



Charles County Climate Action Plan (CAP) DRAFT Government Operations Strategies



Charles County Climate Action Planning Overview

Between record heat waves, increasingly severe storms, flooding, drought, warming water temperatures, and the loss of the pollinator species that help cultivate our crops, it is becoming increasingly important that the County addresses our changing climate.

In order to ensure our resilience to the effects of climate change, reduce greenhouse gas emissions, and sustain the health and vitality of Charles County, Charles County Government (CCG) is undertaking a Climate Action Planning (CAP) process for government operations as well as the broader community. We are seeking your assistance in creating a Climate Action Plan to guide government and community action towards a cleaner and more resilient future.

Government Operations: charting a path for our organization to lead by example through the reduction of operational greenhouse gas emissions and building resilience of the assets and important resources that we manage.

Charles County Community: through interaction and collaboration with the community we will seek to identify ways to

prepare Charles County residents and businesses to adapt to a changing climate, while also reducing greenhouse gas emissions throughout the county.

Draft Government Operations Strategies Overview

There are **91** Government Operations strategies outlined in this document. Some strategies are included in both the community and government operations strategies lists, reflecting their dual relevance. The following page summarizes the number of strategies by resilience and GHG mitigation categories and provides quick links to the categories within the document.

Are the strategies final?

No, the strategies are not final. They are still open to discussion and refinement by the community and CCG. This might include adding, removing, editing, and streamlining the strategies.

How were the strategies developed?

The draft strategies were developed through input and ideas provided during various outreach activities, including **government department meetings, public webinars, and research and analysis.**

Draft Government Operations Strategies Quick Links

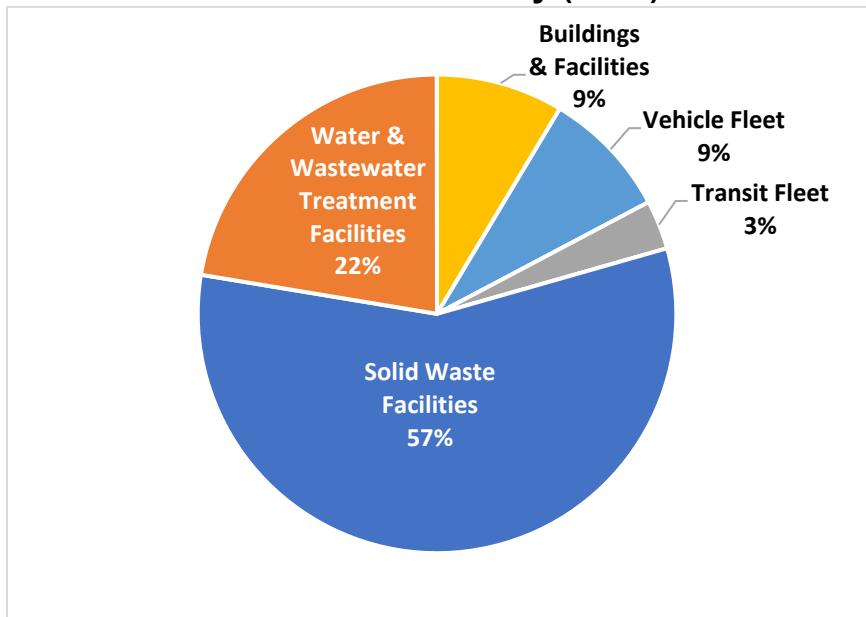
Draft Resilience Strategies

| Category | # of Strategies |
|---|-----------------|
| Built Infrastructure (GO-BI) | 10 |
| Natural Infrastructure (GO-NI) | 5 |
| Land Use (GO-LU) | 7 |
| Planning, Policy & Management (GO-PM) | 13 |
| Governance Capacity Building (GO-GC) | 10 |
| Finance & Funding (GO-FF) | 6 |
| Community Outreach (GO-CO) | 5 |
| Total Resilience Strategies | 56 |

Draft GHG Mitigation Strategies

| Category | # of Strategies |
|--|-----------------|
| Clean Transportation (GO-CT) | 8 |
| Energy Consumption (GO-EC) | 10 |
| Solid Waste (GO-SW) | 15 |
| Green Purchasing (GO-GP) | 2 |
| Total Mitigation Strategies | 35 |

Charles County Government Operations GHG Emissions Inventory (2022)



The inventory above was developed based on 2018 data provided by the Metropolitan Washington Council of Governments (MWCOG).

