

NOTES:

Recommendations are organized according to the following objectives:

Virginia will reduce GHG emissions by increasing energy efficiency and conservation.

Virginia will advocate for federal actions that will reduce net GHG emissions.

Virginia will reduce GHG emissions by reducing the number of miles traveled in automobiles and trucks.

Virginia will reduce GHG emissions by reducing tailpipe emissions from automobiles and trucks.

Virginia will reduce GHG emissions by increasing the proportion of energy demands that are met by renewable sources.

Virginia will reduce GHG emissions by increasing the proportion of electricity generation provided by nuclear power.

Virginia will reduce net GHG emissions by protecting/enhancing natural carbon sequestration capacity and researching/promoting carbon capture and storage technology.

The Commonwealth and local governments will lead by example by implementing practices that will reduce GHG emissions.

Virginia should consider a more aggressive GHG reduction goal.

Virginia will focus and expand state capacity to ensure implementation of the Climate Change Action Plan.

Virginia will educate the public about climate change and the actions necessary to address it.

Virginia will continually monitor, track and report on GHG emissions and the impacts of climate change.

Virginia state agencies and local governments will prepare for and adapt to the impacts of climate change that cannot be prevented.

Virginia will undertake a thorough review of state agency and local government authority to account for climate change in their actions.

Column S indicates the source of the recommendation:

EG = Electricity Generation/Other Stationary Sources Workgroup

CCR = Cross cutting recommendations

BE = Built Environment Workgroup

TLU = Transportation and Land Use Workgroup

AS = Adaptation and Sequestration Workgroup

Column P provides a rough assessment of priorities based on email responses received:

A = more than two commissioners identified as a priority

B = one or two commissioners identified as a priority

C = no commissioners identified as a priority

Recommendations in italics have been revised substantially.

Highlighted language contains conflicts that must be resolved.

P	id #	S	Recommendation
Virginia will reduce GHG emissions by increasing energy efficiency and conservation.			
A	22	EG	The General Assembly should enact legislation to encourage development of utility conservation programs. Such legislation should provide for the timely recovery of (i) prudent electric utility operational expenditures for energy efficiency and demand management actions, and (ii) prudent electric utility capital investments, which should be subject to the same enhanced return as clean energy supply options (200 basis points above the approved electric utility-wide allowable rate of return).
A	23	EG	
A	24	BE	
A	33	BE	Virginia should implement policies that support and encourage investments in advanced metering infrastructure across the electric transmission and distribution systems that serve the Commonwealth.
A	42	BE	Virginia should work with localities to provide a central, publicly-administered capital fund for energy efficiency investments with the projects implemented through local organizations.
A	43	BE	The General Assembly should phase in requirements that all commercial buildings will meet LEED or equivalent standards. Virginia should harmonize the standards with neighboring jurisdictions such as the District of Columbia.
A	39	BE	The General Assembly should ensure stable funding for the Weatherization Assistance Program. Congress has increased funding for the program, which will result in approximately a doubling of funding from last year, allowing additional homes to be weatherized. If the increased amount of funding is not maintained in future years, state funds will be needed to backfill the program's budget to provide for a stable program.
B	36	BE	Business-specific educational and technical assistance efforts, such as industrial efficiency programs or energy auditor training, should be more widely implemented in Virginia. These efforts could be funded from sources with a nexus to the target audience. For example, an effort targeted to fuel oil users or transportation efficiency could be funded through a small increase in the fee that now supports the state's underground storage tank program.
C	5	CCR	<i>The Virginia General Assembly established a goal to reduce by 2022, electricity consumption by retail consumers, in an amount equal to 10% of electricity consumed by retail customers in 2006. Measures of whether Virginia is meeting this goal should take into consideration the impact of increases in electric consumption by the transportation industry due to increased electrically-driven mass transit, plug-in vehicles, and other uses. Electricity consumption for transportation should not be included in the total consumption of electricity for the purposes of calculating progress towards the 10% reduction by 2022. Virginia should consider the net change in emissions when considering policies to promote movement from petroleum-based transportation to electric-based sources.</i>
C	45	CCR	Requiring or expecting GHG emissions reductions at too fast a pace will increase the cost of transitioning to a low carbon economy. Equipment depreciates over time and has to be replaced or upgraded in periodic cycles. Requiring relatively new equipment to be replaced with more GHG efficient equipment is costly. A better approach is to require the replacement of equipment with best achievable technology when it is replaced after a reasonable depreciation period. This approach will also allow for the development and deployment of new more GHG efficient technology as it becomes available. (Proposed by Fledderman, held until consideration of related recommendations.)
C	34	BE	Pursuant to 2008 legislation, the State Corporation Commission issued a draft electric efficiency consumer

