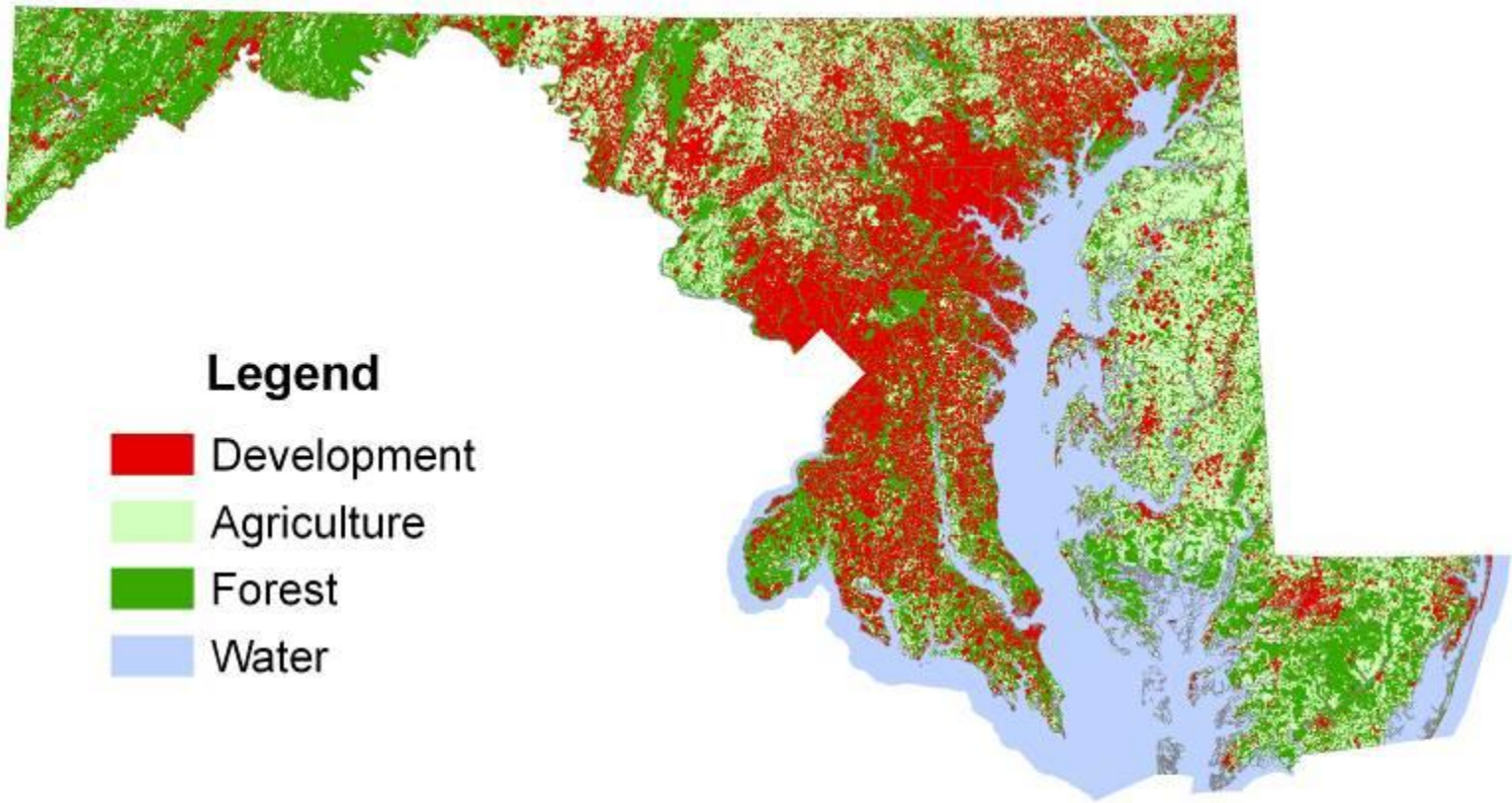


MDP Created November 2007

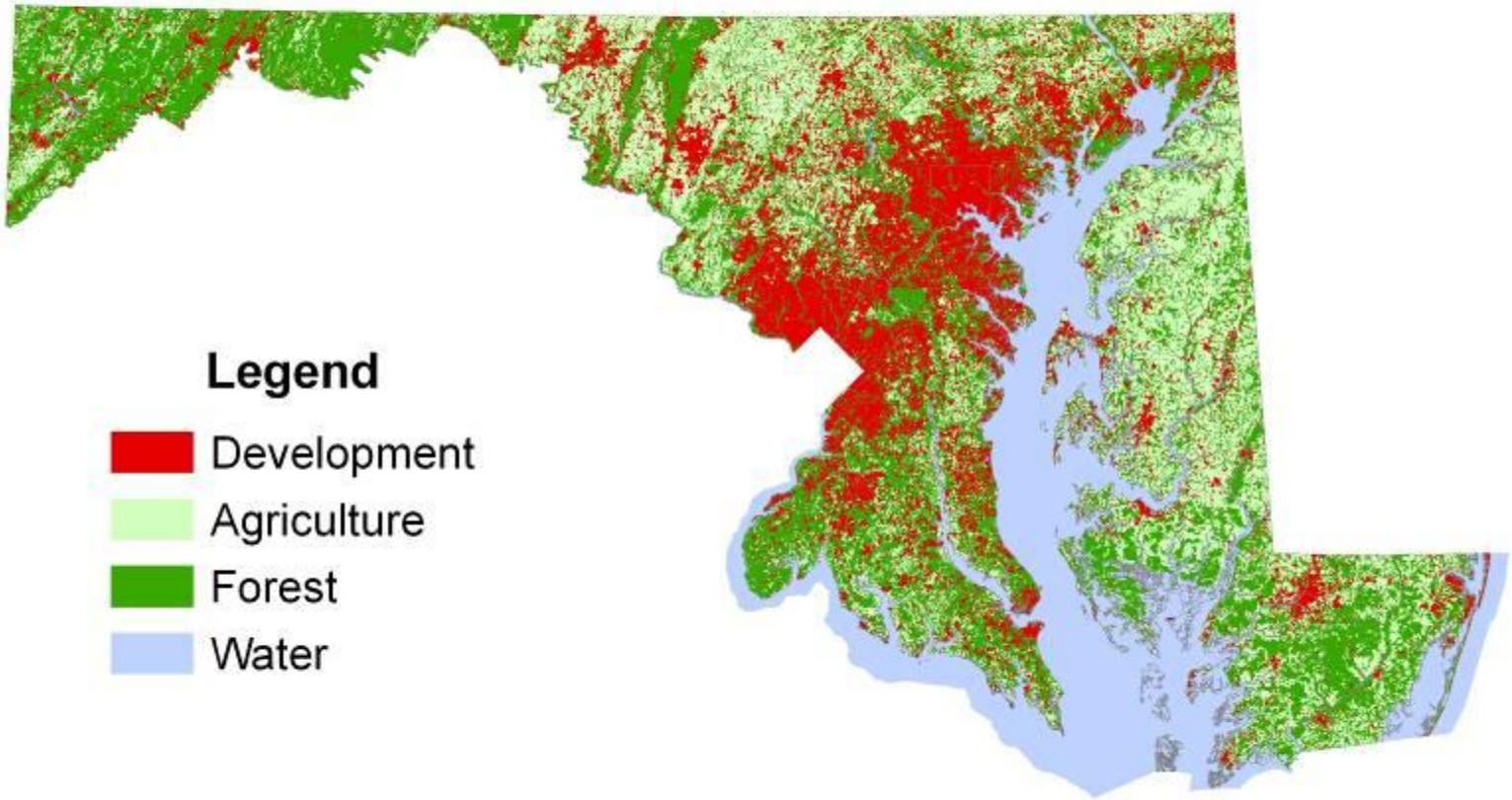
2002 Land Use / Land Cover for Maryland



2030 Land Use for Maryland
Current Trends



2030 Land Use for Maryland
Smart Growth Scenario