Do the number of strategies by category correspond to GHG emissions reductions or resilience-building?

No, the number of strategies in each category is not necessarily indicative of their overall effectiveness or importance.

Each strategy has been carefully considered to address specific aspects of both resilience and greenhouse gas mitigation. Whether focusing on clean transportation, energy consumption, natural infrastructure, or built infrastructure, the goal is to create a comprehensive climate action plan that encompasses a variety of approaches to achieve the desired outcomes.

Draft Government Operations Strategies— Resilience

| Resilience - Built Infrastructure | | |
|-----------------------------------|---------|---|
| Issues/Areas of Concern | | Potential Strategy / Action |
| Wastewater Treatment Plants | GO-BI 1 | Extend the flood protection berm around the backside of the Mattawoman WWTP. |
| | GO-BI 2 | Begin implementing temporary/back-up power generation for WWTP that have been identified as priority. |
| Utility Infrastructure | GO-BI 3 | Partner with the electrical utility to ensure proper tree management (including trimming and removal, when necessary) around new and existing electrical lines to reduce risks during high wind and severe weather (*). |
| Critical and Government Services | GO-BI 4 | Develop flood risk reduction measures for all County owned properties identified as being exposed to current or future flooding (*) |
| | GO-BI 5 | Identify all critical facilities located in flood prone or other high-risk areas. Evaluate timeframe and drivers of vulnerability (type of service provided, age of structure, etc.) to address. |
| Dams | GO-BI 6 | Add signage to roadways indicating they are within the inundation areas for the high and significant hazard dams, including DuBois Road, Route 232, Route 6, and Oaks Road (*). |
| Stormwater Infrastructure | GO-BI 7 | Identify areas that should be prioritized for stormwater runoff controls and drainage improvements with strong consideration given to areas that are subject to repeated flooding or generate excessive amounts of stormwater runoff. (*) |
| Project identification | GO-BI 8 | Use the vulnerability and risk assessment for current and future flooding to identify and prioritize projects to address roadway flooding (*). |
| | GO-BI 9 | Identify where the installation of permeable pavers might be appropriate (such as sidewalks) and create a systematic plan for installation (*) |

(*) indicate the strategy is linked to the Charles County Hazard Mitigation Plan

| Resilience - Natural Infrastructure | | |
|-------------------------------------|---------|--|
| Issues / Areas of Concern | | Potential Strategies |
| Stormwater Infrastructure | GO-NI 1 | From the priority list of stormwater improvement areas, determine where green infrastructure design can be incorporated into mitigation efforts (*). |
| | GO-NI 2 | Reduce flooding from runoff and undertake environmental restoration projects. Utilize green infrastructure design into mitigation efforts to improve drainage and water retention (*). |
| Coastal Restoration | GO-NI 3 | For County-owned shorelines: develop a living shorelines plan for key areas of the County to focus on restoration, nature-based solutions implementation, and erosion. |
| | GO-NI 4 | Develop concept designs for restoring vegetative buffers in coastal floodplains, especially to address urban flood issues identified and prioritized in the Nuisance Flood Plan (*). |
| Tree Canopy | GO-NI 5 | Using the tree inventory, identify areas where tree canopy and open space are lacking and could be used as green infrastructure interventions (*). |

