

Governor's Commission on Climate Change

Proposed Findings – Discussion Document

September 10, 2008

NOTE: this document reflects the Commission's discussion on September 10. It remains a work in progress. A revised version will be prepared for the Commission's October meeting.

The Commission is mindful of Governor Kaine's charge to us, and we accept his views on certain foundational issues as our starting point. As Governor Kaine stated, the fact global climate change is happening and is largely human-caused is now widely accepted.* (Ensure wording reflects Governor's actual statement.)

We have used the IPCC's 4th Assessment Report as our reference point on the science of climate change. Governor Kaine also told us that because Climate Change is a global problem, a national solution is needed in order for significant reductions in GHG emissions to be achieved. However, because the effects of climate change on Virginia will be profound, we cannot wait for the federal government to act. ~~Further, given our nation's robust economy,~~ We believe that the actions taken by U.S. states can have a significant effect on global GHG levels.

According to IPCC, current climate models predict that Virginia's average temperatures are expected to rise by XX degrees (with a range of x-y). The average annual mean precipitation in Virginia is projected to change by x-y%

In pursuing actions to combat climate change, Virginia is not acting in a vacuum. Indeed, we join 37 other states in preparing a climate change action plan. Based upon these concepts, what we have learned from the experts who have made presentations before the Commission, from our discussions, and from the many external documents we have shared with one another and posted on the Commission's website, we now make the following findings:

State actions can be globally significant

Effects on the Built Environment and Insurance

- Sea level rise is a major concern for Coastal Virginia, particularly the highly populated Hampton Roads region. The Chesapeake Bay Program's Scientific and Technical Advisory Committee projects that sea levels in the Chesapeake Bay

* While we have acknowledged these points as being beyond debate in our deliberations, we have allowed those with a different viewpoint to make their views known to the Commission during public comment periods at our meetings.

region will be 0.7-1.6m (2.3-5.2 feet) higher by 2100. Specific impacts will vary by location, depending on changes in land elevation.

- Based on an analysis by RMS (a catastrophe modeling company) that has been reviewed and approved by OECD, Virginia Beach-Norfolk Metropolitan Statistical Area is the 10th largest coastal city in the world in terms of assets exposed to increased flooding from sea level rise.
- Modeling and simulation tools are already being used to improve our understanding of how sea level rise and storm surge may affect certain areas of coastal Virginia. However, the fact that LIDAR (Light Detection and Ranging) elevational data does not exist for most of Coastal Virginia is a major obstacle to the ability to plan effectively for these changes.
- Climate change should be viewed as a threat to national security. Its impacts are likely to exacerbate instability and conflict in many areas around the world. In Virginia, there are several major military installations located in low-lying areas that will be affected by sea level rise and storm surge.
- The continued affordability and availability of insurance for Virginia's landowners is a concern as our climate changes. These effects are already being felt in Coastal Virginia. The frequency and severity of storms in the future are expected to exceed those of the past, and the insurance industry may not have the ability to handle several concurrent events. Development in sensitive coastal areas has been encouraged by the availability of federal flood insurance and . . . (or tweak first sentence?).

Effects on Natural Systems

- Climate change will have a significant impact on Virginia's ecosystems. Virginia represents the northern extent of the range of many southern species, and the southern extent of the range of many northern species. Over time (revise?), vegetation is expected to move from current locations to higher altitudes and higher latitudes. Ecosystems will also be altered by changing temperatures, etc . . . The effect of this will be that suitable habitat for some species will decline, other species may become extirpated in Virginia but survive elsewhere, and other species may become extinct altogether. The effects of climate change on the health of Virginia's forests is of particular concern. Pest management and range shifts are likely to provide significant challenges to our state's forests. (Acknowledge that new species may be beneficial?)
- Climate change will exacerbate the threats already faced by Virginia's terrestrial and aquatic ecosystems, such as habitat loss, invasive species (define in report), and pollution. The effects of climate change on many of Virginia's most significant ecosystems and species is poorly understood. Research and conservation efforts must will need to become increasingly focused on managing resources to maintain healthy, connected and genetically diverse

ecosystems and plant, wildlife and fisheries populations. (Should this bullet and the previous one be combined?)

- Some of the Chesapeake Bay’s “foundation species,” such as blue crabs, eelgrass and oysters, could decline or disappear as salinity and temperatures continue to increase and weather patterns continue to fluctuate widely from year to year. Foundation species support many other species, so these impacts would be felt throughout the ecosystem.
- Oxygen levels in the Chesapeake Bay are expected to decrease due to increasing temperatures and increasing storm runoff, which will have a negative impact on species like striped bass, blue crabs and oysters. Acidification of the Bay and Atlantic Ocean is also a concern as waters absorb more CO₂.
- Coastal wetlands, a critical habitat for many of the Chesapeake Bay’s plants and animals, are being lost as sea levels rise. Freshwater coastal wetlands are also experiencing saltwater intrusion that alters species composition?? (Combine with previous two?)
- Virginia’s agriculture and forestry industries, as well as commercial and sport fishing industries and park land, will be impacted by climate change. More research on ~~potential to determine specific effects of climate change on Virginia’s agriculture and forestry industries~~ is needed. OR: Lack of specific information on the impacts hinders Virginia’s ability to adapt and prepare for these changes.
- Carbon sequestration finding

General Principles Regarding Strategies (look at the order here.)