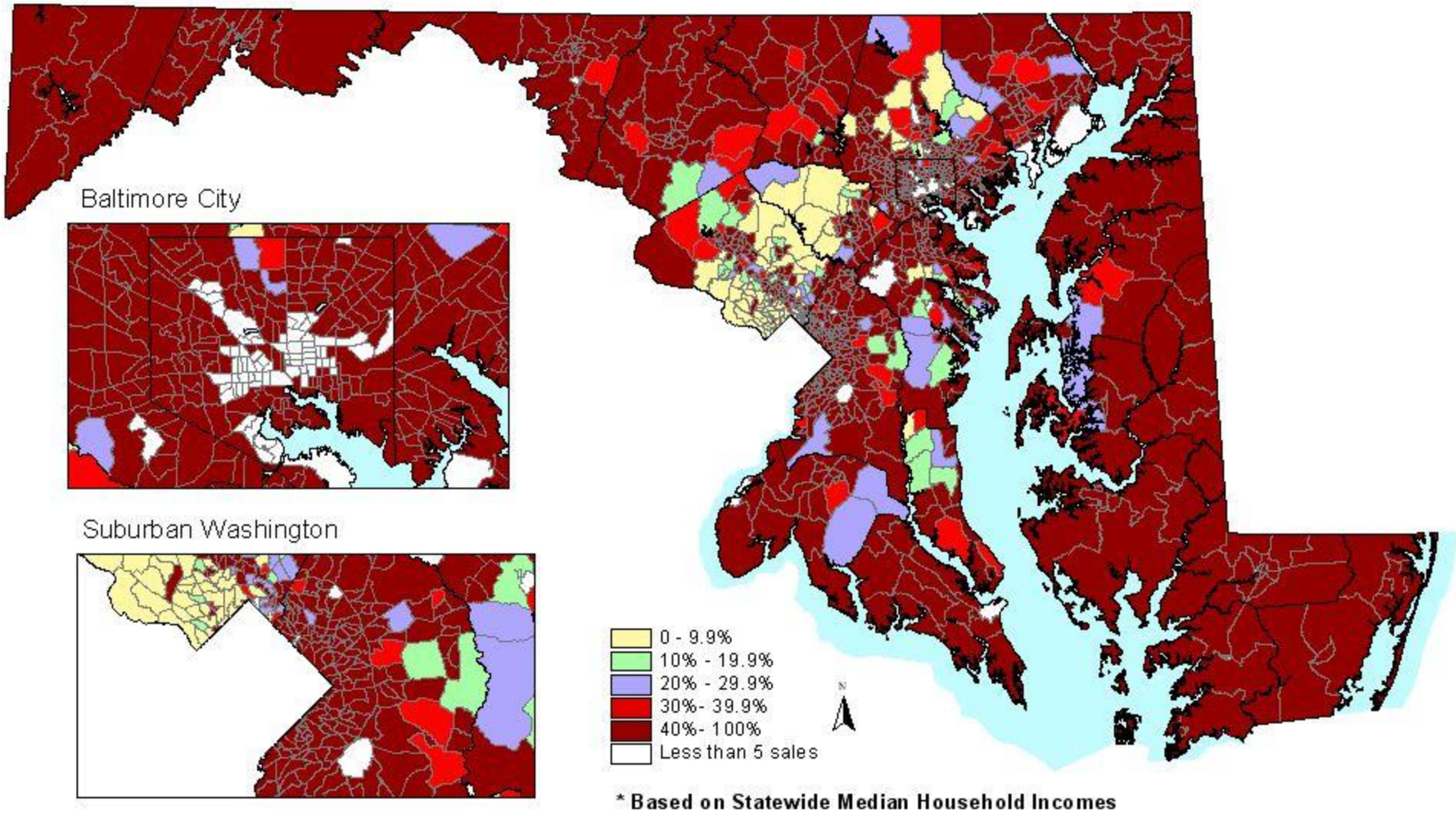
Scope of Challenge:

Housing Affordability
by Census Tract
for Repeat Buyers,

2002 – 2006

(based on Median HH incomes)

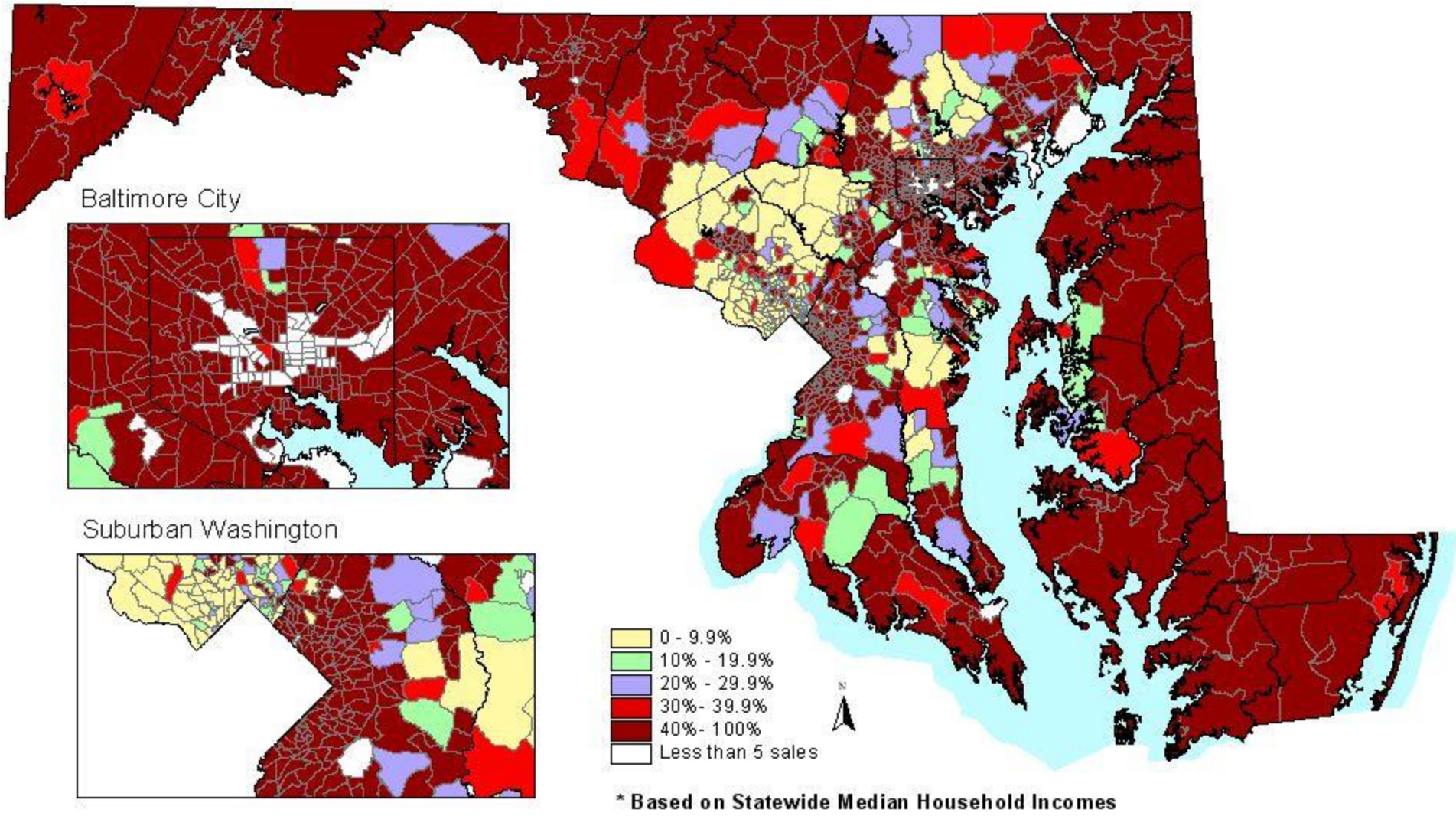
Percent of 2002 Housing Sales by Census Tract Affordable to Repeat Home Buyers *