(*) indicate the strategy is linked to the Charles County Hazard Mitigation Plan

| Resilience - Land Use | | |
|---------------------------|---------|---|
| Issues / Areas of Concern | | Potential Strategies |
| Development | GO-LU 1 | Investigate opportunities to purchase/conserve land along the shoreline to reduce development pressure in flood-prone areas. |
| | GO-LU 2 | Guide development away from areas vulnerable to natural hazards and/or identify ways to support waterfront development with a resilience lens. |
| | GO-LU 3 | Identify county-owned repetitive loss properties that would be suitable for conversion to open space. Develop a facility-level plan for transitioning out of them. |
| | GO-LU 4 | Transition services out of County-owned repetitive loss properties and convert to open space. |
| Natural Space | GO-LU 5 | Conserve remaining wooded areas in the County to increase, enhance, and protect forests. |
| | GO-LU 6 | Require new native plantings to support other natural resources objectives including enhancing riparian buffers, reducing erosion and sedimentation, and mitigating the effects of stormwater runoff. |
| | GO-LU 7 | Support urban forestry programs and incentives to maximize canopy in vulnerable communities. |

| Resilience - Planning, Policy, & Management | | |
|---|---------|--|
| Issues / Areas of Concern | | Potential Strategies |
| Planning | GO-PM 1 | Develop evacuation plans for communities in high-risk areas to be able to leave the area before an emergency and communicate them well in advance of the event. |
| | GO-PM 2 | Develop a plan for critical facilities that have been identified as needing to be relocated or retrofitted for flooding. |
| Design Standards | GO-PM 3 | Review existing "Maryland Stormwater Design Manual" and ensure County stormwater Guides and Processes are aligned to address current conditions, determine areas of improvement to address future hazards and climate conditions. |
| | GO-PM 4 | Create or adopt an existing Best Management Practice guide that recommends when to upgrade stormwater infrastructure by encouraging conveyance and when to enhance infiltration. |
| | GO-PM 5 | Develop a standard operating procedure for stormwater infrastructure updates that considers the latest guidance on climate change outlined by the state. Within the SOP, develop an initial list of both existing infrastructure upgrades and new infrastructure that may be needed. |
| Mainstream Resilience | GO-PM 6 | Incorporate mainstream resilience into all government plans, including but not limited to emergency plans, hazard mitigation plans, comprehensive plans, transportation plans, stormwater and watershed plans, and capital improvement plans. |
| Develop a Study or Inventory | GO-PM 7 | Conduct a hydrologic study of the watershed above the Mattawoman WWTP to determine how upstream runoff that affects the plant can be reduced. |
| | GO-PM 8 | Analyze the life expectancy and level of service expected from each wastewater treatment facility and determine how future coastal flooding and erosion may impact them in order to begin planning for and prioritizing facility replacement. |

| Resilience - Planning, Policy, & Management | | |
|---|----------|---|
| Issues / Areas of Concern | | Potential Strategies |
| Develop a Study or Inventory | GO-PM 9 | Begin planning for future increased temperatures and their impact on WWTP facilities/services by completing an inventory of the capacity of existing cooling systems in facilities and potential future needs |
| | GO-PM 10 | Carry out a full tree inventory on all government-owned properties |
| | GO-PM 11 | Conduct an analysis of all road culverts to determine which ones are undersized and in need of upgrading. |
| | GO-PM 12 | Conduct an analysis of strategies to extend the availability of the back-up power generation at each of the WWTP facilities and prioritize facilities for implementation. |
| | GO-PM 13 | Analyze the feasibility and cost of retrofitting or relocating critical infrastructure to plan for future climate conditions. |
| | GO-PM 14 | Complete hydraulic analysis of all watersheds in the County to identify what measures can be implemented to reduce runoff related flooding |