- The importance of the role of states in addressing climate change is illustrated by the World Resources Institute analysis that the emissions of Virginia, North Carolina and South Carolina are equivalent to those of South Korea or, perhaps more striking, the emissions from 10 Midwestern states are equivalent to those of India.
- Climate change has potential impacts on human health and quality of life, including but not limited to more frequent or intense hurricanes, vector or water-borne diseases, heat waves, and contaminated water or food supplies. Because these changes may foster instability as societal demands exceed the capacity of governments to cope, climate change undermines our collective efforts—both public and private—to keep ourselves and future generations healthy, safe and secure. (Tweak [this language](#).)
- Health Department finding(s) on human health.
- Actions to combat climate change should be chosen in a manner cognizant of their costs with reference to benefits which are measurable and meaningful.

Costly recommendations with benefits that cannot be achieved within a Virginia context or which cannot accurately be measured should not be pursued. (Put in preamble?)

- It is not possible to effectively address impacts of climate change without significant public and private investment. Either new funding sources, redirection of existing resources, or both, will be required.
- Strategies that are focused on increasing the capacity of natural carbon sinks are among the ~~most~~ more cost-effective (check this) ways to abate climate change. Some strategies, such as ~~c~~Conserving land and planting trees and other vegetation also produces a plethora of co-benefits like improving air and water quality, providing habitat for wildlife, assisting in stormwater management, minimizing impacts of sea level rise, producing food and fiber, reducing heat in urban areas, and providing recreational opportunities.
- The three largest sources of GHG emissions in Virginia are electricity generation, transportation, and non-utility uses of fuel in industrial, commercial and residential facilities. Emissions from all of these sources must be addressed in order for our climate-change mitigation efforts to be successful and fair.
- The nation's movement toward a ~~GHG emissions~~ carbon-constrained economy represents an opportunity for Virginia researchers, inventors, and investors to accelerate ~~the advancement of and deploy~~ technologies in the areas of energy efficiency, indigenous renewable and low-emission energy as well as carbon capture and storage.
- ~~Many of the technologies needed to reduce emissions are already available and are becoming more affordable every day.~~— As stated in the Virginia Energy Plan, energy efficiency and conservation provide the least costly and most readily deployable energy resource options available to Virginia. It is essential to identify and remove fiscal, ~~and~~ regulatory and other barriers to investments in energy efficiency and conservation. ~~Many of the technologies needed to reduce emissions are already available and are becoming more affordable every day.~~ (Combine with previous?)
- Fossil fuels are a significant part of Virginia's current fuel mix. Carbon capture and storage technology offers the potential to reduce GHG emissions while continuing to producing energy from fossil fuels. (Acknowledge that technology is still in development.)
- ~~Global~~ Climate change is a global problem that requires a global solution. That global solution is only achievable if the U.S. demonstrates a commitment to reducing emissions and exerts sustained public policy, political, diplomatic, business and technological leadership.

- The Commission ~~expects-anticipates~~ that Congress ~~will~~to enact an economy-wide cap-and-trade program in the next ~~four~~ 4 years. The development of new technology will be accelerated by the market demand created by a cap on GHG emissions.

(Compare Virginia number with EU and CA energy consumption numbers.) ~~The experience of several European countries demonstrates that Virginians can reduce energy consumption and still enjoy an excellent quality of life.~~

As stated in the Virginia Energy Plan, demand for electricity is expected to increase ~~substantially in the future~~ by nearly 2 percent per year, which would equal a % increase by 2025. ~~While~~The plan further states that? efficiency and conservation efforts should be accelerated, new electricity generation capacity will also be needed. ~~How~~ Virginia supplies this electricity will have a bearing on the Commonwealth's GHG emissions. Additional supplies of other energy sources will also be needed to meet growing demand due to population growth. (Is this too general?)

- While recently-enacted federal fuel efficiency standards will reduce the level of GHGs that would otherwise be emitted by automobiles, ~~if there is~~ a significant increase in vehicle miles traveled, ~~that~~ would mean that transportation emissions would still grow over time. ~~Regardless,~~ near-term improvements in fuel efficiency, increased fuel costs and concomitant changes in driver behavior can significantly reduce emissions generated from VMT. Areas with compact development patterns and readily available transit services have lower vehicle miles traveled per capita than areas with sprawling development and limited transit, ~~while conserving more fields, forests and farmlands.~~ Indeed, areas of compact development generally have lower per-capita energy consumption overall.
- Coordination of state and local efforts. Adaptation efforts will occur at the local level. (Bulova/Stiles)
- Virginia does not have an institutional infrastructure to monitor impacts of climate change on Virginia, the effects of efforts to reduce GHG emissions, or to make Virginia-specific predictions of the future climate and its impacts. (Project-level analysis?)