			education plan on October 6, 2008, outlining a five-year, \$10 million program. The SCC should implement this plan using multiple partners and should include funding that is sustainable over the plan's 5-year term.
C	35	BE	Consumer education about the benefits of purchasing and using higher-efficiency appliances should be a key component of consumer education actions.
C	40	BE	Electric utilities should pilot voluntary real-time rates to residential and commercial customers to understand the effect such rates would have on their cost structure and ensure costs are not shifted between time-of-use and other customers. After testing in pilots, these rates should be made available to all residential and commercial customers.
C	41	BE	Virginia should move towards increased block rate schedules year round, and consider using more than two rate blocks. This will encourage high-use consumers to use less power.
Virginia will advocate for federal actions that will reduce net GHG emissions.			
A B C	16 17 18	EG CCR AS	<p><i>The Governor should ask Congress to act as soon as possible to pass comprehensive climate change legislation that includes the following key provisions:</i></p> <ul style="list-style-type: none"> • <i>Establishes a mandatory economy-wide cap and trade program to reduce greenhouse gas emissions.</i> • <i>Imposes a cap stringent enough to ensure emissions of GHGs are actually reduced. OR Achieves at least an 80% reduction in U.S. emissions from current levels by 2050 nationally, with near term reductions of at least 20% by 2020;</i> • <i>Reduces economic impacts by providing assistance to key industries, communities, and consumers to facilitate transition to a low emission economy; develop new technologies to control, capture, sequester emissions; and reduce residential, commercial, and transportation energy use and costs.</i> • <i>Allows use of certified high quality offsets from inside and outside the United States, including those generated through avoided deforestation, restoration of forests and other ecosystems, and management of agricultural and forestry operations that result in emission reductions or carbon storage that otherwise would not have occurred.</i> • <i>Establishes dedicated funding through the use of auction revenues from a cap and trade program or other mechanisms to implement adaptation strategies for natural and human communities impacted by climate change. OR Provides free allowances to affected entities and should credit early action by sources within a reasonable time period.</i> • <i>Includes incentives to preserve and enhance natural carbon sequestration by forestland, farmland, wetlands and other open space.</i>
A	26	EG	The Governor should ask Congress to support Congressman Rick Boucher's bill (H.R. 6258, Carbon Capture and Storage Early Deployment Act) to fund research for carbon capture and sequestration and other, similar federal initiatives to fund research for carbon capture and sequestration.
B	107	TLU	The Governor should ask Congress to support the accelerated establishment of CAFE standards for heavy trucks (which currently have no fuel economy standards) and stronger CAFE standards for passenger vehicles.
B	30	EG	The Governor should ask Congress, as part of its renewable energy policies, to consider long term, reasonable, predictable and sustainable financial incentives like tax credits and/or Federal loan guarantees to encourage development of carbon-free renewable energy projects.
B	145	TLU	The Secretary of Transportation should work with stakeholders to develop specific goals and priority measures for the coming reauthorization of the federal surface transportation act that will reduce the GHG emissions from transportation. The Governor should ask Congress to incorporate these goals and measures into the transportation

			reauthorization legislation.
C	19	CCR	The Commonwealth should sponsor research to assess, from a Virginia perspective, the relative costs, benefits, and effectiveness of various mechanisms to place a price on carbon emissions through a cap-and-trade or a pollution tax on GHG emissions that is linked to reduction of other taxes.
Virginia will reduce GHG emissions by reducing the number of miles traveled in automobiles and trucks.			
A	123	TLU	<i>The General Assembly should amend current law pertaining to the Statewide Transportation Plan to require that the Plan include coordination of transportation and land use as a key policy goal and to require the Plan to include quantifiable measures (including those called for in HB3202 and in the Final Report of the Transportation Accountability Commission, dated October 2007) and achievable goals relating to greenhouse gas reduction. Suggested goals include reduction of GHG emissions from the transportation sector, transit riders per mile of transit infrastructure, percentage of Virginians who walk or bike to work, and percentage of freight carried by rail. Progress towards the goals should be monitored through the annual Transportation Performance Report. Nothing in these recommendations is intended to limit the authority of local governments for land use decisions.</i>
A	133	TLU	The Virginia Department of Human Resource Management should continue to promote its telework and flextime standards for eligible state employees and should recommend that local governments and private businesses adopt these voluntary standards. All state agencies should increase opportunities for citizens to engage in electronic transactions with the state rather than having to drive to state offices. The Virginia Department of Rail and Public Transit should expand the Telework!Va program and encourage private employers to adopt these standards, and should consider rewarding high-performing public and private employers who use telework well. The effectiveness of these transportation demand management measures should be compared to that of providing access to transit for workers and those doing business with the Commonwealth.
B	119	TLU	<i>State and local transit and rail funding should be increased first to maintain existing infrastructure and services, second to meet increasing demand by expanding the frequency and scope of transit and rail services across the Commonwealth, and third, to encourage local and regional land use patterns which minimize GHG emissions. With regard to local transit funding, the General Assembly should extend the regional revenue source for transit that exists in Northern Virginia throughout the Commonwealth, because the current structure for funding regional transit operations is an impediment to sustaining and growing transit operations. The General Assembly should analyze the sufficiency of this source and ensure that the source is sufficient to provide for no less than a transit level of service “B” as defined by the Transit Capacity and Quality of Service Manual. With regard to rail funding, the General Assembly should improve and expand funding for passenger and freight rail service, including substantially increasing funding for the Virginia Rail Enhancement Fund. The draft Statewide Rail Plan, for example, identifies a number of projects offering significant GHG reductions. The movement of freight via rail instead of over-the-road is typically three times more fuel-efficient. A ton of freight moved via rail will generate one-third the carbon footprint of the same or equivalent movement over the road via truck.</i>
B	118	TLU	
A	136	TLU	
A	137	TLU	Within its allocation formula and funding decisions, the Commonwealth Transportation Board should target available transportation funds towards existing communities and designated urban development areas and promote compact, walkable, transit-oriented development areas. VDOT and natural resources agencies should provide technical assistance, funding, and authority to localities to amend comprehensive plans and zoning ordinances to promote compact, walkable, transit-oriented development areas and to guide development to such areas.