| Resilience - Governance Capacity Building | | |
|---|----------|---|
| Issues / Areas of Concern | | Potential Strategies |
| Access to Services | GO-GC 1 | Develop a list of priority access points (streets and/or sidewalks) to critical facilities during hazard events to use in coordination with other departments. |
| | GO-GC 2 | Coordinate with utility managers and other critical facility managers to minimize gaps in services: utilities, schools, critical care, emergency buildings, etc. |
| Heat Waves | GO-GC 3 | Evaluate capacity throughout the County to provide or support the provision of emergency services and healthcare during heat waves. |
| | GO-GC 4 | Evaluate existing cooling center locations and determine need in other areas of the county based on population indicators of extreme heat vulnerability, availability of nighttime cooling centers. |
| | GO-GC 5 | Add generator power to existing warming/cooling centers and require for all new construction or retrofit new facilities. Investigate the potential for microgrid installation at these locations to island electrical infrastructure. |
| Capacity Building | GO-GC 6 | Support capacity building for resilience across departments to achieve a common understanding of climate risks amongst all government staff. |
| | GO-GC 7 | Add grant writing capacity by hiring a full, part-time, or contractor employee. |
| | GO-GC 8 | Explore other support avenues for grant writing, such as support from MWCOG. |
| | GO-GC 9 | Clarify and streamline infrastructure design & update process. |
| | GO-GC 10 | Develop an interdepartmental mechanism for identifying the highest priority multi-benefit County projects for inclusion in the County's CIP, potentially scoring each potential project against a rubric of goals and needs from each department or division. |

| Resilience - Finance and Funding | | |
|----------------------------------|---------|---|
| Issues / Areas of Concern | | Potential Strategies |
| Transportation Infrastructure | GO-FF 1 | Examine the feasibility and cost of raising Route 225 at its intersection with Route 224 to reduce loss of access to the Mattawoman WWTP from flooding during severe storms. |
| | GO-FF 2 | Using the completed hydraulic analyses, identify and plan for priority watershed projects, including identifying funding sources for road culvert replacement/upgrades. |
| | GO-FF 3 | Work with MD SHA, the Resilience Authority, PGM and constituent municipalities to identify funding sources to address roadway flooding challenges identified in the County Nuisance Urban Flood Study (Oct 2020). |
| | GO-FF 4 | Identify and apply to grant programs to secure funding to address nuisance and urban flood issues identified and prioritized in the Urban Flood Plan (*). |
| Facility improvements | GO-FF 5 | Investigate cost and funding availability for high water warning and/or closure system projects. |
| | GO-FF 6 | Investigate funding for back-up electric power generation or microgrids at WWTP. |

(*) indicate the strategy is linked to the Charles County Hazard Mitigation Plan

| Resilience - Community Outreach | | |
|---------------------------------|---------|--|
| Issues / Areas of Concern | | Potential Strategies |
| Public Communication | GO-CO 1 | Coordinate with landowners to conduct a condition assessment of the three key dams in the County along with a failure consequence analysis for each. |
| | GO-CO 2 | Add flood gauges to roads that frequently flood to allow for better monitoring and early message/warning to facility managers. |
| Business Community | GO-CO 3 | Develop an information and training system for businesses to prepare plans for loss of power and access, supply chain disruptions, physical damage to facilities, workplace closures and staff disruptions due to employee absences. |

Draft Government Operations Strategies

— Greenhouse Gas Reduction (Mitigation)

| Mitigation - Clean Transportation | | |
|--|---------|---|
| Issues / Areas of Concern | | Potential Strategies |
| Convert 30% of light-duty vehicle fleet to hybrid, plug-in hybrid or battery electric by 2030 (100% battery electric by 2045). | GO-CT 1 | Update Vehicle and Equipment Replacement SOP requiring purchase of the lowest emissions vehicle available for a particular purpose. The policy should prioritize EVs when available, with hybrid vehicles as the next choice option, and non-hybrid internal combustion vehicles only when there is not an EV or hybrid option that meets the use requirements. |
| Education | GO-CT 2 | Develop and implement a Green Driver Awareness course for all employees authorized to operate a county vehicle. |
| Vehicle Maintenance | GO-CT 3 | Ensure vehicle maintenance staff are trained in maintenance of EVs. |
| Hybrid Ambulances | GO-CT 4 | Use hybrid vehicles for ambulances as replacements are needed. |
| Golf carts | GO-CT 5 | Replace all golf carts with battery electric models when current lease ends in 2027. Have charging equipment ready for electric carts prior to lease end. |
| VanGo (small bus fleet) | GO-CT 6 | Conduct a study to compare benefits and cost of deploying a low-emission bus fleet for VanGo. |
| Off-road equipment | GO-CT 7 | Replace gasoline powered landscape equipment (weed trimmers, lawn mowers, etc.) with electric as available. |
| Medium and Heavy duty | GO-CT 8 | Increase adoption of alternative fuels to 30% of new medium and heavy-duty fleet vehicles by 2035. |