* Based on Statewide Median Household Incomes

MDP **Source: The Maryland Department of Planning, Planning Data Services**

Percent of 2003 Housing Sales by Census Tract Affordable to Repeat Home Buyers *



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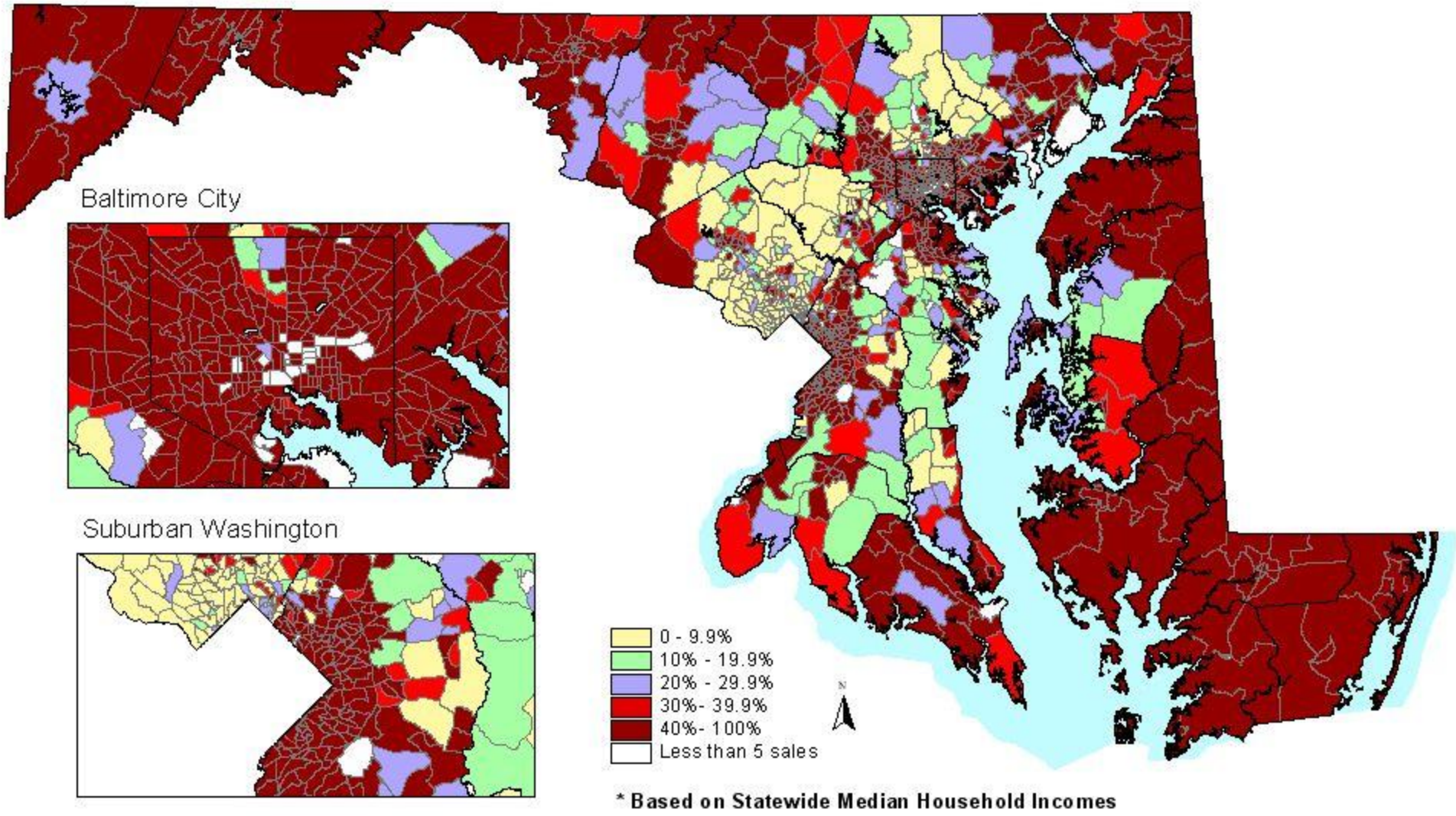