B	125	TLU	Virginia should require that environmental analysis and review of major transportation projects/networks should include the GHG emissions projected to result. Virginia's MPO's should include consideration of GHG emissions in their regional transportation analyses and seek outcomes that help reduce GHG emissions. The Commonwealth Transportation Board should use such analyses in its consideration of project selection. (<i>NOTE: this recommendation is still being discussed by the workgroup.</i>)
B	148	TLU	Our workgroup recommends that the full Commission establish a specific target, in millions of metric tons, for 2025 Greenhouse Gas Emissions from transportation, in order to provide certainty and specificity to the Executive Order goal of 30% reduction from Business As Usual. We encourage other Workgroups to establish specific goals as well.
B	116	TLU	The Secretary of Transportation should explore ways to send consumers better, more accurate signals of the costs of transportation. Pricing transportation on miles driven, and on the timing and congestion of the trips taken, can do much to reduce and consolidate discretionary travel (as much as 40% of all trips, and 54% of trips during peak periods). Our highway system must move toward greater use of pricing mechanisms that will charge for actual usage reflective of supply and demand (as virtually all other goods and services are priced).
B	117	TLU	<i>The Commonwealth Transportation Board should study and evaluate the feasibility of building HOT lane networks in large metropolitan regions (beyond those planned for the Beltway and I-95) to promote car pooling, consolidation of trips, and transit use, particularly where existing lanes are converted into HOT lanes. Excess revenues from HOT lanes should be used to support transit throughout such networks. Reviewed on a corridor-wide basis, recent research indicates that HOT lane user fees can be less costly to lower income drivers than a transportation-funding regime based on the gas tax.</i>
B	124	TLU	VDOT should assist Planning District Commissions and local governments to complete a statewide region-by-region scenario analyses for local transportation and land use planning. These will model and compare the differences in transportation costs, land used, environmental impacts, energy, water, fuel used, and GHG emissions of compact vs. sprawling land use patterns. The preferred scenario should be incorporated into local and regional plans and the Statewide Transportation Plan, and used to guide transportation system investments and future land use decisions.
B	127	TLU	The General Assembly should evaluate the costs/benefits of a commuter tax credit, offering businesses tax savings for providing their employees with transportation benefits that provide an alternative to single occupancy vehicle commuting, such as transit passes, vanpool expenses, and cash in lieu of parking.
B C	129 131	TLU TLU	The CTB has amended its road construction standards to make new or upgraded roads more pedestrian and bike-friendly. The CTB should ensure that funding is available for localities to implement these standards, develop and provide funding and technical assistance to encourage local governments to construct pedestrian and bicycle improvements, and compile and coordinate local and regional plans to develop a pedestrian and bicycle network.
B	134	TLU	The Virginia Resources Authority should continue to promote the expansion of broadband access to our homes and businesses, a key to trip avoidance.
B	138	TLU	The General Assembly should authorize and encourage cities, towns, and older suburbs to adopt the split rate property tax that applies a lower tax rate to buildings than on land to encourage redevelopment where there is existing infrastructure.
B	139	TLU	Virginia should work with lenders to provide and promote location efficient mortgages, which promote the purchase of homes in compact, mixed-use areas where there is less need to drive and therefore more discretionary income.

B	140	TLU	The State Corporation Commission should encourage insurance companies to offer pay-as-you-drive insurance as an option to motorists (which is already permissible, but not currently offered, in Virginia).
C	122	TLU	Virginia should amend its corridor analysis and project analysis process, required under many federal provisions such as environmental statutes, to make sure that transit, freight and passenger rail, and other transportation modes are included in every analysis. Access management should be also considered as a design alternative for all major road projects, to evaluate the cost effectiveness of various design options. VDOT should develop and implement access management plans to preserve new transportation corridors and to help restore the capacity of existing roads.
C	121	TLU	
C	130	TLU	VDOT should adopt a “complete streets” policy to design and operate roadways to allow safe, attractive, and comfortable travel for all users.
C	132	TLU	Local governments should enhance the convenience of using transit compared to driving. VDOT should develop and provide funding and technical assistance to local governments to amend zoning codes that currently establish excessive minimum parking space standards and encourage local governments to apply parking maximums, market pricing of parking, shared parking, and other tools. Virginia’s PPTA can be used for the development of privately funded parking facilities that can enhance the desirability and accessibility of using mass transit.
C	141	TLU	VDOT should work with regional and local governments to harmonize the state transportation plans and local land use plans on the same five-year schedules.
C	146	TLU	The General Assembly should expand local governments’ current ability to flex secondary and urban road funds to provide the most efficient GHG emissions option.
Virginia will reduce GHG emissions by reducing tailpipe emissions from automobiles and trucks.			
A	105	TLU	The General Assembly should enact state incentives for the purchase of fuel-efficient vehicles, regardless of energy source. Incentives could include tax credits, reduced sales tax, reduced car tax, or lower registration fees, or other incentives. The public policy goal is to accelerate the rate of fleet turnover, with a particular emphasis on the introduction of ever more fuel efficient vehicles.
A	111	TLU	Virginia should become a leader in promoting low-carbon fuel options, such as low-carbon gasoline blends, biodiesel, natural gas, plug-in hybrids, hydrogen and other alternative fuel technologies. VDOT should promote and support siting of refueling and recharging stations for low-carbon fueling stations on state- and local government-owned land, including interstate highways, rest stops, and truck stops. VDOT should assess the feasibility and benefits of vehicles that can plug into the electric grid, and identify and enhance plug-in charging areas and services, to make and market Virginia as “hybrid friendly.” VDOT should work with alternative fuels providers to enable convenient location of alternative fuels infrastructure and with equipment and vehicle manufacturers to support a vibrant alternative energy market in Virginia.
B	109	TLU	The General Assembly should seek to reduce emissions from older diesel engines (e.g., trucks, school buses) through the establishment of a retrofit or retirement program, including incentives to encourage retrofits.
B	110	TLU	The General Assembly should provide funding for increased enforcement of existing speed limits.
B	112	TLU	The Commonwealth should promote research at Virginia’s colleges and universities on alternative fuels and vehicle efficiency. The General Assembly should create a pool of research funds to reward and stimulate low-carbon fuel and battery research and ask scientists at its universities to study the GHG impact of cellulose-based ethanol, and of other biofuels. The Governor should ask Congress to expand federal appropriations for such research. Virginia Tech’s switch grass research and Old Dominion University’s algal biofuels work are excellent examples of the
C	106	TLU	