| Mitigation - Energy Conservation and Emissions Reduction | | |
|---|----------|--|
| Issues / Areas of Concern | | Potential Strategies |
| Align with Maryland goals of 50% renewable energy by 2030 and 100% clean energy by 2035. [per Maryland Clean Power Plan and Renewable Portfolio Standard] | GO-EC 1 | Investigate Power Purchase Agreement (PPA) opportunities to add Solar PV to County building roofs, parking lots and available land at wastewater treatment plant or landfills. |
| | GO-EC 2 | Identify County-owned building roofs, parking lots and available land at wastewater treatment plant or landfills where onsite renewable energy is feasible. |
| Wastewater Facilities | GO-EC 3 | Use most efficient available pumps, motors, and controls when replacing equipment. |
| | GO-EC 4 | Convert Clifton pumping station 2 to gravity. |
| | GO-EC 5 | Replace UV lamps at Mattawoman WWTP with more efficient lamps. |
| Convert 20% of heating to heat pumps by 2030 (100% by 2045). | GO-EC 6 | Train DPW staff on maintenance of heat pumps. |
| | GO-EC 7 | Establish policy for conversion to heat pump when heating equipment is replaced, unless prevented by technical obstacles. |
| | GO-EC 8 | Identify most cost-effective buildings for early replacement, focusing on those using heating oil and those with heating or cooling equipment near end of life. |
| Building Efficiency | GO-EC 9 | Develop a green building policy that establishes minimum standards for new county funded facilities and refurbished building standards. |
| | GO-EC 10 | Inventory County owned buildings to find potential performance opportunities to increase conservation and efficiency. |

| Mitigation - Recycling and Solid Waste Reduction | | |
|---|----------------------|---|
| Issues / Areas of Concern | Potential Strategies | |
| Increase landfill gas capture rate at Landfill #2 to 90% by 2030 and 100% by 2045. | GO-SW 1 | Use monitoring to quickly detect and repair leaks (may include drones and/or continuous monitoring sensors). |
| | GO-SW 2 | Use methane oxidizing cover materials. |
| | GO-SW 3 | Limit time between daily, intermediate, and final cover. |
| | GO-SW 4 | Optimize collection system performance - install and expand wells early, use automated well-head tuning, and manage liquid levels. |
| Reduce waste 35% through recycling | GO-SW 5 | Provide recycling at parks and recreation facilities and sites where high amounts of plastic drink bottles are generated. |
| | GO-SW 6 | Conduct biennial audit of composition of waste disposed at Landfill #2. |
| | GO-SW 7 | Add bottle-filling stations at County parks/ welcome centers/ buildings to encourage reusable containers and reduce waste. |
| | GO-SW 8 | Provide employees with training in waste reduction and designate a point person for each division. |
| Divert/reduce 30% of organic material that currently goes to landfill by 2030 (60% by 2045) | GO-SW 9 | Identify a private option for composting or establish a county organic composting facility while ensuring equitable siting and ample community input to prevent environmental justice communities from being overburdened by County waste operations. |
| | GO-SW 10 | Assess the compatibility of existing recycling and refuse drop-off sites for food waste composting. Establish community drop-off sites for food waste composting. |
| | GO-SW 11 | Make all county-hosted events “zero waste” events that use only reusable or compostable materials |
| | GO-SW 12 | Utilize the Department of Solid Waste Management’s compost and mulch program for landscaping and maintenance projects at County buildings and facilities. |
| | GO-SW 13 | Provide composting in all county buildings |

| Mitigation - Green Purchasing | | |
|--------------------------------------|---------|--|
| Issues / Areas of Concern | | Potential Strategies |
| Green Purchasing | GO-GP 1 | Set a target for the percentage of green products purchased through the County's office supply contractor. |
| | GO-GP 2 | Encourage bulk purchasing for reduced trips and emissions. |