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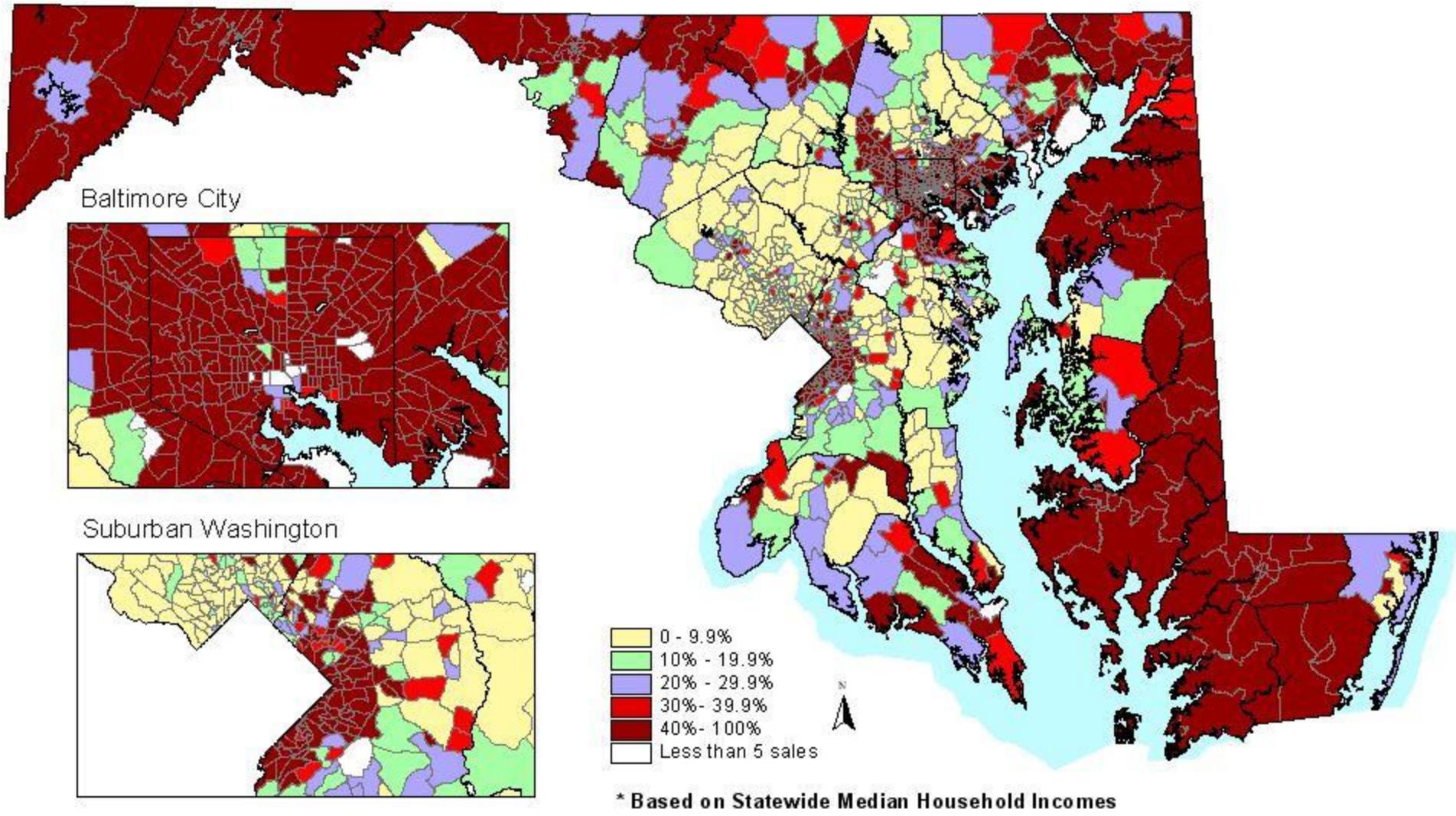

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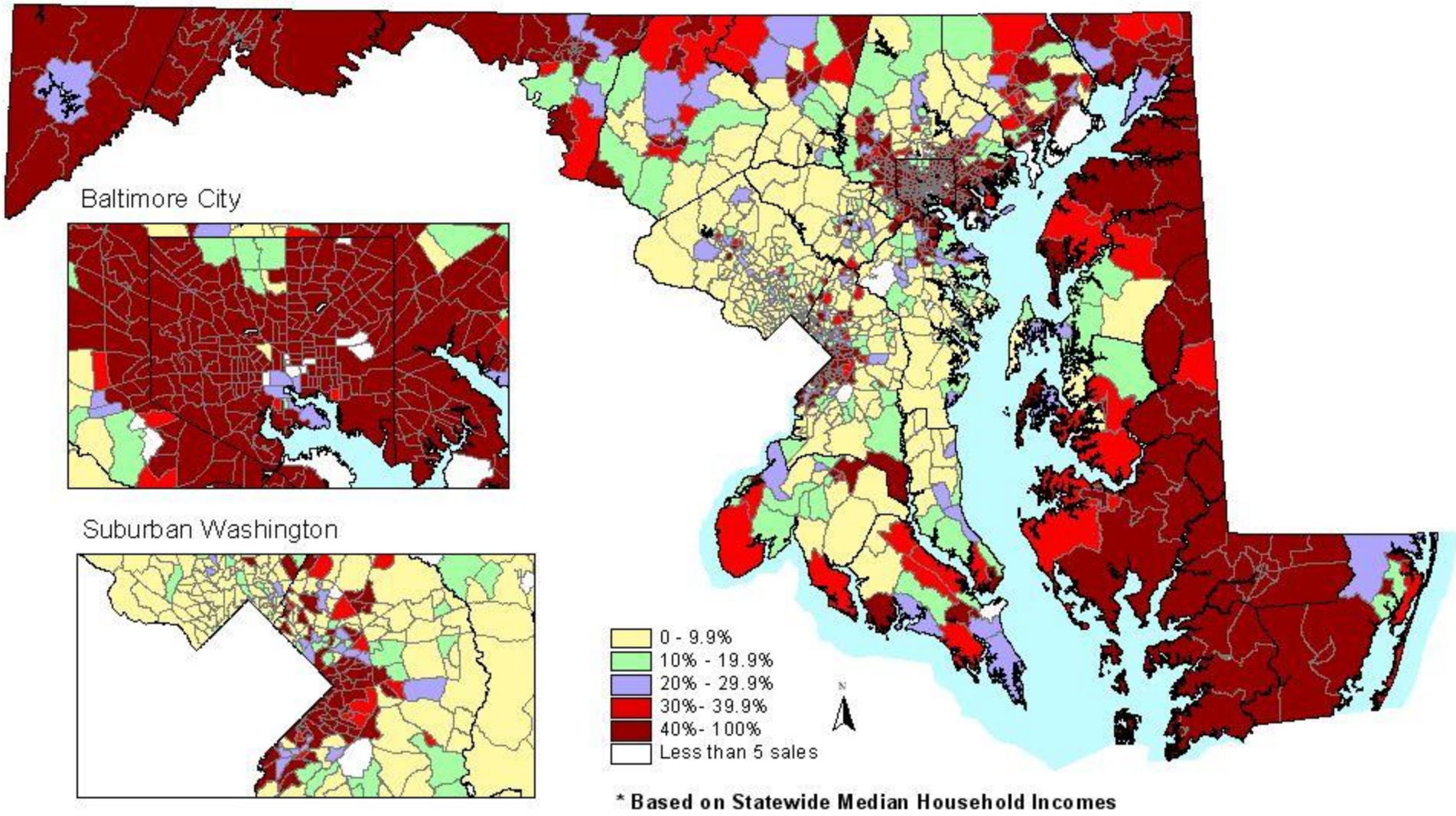