			productive work being accomplished in Virginia today. Virginia should canvass existing federal and independent research on measures that can improve vehicle fuel efficiency, such as improving the aerodynamics of larger vehicles (especially tractor-trailers) to reduce the turbulence of their wake and reduced rolling resistance in tires.
B	114	TLU	The General Assembly should evaluate the cost effectiveness of funding to accelerate the electrification of truck stops and the adoption of idling avoidance technology, and increase enforcement of the state anti-idling statute. Where feasible, use of renewable energy to support truck stop electrification should be considered.
B	149	TLU	NOT RECOMMENDED BY WORKGROUP: Virginia should adopt the California tailpipe emissions standards, as have 18 other states.
C	108	TLU	The Secretary of Transportation should promote efforts to educate all drivers, including those taking driver education, about behavioral changes that can significantly boost energy efficiency, including considering participating with other states in EcoDrivingUSA.
C	120	TLU	The Commonwealth Transportation Board (CTB) should create signalization standards to improve the timing and the intelligence of traffic signalization across the Commonwealth, to support improved traffic flow, transit preference and priority, and improved pedestrian access. The CTB has established roundabouts as the preferred alternative for projects involving reconstruction of intersections or new intersections, when roundabouts are determined to be feasible. The CTB should establish simple criteria to make roundabouts easier to build.
C	128	TLU	
C	150	TLU	NOT RECOMMENDED BY WORKGROUP: Virginia should lower its statewide speed limit to 60 mph.
C	151	TLU	NOT RECOMMENDED BY WORKGROUP: Virginia should consider a “Cash for Clunkers” program, which subsidizes the retirement of the oldest, most polluting, and least efficient vehicles on the roads. The program should be calibrated to spend the most where the benefit in GHG reduction is the greatest and should consider income limitations for those who can qualify. The program’s cost effectiveness should be evaluated prior to implementation, and should only be pursued if investments will produce greater GHG reductions than an equivalent investment in transit.
Virginia will reduce GHG emissions by increasing the proportion of energy demands that are met by renewable sources.			
B	4	CCR	The Virginia Economic Development Partnership should promote Virginia as a green industry center for excellence by expanding its economic development marketing efforts to focus on green industries such as renewable energy providers, alternative fuel companies, energy audit and retrofit organizations, green building contractors, carbon sequestration entities, and research and development firms, and identifying potential incentives for green business to locate in Virginia. The Secretaries of Education and Commerce and trade should promote partnerships with Virginia colleges universities – including community colleges – to create education and training programs to insure that green jobs can be filled by Virginia citizens.
B	12	CCR	The General Assembly should increase to at least 35% (from 25%) the requirement that localities recycle or divert solid waste away from landfills. Landfills generate significant amounts of methane from the degradation of putrescible wastes. Methane is over 20-times more effective at trapping greenhouse gases than carbon dioxide. Emphasis should be placed on recycling reusable material and diverting putrescible wastes for composting or cogeneration of electricity and thermal energy. Using the waste for direct energy generation causes less net GHG emissions than long-term decomposition in landfills.
B	113	CCR	The Commonwealth should create a new entity or empower an existing entity such as the Center for Innovative Technology to increase clean tech energy and climate change related technology research through increased funding

			and collaboration among Virginia’s research universities and private companies. (Proposed by Greenleaf; held until consideration of workgroup reports.)
B	29	EG	Both of the major utilities in Virginia, Dominion and AEP, have publicly committed to meet the 12% RPS goal by 2022 and the Commission should account for the GHG emissions avoided through 2025 resulting from those commitments.
B B C	32 37 31	EG BE EG	<i>The State Corporation Commission should encourage the use of renewable forms of energy by:</i> <ul style="list-style-type: none"> • <i>Developing standardized interconnection rules in order to simplify the process and reduce costs for renewable energy generators to connect to utility systems. Through this process, consideration should be given to adjustment of the existing kilowatt load requirements and the extent to which any subsidies or tariffs should be modified.</i> • <i>Ensure that net metering customers generating renewable energy are paid for production back into the grid at the same rate the utility charges customers under the 100% green power tariff, not under the standard tariff rate.</i> • <i>Studying the feasibility of a feed-in tariff for Virginia. As part of this study, the SCC should consider the feed-in tariffs proposed in other states.</i>
B	135	TLU	VDOT should, in cooperation with local governments, allow its rights-of-way to be used for solar and wind connections to the power grid.
C	25	EG	The SCC and utilities and NGOs should work together to publicize the availability of options for retail electric customers to purchase renewable energy products through their electric utilities.
C	38	BE	As an additional incentive to implement distributed renewable systems, the General Assembly should expand the Energy Star sales tax credit to cover certified renewable energy equipment.
Virginia will reduce GHG emissions by increasing the proportion of electricity generation provided by nuclear power.			
A	20	EG	The Commission should adopt a statement of policy supporting nuclear energy and encouraging the development of additional nuclear energy capacity in Virginia. This policy should include a statement recommending that the Virginia delegation to Congress encourage the federal government to develop a nuclear waste facility. This policy also should recommend that the Virginia delegation to Congress support extension of the Federal loan guarantees for new nuclear power plants.
C	21	EG	Given the potential for uranium mining in Virginia to supply additional nuclear capacity in the Commonwealth, the General Assembly should study the risks associated with uranium mining in Virginia.
Virginia will reduce net GHG emissions by protecting/enhancing natural carbon sequestration capacity and researching/promoting carbon capture and storage technology.			
A A	27 28	EG AS	<i>The General Assembly should provide funding for research at Virginia universities on carbon capture and sequestration, including research to determine the commercial viability of carbon capture and sequestration technology and the potential for its development and deployment in Virginia. Universities should also seek federal dollars to support this research. Research should also be conducted on emissions-free energy sources and advanced clean coal technology.</i>
A	68	AS	<i>Farmland, managed using best practices, can make a significant contribution to natural carbon sequestration; yet thousands of acres of farmland are lost to development every year due to the difficulty of keeping farms economically viable. One potential approach for improving the economic viability of farming in Virginia is to capitalize on Virginia’s natural resources and advance renewable fuel technologies. In addition, current efforts to</i>

