VTrans2035
Policy Report
Natural and Human Environment Report

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Overview

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Climate Change and Energy Use

- As an emerging concern
- Climate Change and Greenhouse Gases (GHG)
  - Recognized as an International concern
  - Most common GHG are CO_2, methane, nitrous oxide, and fluorinated gases
  - IPCC predicts temp rise of 2 to 12 ^oF by year 2100, mean temp rise 5 ^oF
    - Arctic ice cap melting, sea level rise expected
    - More severe storms, storm surge, coastal flooding, and erosion
    - More frequent and intense heat waves
- Sea level rise is a major concern for coastal Virginia, Hampton Roads
  - Experts predict Chesapeake Bay will rise 2.3 to 5.2 feet by year 2100
  - Poses serious threat to Virginia's roads, railways, ports, and utility systems
- Wide range of adverse environmental effects could occur
  - Increases in waterborne and food-borne illnesses
  - Disease may spread, reduced crop yields

Climate Change and Energy Use

- Energy consumption is the largest manmade contributor to GHG emissions
- Transportation sector accounted for 31% of manmade GHG emissions in Virginia in 2005*
- Three largest sources in Virginia
  - Electricity generation (38%)
  - Transportation (31%)
  - Industrial, commercial and residential facilities (19%)
- Unabated, transportation GHG emissions to grow to 34% by 2025*
- 2007 fuel economy standards for light-duty cars and trucks expected to significantly reduce GHG emissions
  - 35 mpg by 2020 (currently at 25 mpg)
  - VDEQ estimates a 30% reduction in on-road GHG emissions by 2025

* Per VDEQ “Inventory and Projection of Greenhouse Gas Emissions (2000-2025)”

Climate Change and Energy Use

Findings and recommendations of the Governor's Commission on Climate Change on transportation

- Advocate for federal actions that will reduce GHG emissions
  - Within reauthorization of federal surface transportation act
  - Higher fuel economy standards for car, and for heavy trucks
- Increase efficiency of transportation fleet, use of alternative fuels
  - Diesel retrofit or retirement program
  - Increased enforcement of anti-idling statute
  - Traffic signalization improvements statewide
  - Explore low-carbon refueling and recharging stations on state land
- Increase proportion of energy demands met by renewable sources
  - Allow right-of-way use for renewable projects (e.g., wind, solar)
- Enhance natural carbon sequestration capacity
  - Amend landscaping standards to minimize mowing, support tree preservation, and plant-life that increases carbon retention

Climate Change and Energy Use

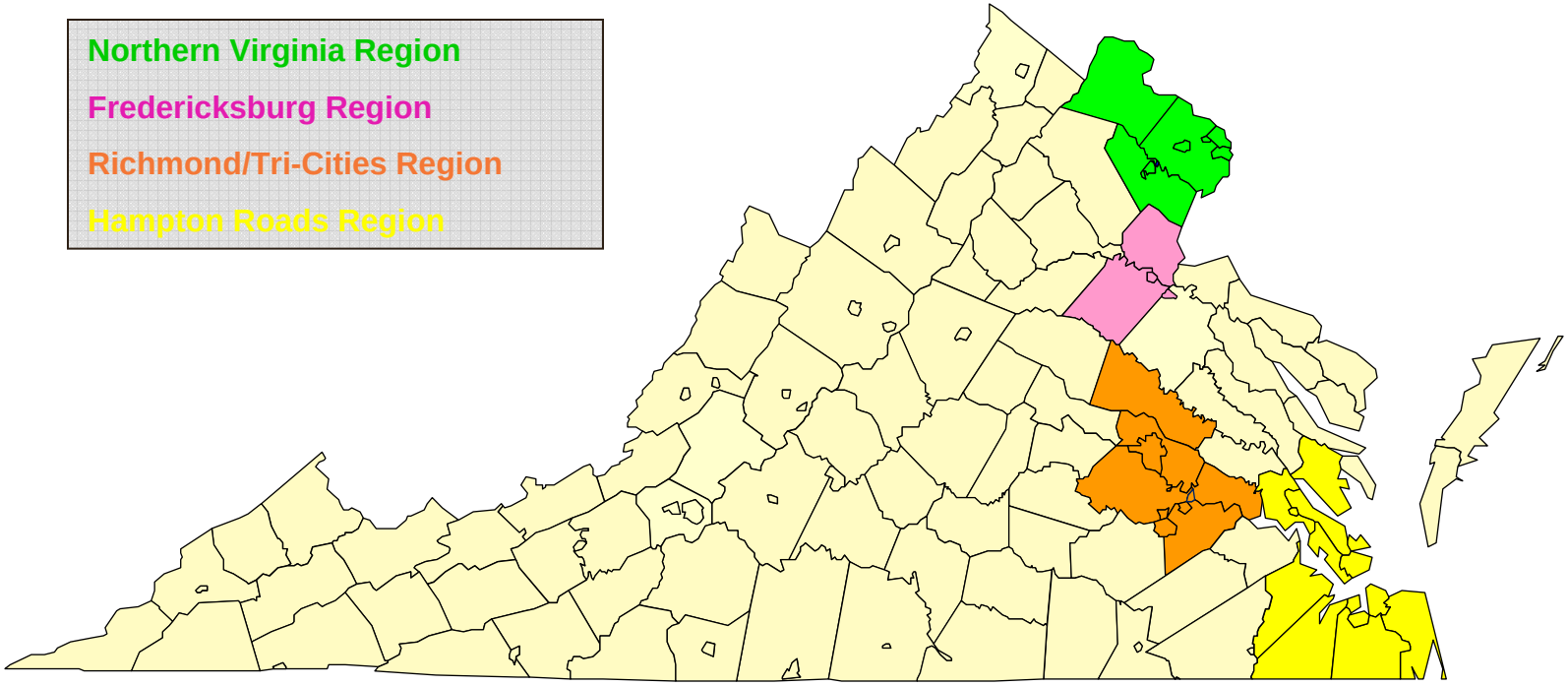
Findings and recommendations of the Governor's Commission on Climate Change on transportation