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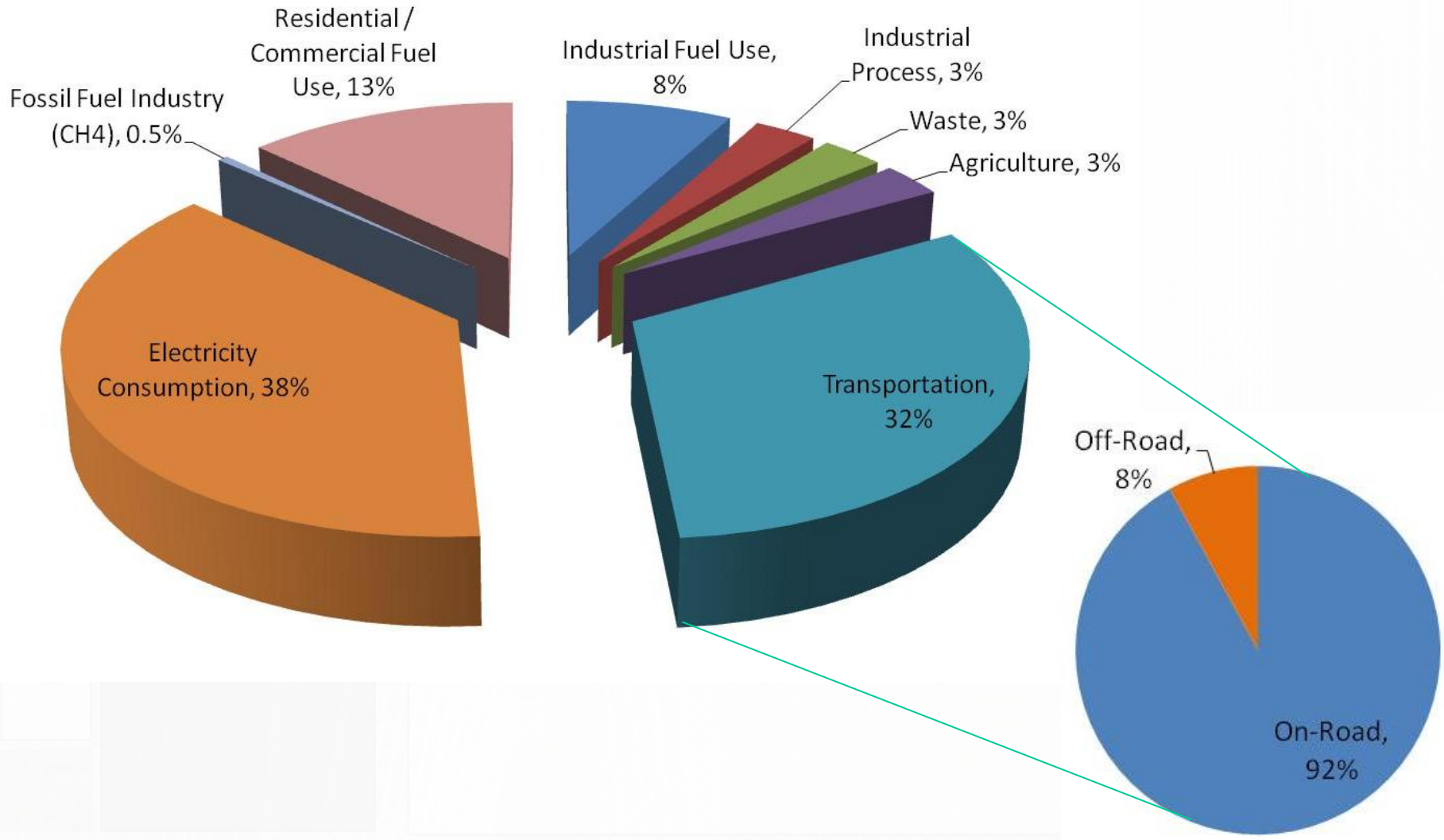
Maryland GHG Sector Sources:



Milestone Action details:

April 2007
Governor O'Malley's Executive Order

- 25% reduction by 2020 from 2006 baseline levels
- Established Maryland Commission on Climate Change (MCCC)
- Members include:
  - (16) Agency Heads;
  - (6) General Assembly Members;

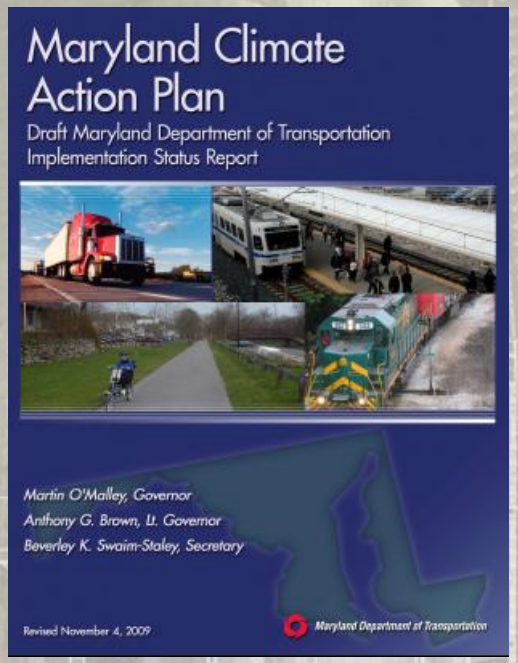
August 2008
Climate Action Plan (CAP)

- 42 Policy Options Across all Sectors –
- 8 Transportation & Land Use Policy Options
  - TLU-2: Land Use
  - TLU-3: Transit
  - TLU-5: Intercity Travel
  - TLU-6: PAYD
  - TLU-8: Bike / Ped
  - TLU-9: Pricing
  - TLU-10: Technologies
  - TLU-11: GHG Impact Analysis

May 2009
2009 GHG Emission Reduction Act

- Established Implementation requirements, but NO Financial Commitments
  - by 12/31/11 – Submit Draft Implementation Plan
  - by 12/31/12 – Final Implementation Plan Adopted
  - in 2016 General Assembly will Conduct a Mid-Course Review

MDOT Implementation Status Report



Purpose:

- To quantify the GHG emission reduction contribution that the transportation sector can make by 2020 through:
  - Technology Improvements;
  - Increasing System Efficiencies;
  - VMT Reduction;
  - Use of Low-Carbon Fuels;
  - Fuel Consumption Reductions.

http://www.mde.state.md.us/assets/document/Air/ClimateChange/Appendix_C_%20MDOT_CLimate_Action_Process.pdf

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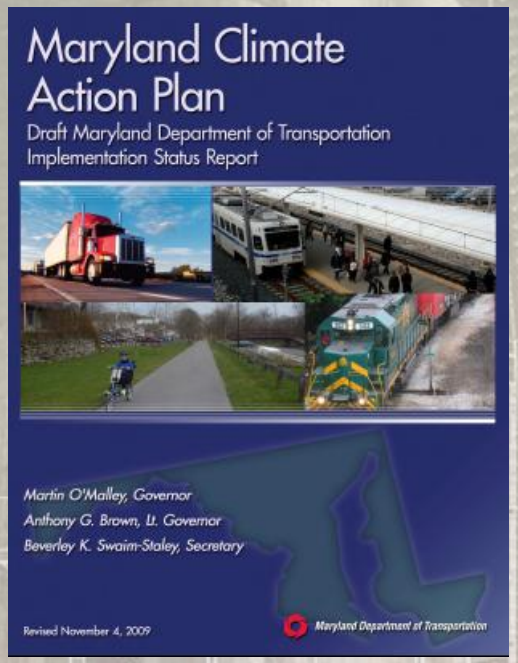
Process:



1. Update the 2006 baseline and 2020 base forecast
2. Establish transportation sector GHG emissions reduction target
3. GHG emissions assessment by Category (GHG reductions and costs)
   - Category 1 – *Technology and fuel* programs
   - Category 2 – *Open and funded projects 2006-2020* (CTP, MPO TIPs & CLRTPs)
   - Category 3 – *TERMS* open and funded 2006-2020
   - Category 4 – *TLU* strategies (established in Phase I)
4. Produce initial GHG emission estimates and costs