			<i>promote consumption of agricultural products grown in Virginia, such as the Virginia Farm Bureau Federation’s “Save Our Food” campaign, should be sustained and expanded in order to support the economic viability of Virginia’s farms and help preserve farmland for carbon sequestration.</i>
A	47	AS	Virginia should establish a no net loss policy for natural carbon sequestration areas based on the 2010 baseline. In order to achieve progress on a goal of no net loss of natural carbon sinks, the Commonwealth should set ambitious goals to protect forests, wetlands, and farmland to maximize protection of natural carbon sinks. Particular focus should be given to large blocks of functional forest, wetlands and farmland that not only sequester carbon but demonstrate multiple economic and ecologic benefits. Existing Federal, state and local government programs for preservation of forests, farmland, wetlands and open space, including grant programs and tax incentives, should be used to the maximum extent possible in implementing this no net loss policy.
B	48	AS	<i>Both the Virginia Department of Conservation and Recreation and the Virginia Department of Game and Inland Fisheries have established planning documents (ex. Natural Heritage Plan and the Wildlife Action Plan) that identify important habitat types, specific habitat sites, areas important for maintaining biodiversity, and conservation actions needed to conserve all of Virginia’s wildlife and native habitats. Using Virginia’s Natural Heritage Plan and Virginia’s Wildlife Action Plan to identify critical conservation areas, Virginia should implement a statewide effort to conserve 25% of these areas by 2015 and 50% of these areas by 2025.</i>
B	49	AS	
B	50	TLU	
B	51	CCR	
A	57	AS	Recognizing that enhanced land management activities can both decrease emissions associated with certain agricultural practices and increase the sequestration capacities of agricultural lands, the Department of Conservation and Recreation should continue to work with local Soil and Water Conservation Districts to vigorously promote increased adoption of high-priority agricultural best management practices that reduce agriculture’s fuel and fertilizer consumption and associated greenhouse gas emissions, and that provide methods for increasing carbon sequestration on Virginia’s agricultural lands. The General Assembly should provide adequate and consistent funding to appropriate agencies to implement this recommendation.
B	52	AS	<i>Virginia, like all states, is struggling with estimates of natural carbon sequestration rates and sources, and as a result, the current GHG emissions inventory does not account for the carbon currently sequestered in Virginia’s forests, farmland or wetlands. Virginia’s universities should supply the research that is necessary to incorporate this information into the next iteration of the GHG emissions inventory. This research will provide a quantitative basis to recognize emission reduction benefits associated with land conservation and management policies and to further the development of best practices.</i>
B	53	AS	
B	54	AS	
B	55	AS	
B	56	AS	
B	142	TLU	The General Assembly should encourage local governments to establish tree canopy preservation goals through incentives and ordinances and provide technical assistance to localities seeking to establish such goals. A specific statewide goal should be developed for 2025 or another target year.
B	144	TLU	The General Assembly should adopt a no net loss of carbon sequestration capacity standard for all state actions.
C	61	AS	Reduce the loss of critical natural habitats and native species by incorporating data from the Virginia Natural Heritage program, the Department of Game and Inland Fisheries, and other information as appropriate as a factor to consider in biomass conversion incentive programs for agricultural and forestry based biomass production, and alternative energy facility development planning.
C	143	TLU	VDOT should amend its landscaping standards to minimize mowing, support tree preservation and increase carbon retention.