- Reduce GHG emissions related to vehicle miles traveled, including
  - Expanded commuter choice; frequency and scope of transit and rail services
  - Make coordination of transportation and land use key policy goal
  - Make new or upgraded roads more pedestrian and bike friendly
  - Target available funds towards existing communities and designated urban development areas
    - Promote compact, walkable, transit-oriented development areas
  - Explore ways to send consumers better signals on the cost of transportation
    - Pricing transportation on miles driven and during peak congestion periods can significantly reduce discretionary travel (up to 40% of all trips, 54% during peak periods)
  - Evaluate the impact of high occupancy toll (HOT) lanes on GHG emissions
- Prepare for and adapt to the impacts of climate change that cannot be prevented
  - Ensure climate change impacts (e.g., sea level rise and storm surge vulnerability) are taken into account during roadway design
  - Develop climate change adaptation plans for critical infrastructures

Air Quality

- **Transportation-related pollutants**
  - Ozone and its precursors
  - Fine particulate matter
  - Carbon monoxide
  - Mobile source air toxics
- **Significant progress made in recent years**
  - Mostly through more stringent car and truck emission standards
  - New cars today are 90% cleaner than those in late 1990s
- **Challenges still remain**
  - New 8-hour ozone standard of 75 ppb
  - Many areas of Virginia exceeding the new ozone standard
  - Annual fine particulate matter standard may be lowered

8-Hour Ozone Nonattainment Areas
State Recommendations



Land Use

- **A key goal of Kaine Administration is to reduce the disconnect between and improve the coordination of land use and transportation planning**
- **Significant progress made through new laws that:**
  - **Require traffic impact analysis of major developments**
  - **Require high growth localities to establish Urban Development Areas**
  - **Expand the number of localities that can impose road impact fees**
  - **Require the CTB to develop new requirements for secondary street acceptance**
  - **Require VDOT to develop and implement access management standards**
  - **Allow localities to transfer development rights**
  - **Require regional performance measures**

Other Environmental Topics

- **Water quality**
  - Methods to reduce water quality impacts
- **Noise Abatement**
  - Addressed in new construction, capacity increases, change in vertical/horizontal alignment
- **Cultural and Historic Resource Preservation**
  - Great care exercised to minimize effects on historic properties
  - From rehabilitating historic railway stations to streetscape improvements
- **Habitat Preservation**
  - VDOT placed nesting boxes on bridges to help restore the endangered peregrine falcon
- **Environmental Review Processes**
  - Allows for federal, state, and local agencies to facilitate compliance with all applicable environmental laws and regulations
- **Environmental mitigation strategies**
  - Avoiding/minimizing impacts
  - Air quality/noise abatement

Strategies to Address the Natural and Human Environment

- **Reduce transportation sector's GHG emissions to 30% below the business-as-usual projection by 2025**
  - **Consistent with the Virginia Energy Plan**
- **GHG Emission reductions can be achieved through:**
  - **Expanding commuter choice, improving transportation system efficiency, and improving community designs**
  - **Increase the efficiency of the fleet, and use of alternative fuels**
  - **Accelerate R&D in the field of low-carbon alternative fuels**
  - **Advocate for federal actions that will reduce transportation GHG emissions**
  - **Pricing policies that send consumers better signals of the costs of transportation**
- **Ensure climate change impacts (e.g, sea-level rise and storm surge) are taken into account during roadway design**

Strategies to Address the Natural and Human Environment

- Ensure that all transportation projects, plans, and programs in air quality nonattainment/maintenance areas conform to the CAA
- Increase inter-modal and non-highway freight shipments to improve system efficiency in moving goods and people
- Work with MPOs to ensure that coordination of planning and land use is a key policy goal, and utilize regional performance measures
- Recognize community excellence in planning and land use
- Increase access to, and use of, alternatives to the SOV (e.g., carpooling, mass transit, etc.)
- Minimize VMT related to state and local operations by promoting carpooling, videoconferencing, teleconferencing, etc.