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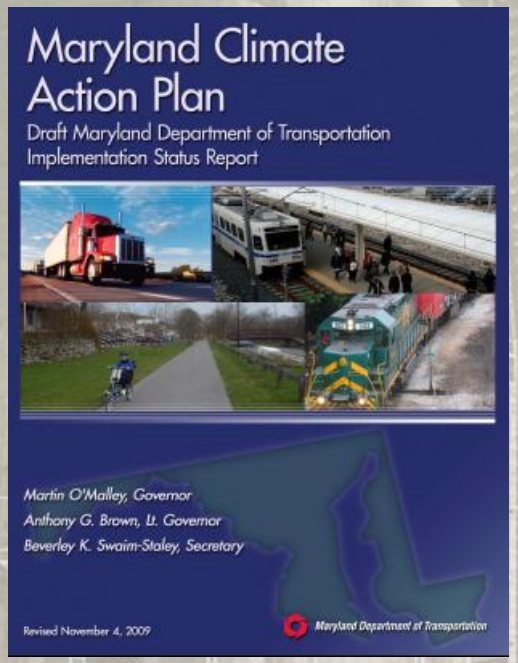
Process:



- Inter-Agency Process (including MPA)
  - Coordinating Committee
  - TLU Working Groups
- Developed 72 Strategies to Implement the CAP's 8 Transportation Policy Options
- 57 Strategies Recommended to Move Forward
- 44 Capable of Implementation by 2020

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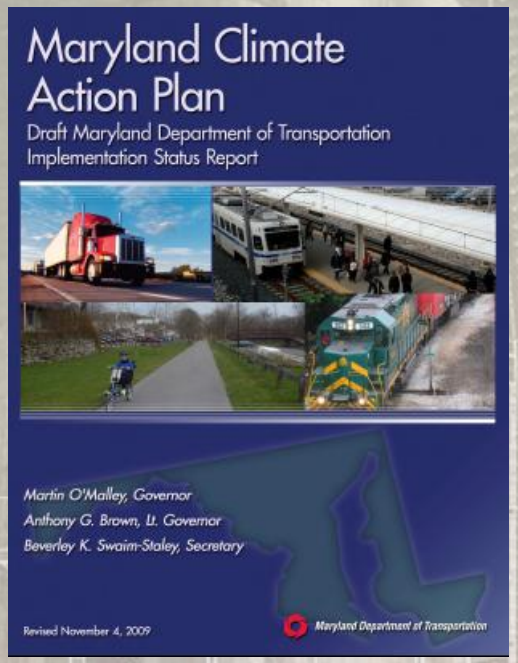
TLU Strategy Process:



- Eight transportation and land use policy options were outlined in the CAP.
- Phase I defines TLU strategies for each TLU policy option
- Phase I identifies 44 "critical" and "important" short/mid-term TLU strategies
- Phase II produces a macro-level assessment of the range of GHG reduction and cost for the 44 TLU strategies

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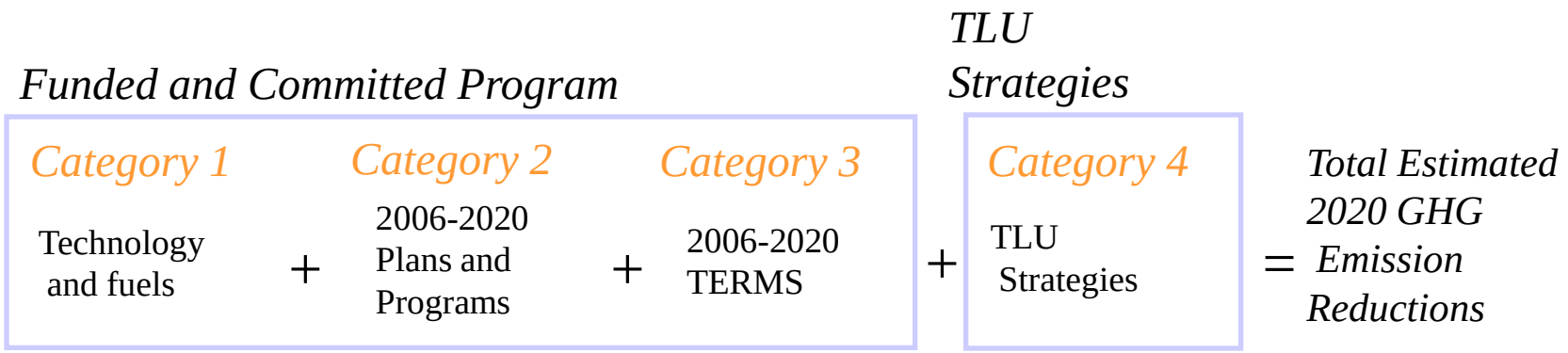
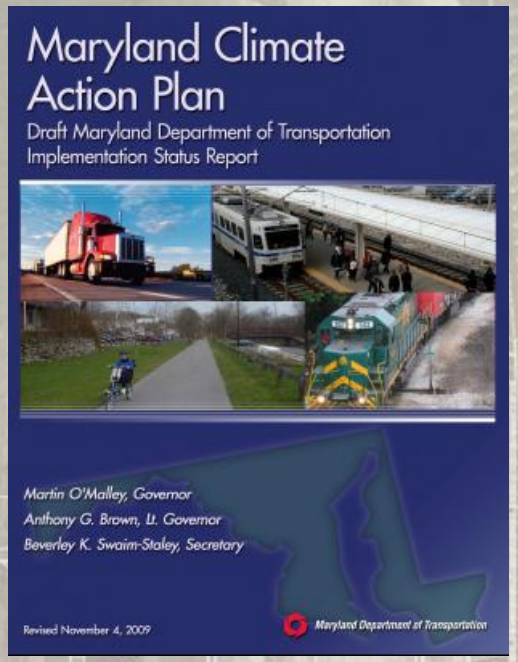
Process:

An Additive Process -



- Emissions estimates are completed for each Category.
- Each Category is mutually exclusive from one another.
- Emissions estimation process avoids any potential for double counting.

Strategy: Land Use and Location Efficiency



- Working Group recommendation for added emphasis on integrated land use and transportation planning
  - State, regional and local programs on best practices
  - Providing staff and technical resources
  - Development and implementation of expanded existing and new smart growth planning and implementation tools
- Evaluates two alternative population density scenarios based on the 2020 MPO (BMC, MWCOG) land use forecasts
- Recognizes that marginal shifts in land use could occur by 2020

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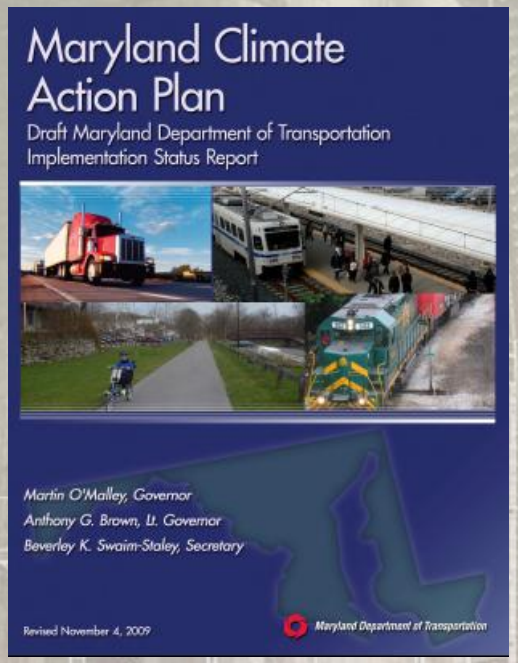
Strategy: Transit