The Commonwealth and local governments will lead by example by implementing practices that will reduce GHG emissions.			
A	44	BE	The Governor and General Assembly should require all new and substantially renovated buildings to meet LEED or equivalent standards. All future federal buildings and substantial renovations are already required to meet LEED or equivalent standards.
A	104	TLU	The Department of General Services should set minimum miles-per-gallon standards for the fleet owned or leased by the Commonwealth as well as standards for the appropriate class of rental vehicles requested by state employees in the transaction of state business. These standards should be phased in to allow effective implementation, and should include achieving the 2025 CAFE standard by 2015. In addition, DGS policies for purchasing and leasing vehicles should give a preference for the most fuel-efficient vehicles available. Virginia should recommend such standards for local government-owned fleets (especially school buses and transit vehicles), non-governmental organizations, and private businesses, and provide incentives to groups that adopt the suggested minimum standards. For example, the state should provide a higher rate of matching funds to localities that adopt the standards. Virginia also should develop technical assistance capacity to help inform local governments about their range of vehicle choice, costs, and benefits.
C	115	TLU	VDOT should lead the Atlantic and Southeast Regions in establishing one standard for diesel biofuel (e.g. B15) for state-owned equipment and school buses, and work with our neighboring states to adopt this same standard. In cooperation with adjacent states and the federal government, VDOT should develop standards for a) alternative transportation fuels (such as biodiesel or low-carbon gasoline fuels), and for b) equipment and vehicles -- all of which reduce GHG compared with traditional fuels, equipment, or vehicles.
C	126	TLU	All state agencies and institutions and local governments should take necessary actions to minimize vehicle miles traveled related to state and local operations. Virginia agencies and institutions should implement programs to promote alternatives to driving, including creating new or expanded benefits for state workers who take transit, walk, or bike to work, and create program examples for local governments and private businesses. These benefits should be equal to or greater than those provided for state employees to park their personal automobiles at work. All office buildings owned or rented by the Commonwealth should provide bike racks. Where possible, all office buildings owned or rented by the Commonwealth should be located near transit facilities.
Virginia should consider a more aggressive GHG reduction goal.			
A	1	CCR	The Commission recommends that the Governor and General Assembly consider adopting a more aggressive GHG reduction goal that more closely reflects the Intergovernmental Panel on Climate Change (IPCC) recommendation. The IPCC recommendations call for reducing greenhouse gas emission by 25% below the 1990 level by 2020, and 80% below the 1990 level by 2050. This would require a Virginia to achieve a reduction of 35% from the 2000 level by 2020.
Virginia will focus and expand state capacity to ensure implementation of the Climate Change Action Plan.			
A	3	CCR	The Governor should act quickly on those recommendations with which he concurs and for which no other approval is required. He should direct all agency heads to review the Commission's final report and immediately implement those for which sufficient authority already exists. Legislation should be prepared for all recommendations for which executive branch authority does not exist.
A	99	AS &	<i>To ensure that the recommendations of the Commission are implemented, that Virginia meets its greenhouse reduction goals, and the state's response to climate change is refined and updated as more information becomes</i>

		CCR	<i>available, the Governor should establish a Sub-Cabinet on Climate Change Response. The Governor's Sub-Cabinet on Climate Change Response should consist of the Secretaries of Agriculture and Forestry, Commerce and Trade, Finance, Health and Human Resources, Natural Resources, and Public Safety, and Transportation. The Sub-Cabinet's core responsibilities should include coordinating the Commonwealth's response to climate change, disseminating critical information and data on climate change to elected officials, policy makers, and the general public, assessing progress toward implementation of recommendations in Virginia's Climate Action Plan and provide annual report on progress to Governor, the General Assembly, and the public. Additionally, the Sub-Cabinet should evaluate the feasibility and desirability of future creation of an Office of Climate Change Response, with Director reporting to the Governor.</i>
B	6	CCR	Several of the Commission's recommended actions complement the Commonwealth's existing goals and commitments, such as those for land conservation and water quality. In order to maximize these complementary goals, the Governor and General Assembly should strive to utilize existing state programs to implement its recommendations in lieu of creating new state programs. This will, however, require ensuring that existing state programs are appropriately staffed and funded and that their authorities include consideration of climate change impacts.
B B	14 15	CCR EG	The Governor should continue working with neighboring states, especially in the southeast, to develop strategies for collaborative engagement in the national discussion on federal climate change legislation and to implement regional GHG emissions reductions strategies complementary to such a federal system.
B C	46 53	AS AS	The General Assembly should provide funding for the acquisition of high resolution statewide land cover data to accurately assess the land use status over time. This data is critical to quantify Virginia's land cover categories and to identify large natural sequestration areas (forests, wetlands, agricultural lands, parks and other open space, etc.) in Virginia and monitor their change over time. Collection and compilation of this statewide land cover data should be completed by January 13, 2010, and a comprehensive survey should be conducted every four years to validate the accuracy of the inventory. In particular, wetlands inventory data for Virginia is outdated and needs to be updated.
C	10	CCR	The General Assembly should formalize the use of Planning District Commissions (PDCs) as a bridge between the state and local governments and encourage the PDCs to include climate change in their regional strategic plans.
Virginia will educate the public about climate change and the actions necessary to address it.			
A	9	CCR	The Commonwealth should, in collaboration with other public and private sector partners, develop an outreach and educational campaign to increase understanding of the causes and impacts of climate change and to build public support to implement the recommendations of the Climate Change Action Plan. It is critical to inform the public about the individual, business, and governmental actions needed to mitigate and to adapt to climate change. The campaign should focus first on no-cost and low-cost GHG reduction strategies and those with co-benefits, and over time explain the need for long-term mitigation actions and those that may increase energy costs.
B	152	TLU	Virginia should create a voluntary action plan for Virginia citizens: 10 things we can do (and should not do) in our private lives to help achieve the 30% reduction goal.
C	13	CCR	The Commonwealth should work with retailers to eliminate the distribution of free plastic and paper bags in stores, provide programs for recycling plastic bags implement a public education program.
Virginia will continually monitor, track and report on GHG emissions and the impacts of climate change.			
A	2	CCR	Virginia should establish a network of scientific and technological institutions to monitor and evaluate the

			impact of climate change on Virginia’s agriculture, energy use, economy, health and ecosystems; and suggest optimal adaptation and mitigation strategies to the policy-makers.
A	11	CCR	The General Assembly should establish a GHG reporting system, requiring all stationary sources of air pollution already required to report air emissions to include GHG emissions in these reports, requiring VDOT to report on transportation emissions, and requiring DEQ to prepare an annual report of emissions in Virginia.
A	98	CCR	DEQ should annually update and enhance GHG emissions inventories and forecasts, and should assess progress toward achieving GHG reduction goals at least once every five years and report the results of this assessment to the public. There should also be a mechanism to assess the need to readjust GHG reduction goals that have been set and to adopt additional goals.
C	88	AS	VDH should monitor changes in harmful algal blooms (HABs) frequency, toxicity, and geography and any impacts on human health through the Harmful Algal Bloom Illness Surveillance System (HABISS), a surveillance database used for tracking illnesses related to HAB exposure.
C	89	AS	VDH should develop a system able to track changes in allergic or respiratory illnesses and cardiovascular disease that might be associated with increasing temperatures and/or air pollution..
Virginia state agencies and local governments will prepare for and adapt to the impacts of climate change that cannot be prevented.			
A	62	AS	<i>To allow for the potential migration of tidal wetlands inland and increase coastal resiliency, the General Assembly should authorize the Virginia Marine Resources Commission to adopt shoreline protection policies that emphasize the use of living shorelines and seek to avoid shoreline hardening (bulk heads, sea walls, rip rap) wherever feasible.</i>
B	83	AS	
A	67	AS	<i>The Secretary of Commerce and Trade should identify adaptation plans to minimize impacts of climate change on Virginia’s economy, with special emphasis on those industries and economic sectors most sensitive to changing climatic conditions (e.g., agriculture, fisheries, military installations and ports).</i>
A	69	AS	Local governments in the coastal area of Virginia should include projected climate change impacts in all planning efforts, including local government comprehensive plans and land use plans. Local governments should revise zoning and permitting ordinances to require projected climate change impacts be addressed in order to minimize threats to life, property, and public infrastructure and to ensure consistency with state and local climate change adaptation plans.
A	70	AS	
B	71	AS	The Secretary of Transportation should ensure that climate change impacts, particularly sea level rise and storm surge vulnerability in coastal areas of Virginia, are taken into account in all transportation planning, project design, prioritization of projects for funding, and transportation systems management, operations and maintenance. Where existing transportation infrastructure is already vulnerable to sea level rise, more intense storm events and other climate change impacts, state, regional and local transportation agencies should develop plans to minimize risks, move infrastructure from vulnerable areas when necessary and feasible, or otherwise reduce vulnerabilities.
B	72	AS	State agencies and local governments should develop climate change adaptation plans for critical infrastructures for which they are responsible. Climate change impacts, particularly sea level rise and storm surge vulnerability in coastal areas of Virginia, should be taken into account in all critical infrastructure planning, project design, prioritization of projects for funding, and infrastructure management, operations and maintenance. VTRANS 2035 should include a complete reevaluation of the state’s transportation plans, capital investment programming, and projects in light of climate change, higher energy prices, and changing demographics. Private sector owners of infrastructure should be encouraged to conduct a climate change vulnerability assessment and develop a climate
C	75	AS	
B	147	TLU	

			change adaptation plan as a condition for approval of any required permits.
B C	73 74	AS AS	All state discretionary funding programs should require that infrastructure projects receiving state funding are designed to be resistant to climate change impacts over the projected life of the project. Additionally, the Commonwealth should establish policies that discourage expenditure of public funds on development of public infrastructure in areas highly vulnerable to climate change effects, especially sea level rise and increased risk of flooding from intense precipitation events.
B	77	AS	Based on the revised floodplain maps accounting for sea-level rise, increasing storm surge and flooding from more intense rainfall events, the State Corporation Commission should work with the insurance industry and other partners as necessary to develop an analysis of the areas most vulnerable to insurances losses due to increased storm activities and inundation.
B C	78 79	AS AS	The Department of Conservation and Recreation should revise the Virginia Floodplain Management Plan and update model floodplain management ordinances to address more specifically sea-level rise and increasing storm surge impacts due to climate change. Local governments should then be directed to update floodplain ordinances and maps to incorporate sea-level rise and increasing storm surge impacts where applicable.
B	81	AS	Adaptation policies and programs for the built environment should take into consideration impacts on natural systems, particularly in coastal areas, and minimize negative impact on natural areas that are important for mitigating the impact of climate change. Adaptation policies and programs for the built environment should make use of nature-based strategies such as natural shorelines and should be coordinated with fish and wildlife adaptation strategies.
B	82	AS	The Secretary of Natural Resources should lead an inter-agency and intergovernmental effort to develop a Sea Level Rise Adaptation Strategy. The Sea Level Rise Adaptation Strategy should encompass the full range of policies, programs and initiatives that will be required to adapt in the areas of natural resources, economy and infrastructure, and any other area impacted by sea level rise.
B	85	AS	The Virginia Department of Conservation and Recreation should assess the need to expand Virginia’s Resources Protection Area buffer designations beyond the current 100-foot requirement to accommodate the impact of sea-level rise.
B B	90 91	AS AS	The Assistant to the Governor for Commonwealth Preparedness should lead a state-wide assessment of the impact of climate change on emergency preparedness, response and recovery plans and capacity in Virginia, coordinate a review of all state agency Continuity of Government and Continuity of Operations plans to ensure that they are adequate for projected climate change effects and develop recommendations for correcting weaknesses in those plans, and coordinate a review of the Virginia Homeland Security Exercise and Evaluation Program (HSEEP) and regional and local exercise and evaluation programs to ensure that they are adequate for projected climate change effects and develop recommendations for correcting weaknesses in those exercise and evaluation programs.
B	100	AS	The General Assembly should provide funding for the Virginia Geographic Information Network to acquire LiDAR data for the coastal zone, which will cost approximately \$6 million, and the resulting data should be made publicly available.
B C	58 59	AS AS	The Virginia Department of Conservation and Recreation and the Virginia Department of Game and Inland Fisheries to should develop a process to document climate change impacts on native species and ecosystems and recommend ways to preserve Virginia native species when feasible under conditions of climate change, while