- Working Group supports the goal of doubling transit ridership (compared to 2000) by 2020 through the Phase I recommended strategies
  - Increasing the attractiveness and convenience of transit
  - Improving the operational efficiency of the system
  - Adding new on-road transit system capacity
- GHG reduction and cost estimates based on:
  - Incremental transit trips required above 2020 transit forecast to achieve doubling goal (translated to VMT reduction)
  - Incremental cost estimate based on cost per added trip

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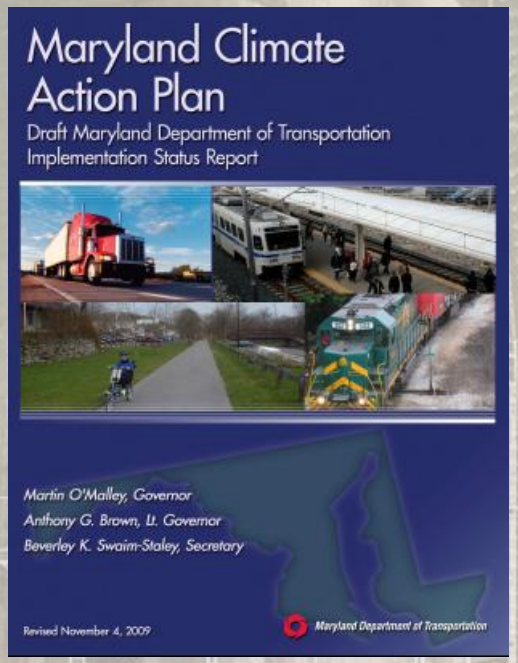
Strategy: PAYD



- Working Group focuses on short-term strategies that enhance connectivity and reliability of intercity passenger modes
- Longer term strategies include consideration of rail and truck freight bottlenecks and intermodal connections
- 2020 approach includes improving passenger convenience at intermodal connections (BWI, Amtrak stations, intercity bus terminals)
  - BWI airport increase non-auto arrival mode share from 12% to 20%
  - Intercity passenger terminals increase non-auto arrival by 5%

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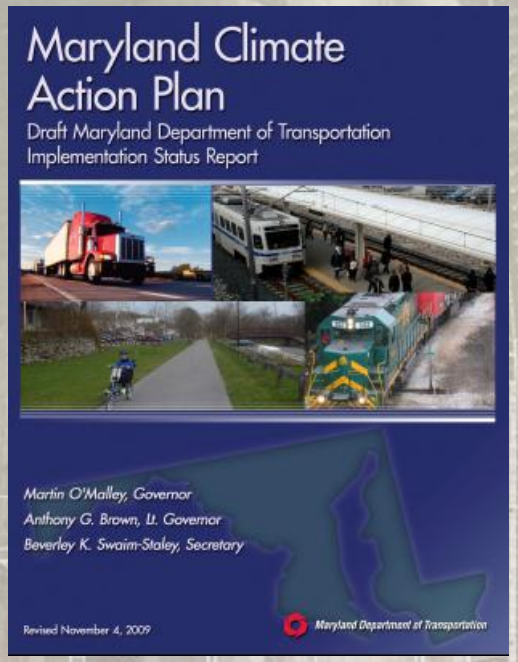
Strategy: PAYD



- Working Group identifies the following policy goal
  - Make PAYD Insurance coverage available to all Maryland drivers as early as possible
  - Push for adoption of incentives or pilot programs to support PAYD Insurance for Maryland drivers by 2012
- MIA goal focuses on a maximum deployment target of 20% by 2020
- Assumes a 5% decrease in VMT per PAYD Insurance policy

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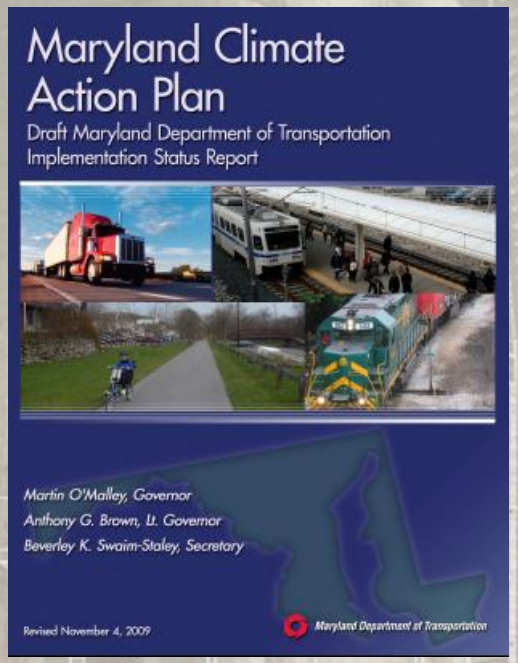
Strategy: Bike & Pedestrian



- Working Group strategies support the CAP goal of increasing bike and pedestrian mode share to 15% in urbanized areas by considering -
  - Infrastructure design and construction policies and funding
  - Regulatory and land use strategies improving bike and pedestrian amenities
  - Education and marketing measures
- Build out of *Maryland Trails Plan* and added 2 scenarios of pedestrian facility deployment around activity centers, transit stations and schools

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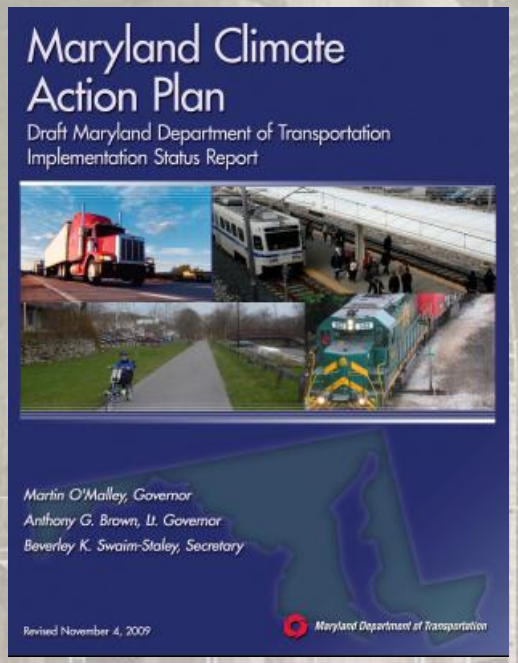
Strategy: Pricing



- Working Group addressed three pricing strategies along with a ramp-up of employee commute options that include -
  - VMT fees
  - Congestion pricing and managed lanes
  - Parking impact fees
  - Increase in employer commute incentives
- VMT fees and facility pricing GHG reduction based on employing travel cost elasticities at various pricing levels
- Commute programs GHG reductions based on Maryland specific EPA Commuter Model scenarios

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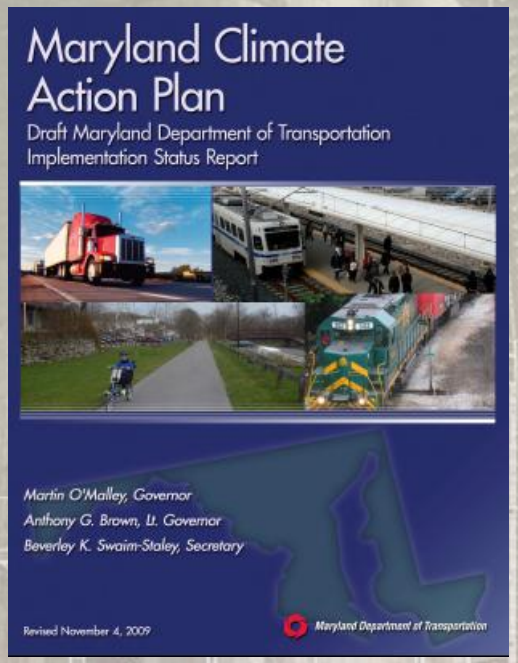
Strategy: Transportation Technology



- Working Group goal to reduce GHG emissions through deploying technologies designed to cut GHG emission rates include -
  - Idling reduction (freight vehicles and school buses)
  - Engine/vehicle replacements (state and transit fleets)
  - Promotion of fuel efficient technologies
  - Transportation system efficiency improvements
- GHG reductions assessed based on strategy specific research on reductions in fuel consumption per unit deployed

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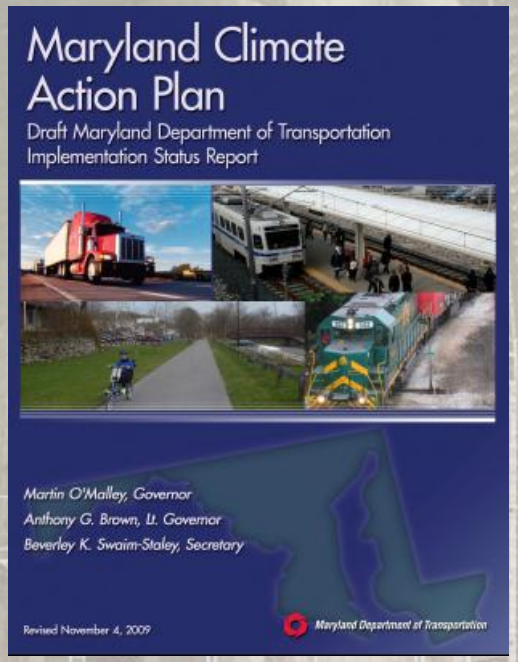
Strategy: Major Project Assessment



- Working Group focus to understand impacts of major projects on GHG emissions
- Develop guidance for state and other project sponsors
- Implementation approach includes -
  - Participate in national policy discussions
  - Evaluation of GHG impacts through NEPA process
  - Evaluation of GHG impacts through state/regional plans
- No quantification of potential GHG emission benefits

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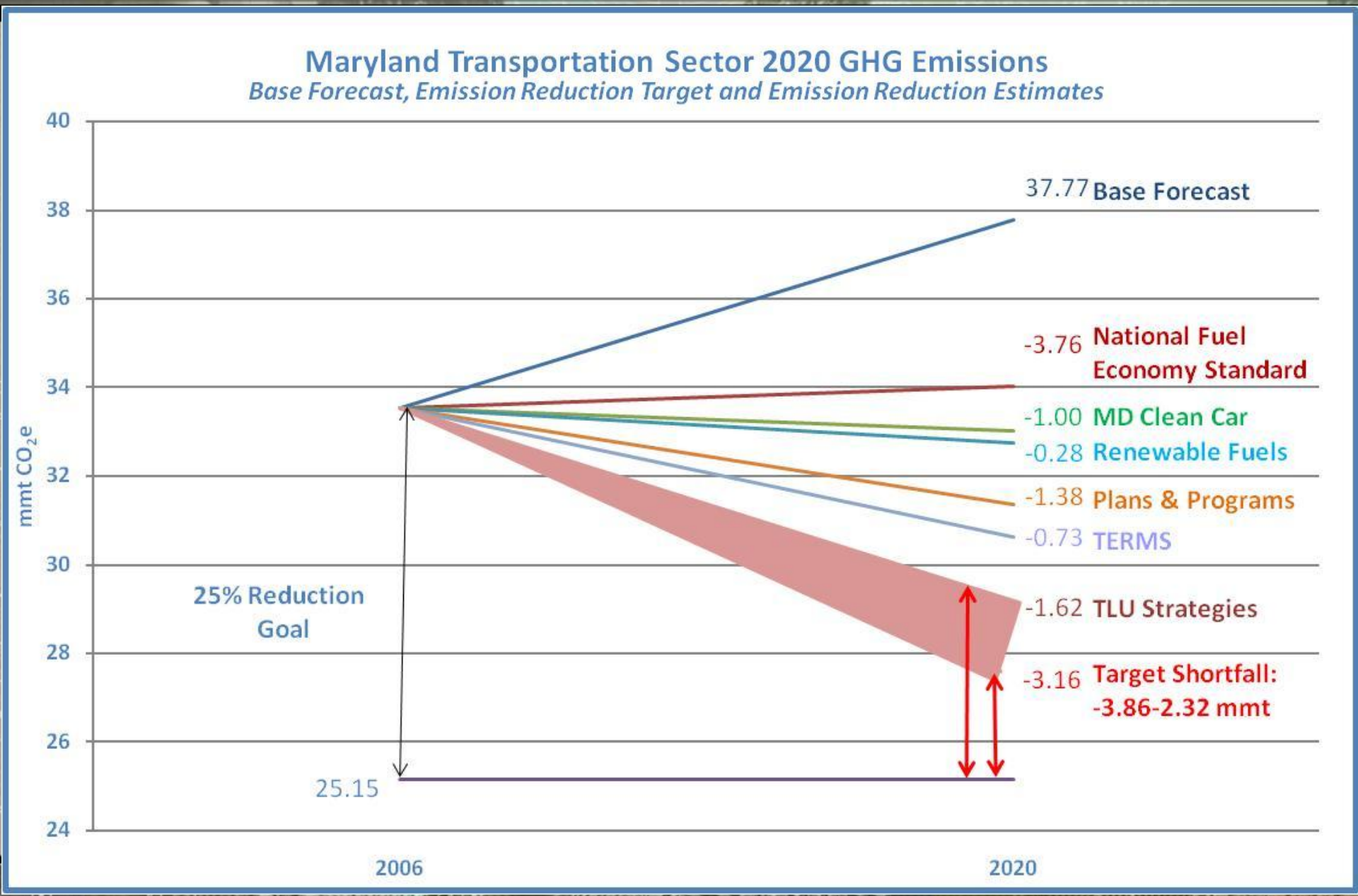
MDOT's Draft Implementation Status Report Results



Policy Option Cost/Benefit :

Costs and Benefits

GHG Reduction Strategies	GHG Reduction (mmt)	Total Added Cost 2010 -2020 (billion $)
TLU-2 *Land Use and Location Efficiency*	0.18 – 0.24	N/A
TLU-3 *Public Transportation*	0.45	$1.7
TLU-5 *Intercity Travel*	0.02	N/A
TLU-6 *PAYD Insurance*	0.26	N/A
TLU-8 *Bike and Pedestrian*	0.10 – 0.15	$.59 - $.82
TLU-9 *Pricing*	0.41 – 1.84	$2.5 - $3.4
TLU-10 *Transportation Technology*	0.20	$.50
TLU-11 *Evaluate GHG Impacts of Major Projects & Plans*	N/A	N/A
Total 2020 GHG Reduction	***1.62 – 3.16***	***$4.8 – $6.0***

The 44 TLU strategies result in a 2020 GHG reduction between 1.6 – 3.2 mmt at a capital cost estimated between $4.8 to $6.0 billion not included in current funding program.

Where Now?

“Carbon Neutral” Corridor Study