			preventing the spread of invasive species. The Virginia Institute of Marine Science should assess the vulnerability of living resource restoration efforts to climate change, particularly those for oysters and submerged aquatic vegetation, to climate change and recommend specific steps to increase the likelihood of success under changing conditions.
C	60	AS	The Secretary of Natural Resources should direct state agencies and universities to work with federal partners (National Oceanic and Atmospheric Administration, U.S. Fish and Wildlife Service, U.S. Geological Survey, and US Environmental Protection Agency), neighboring states, and regional non-profits to develop regional adaptive resource management plans that incorporate climate change impacts.
C	65	AS	The Department of Conservation and Recreation should monitor available forecasting tools and amend its stormwater regulation as needed to ensure the implementation of stormwater management measures that will continue to function effectively in an altered precipitation regime.
C	66	AS	The Virginia Department of Conservation and Recreation should assess the consequences of climate change on the effectiveness of non-point source urban and agriculture best management practices.
C	76	AS	The Assistant to the Governor for Commonwealth Preparedness should coordinate with Department of Defense installations and facilities in the Commonwealth to explore ways the Commonwealth and Department of Defense can work together to address climate change impacts to critical military installations in Virginia.
C	80	AS	State and local agencies should establish policies such as rolling easements, tax incentives, or mandatory setbacks to discourage new development in vulnerable coastal areas. Persons purchasing or developing property in vulnerable coastal areas or floodplains should have ready access to accurate data on the current and potential future vulnerability of their property.
C	84	AS	The General Assembly should require local governments whose jurisdictions encompass Virginia's shoreline to develop integrated shoreline management plans in coordination with the Virginia Marine Resources Commission.
C	86	AS	The Virginia Department of Health (VDH) should use disease surveillance programs to track vector, water and food-borne morbidity and mortality that might be associated with climate change and conduct or modify prevention/intervention efforts based on information gained through surveillance.
C	87	AS	VDH should develop one or more syndrome definitions for climate change related disease or illness for inclusion in a syndromic surveillance system, e.g., ESSENCE (Electronic Surveillance System for Early Notification of Community-based Epidemics). Syndromic surveillance can be used as a tool to determine the existence or the absence of an outbreak; the size, spread and location of an outbreak; or to monitor disease trends.
C	93	AS	The Virginia Department of Health should work with local health departments and planning district commissions to conduct an assessment of vulnerable populations in Virginia based on different climate change impact scenarios including the following: sea level rise, increased air temperatures, and heat-related illnesses and deaths. The assessment should include an understanding of the vulnerability of populations as well as its capacity to respond to new and changing conditions.
C	94	AS	The Virginia Department of Health should promote the Virginia Medical Reserve Corps (VAMRC) to strengthen local public health initiatives and enhance local emergency response efforts during extreme weather events related to climate change. The VAMRC is dedicated to establishing teams of local volunteer medical and public health professionals to contribute their skills and expertise throughout the year as well as during times of community need.
C	95	AS	The Virginia Department of Health should ensure that every Health District in Virginia has a heat emergency response plan.

C	96	AS	The Weldon Cooper Center for Public Service and the Old Dominion University Center for Regional Studies should conduct an assessment of the impact of that climate change will have on persons of low socioeconomic status, members of racial and ethnic minorities, and people living in coastal areas and flood plains.
C	97	AS	The Department of Historic Resources should oversee an assessment of the social and cultural impact that climate change will have on Virginia, including the impact on historic resources. This assessment should provide recommendations on (1) the feasibility and cost of trying to preserve important cultural or historic resources from being destroyed by the effects of climate change, (2) measures to ensure that a historical record of those communities and important cultural or historic resources that cannot be protected from destruction is preserved.
Virginia will undertake a thorough review of state agency and local government authority to account for climate change in their actions.			
B	7	CCR AS	The General Assembly should amend the State Water Control Law to include as a policy of the Commonwealth consideration of changing climatic conditions in the protection and restoration of state waters and living resources.
B	8	CCR AS	The General Assembly and Governor should direct a comprehensive review of other state agency and board policies, regulations, and enabling authorities to determine if amendments are needed to account for the impacts of changing climate conditions on state waters and living resources. Such a review should include, but not be limited to, collaboration among the Virginia Marine Resources Commission (§28.2 et seq), the Virginia Soil and Water Conservation Board (§10.1-603.2:1 et seq), the State Water Control Board (including water supply planning requirements in §62.1-44.38:1), and the Chesapeake Bay Local Assistance Board (§ 10.1-2100 et seq).
B B B	101 102 103	AS AS CCR	Local governments are on the front lines of many climate change adaptation approaches and may not have the authorities needed to put those in place. The General Assembly should, with the assistance of the Virginia Municipal League (VML) and the Virginia Association of Counties (VACo), undertake a review of authorities of local governments, and enact any enabling authority that is needed.
C	63	AS	The Virginia Department of Environmental Quality should incorporate assessment of the current and potential impact of climate change on instream flow into the state water resources plan (§ 62.1-44.38:1) and evaluate the impact of climate change induced alterations in stream flow on in-stream beneficial uses when assessing a Virginia Water Protection Permit (§ 62.1-44.15:20) application.
C	64	AS	The Virginia Department of Environmental Quality should amend the comprehensive water supply planning regulation (9 VAC 25-780) to require that localities or regional planning units assess the potential impacts of climate change on existing or proposed water supplies.