OFFICE OF
Environmental and
Energy Coordination
FAIRFAX COUNTY

Resilient Fairfax
Infrastructure Advisory Group – Meeting 3
December 10, 2021 | 1:30 PM | Via Zoom
Meeting Minutes

Attendees:

- Fairfax County Office of Environmental and Energy Coordination (OEEC) (Chair)
- Consultant Team: Cadmus and WSP
- Fairfax County Department of Public Works & Environmental Services (DPWES)
- Fairfax County Department of Emergency Management and Security (DEMS)
- Fairfax Water
- Metropolitan Washington Council of Governments (MWCOG)
- National Association of Industrial & Office Properties (NAIOP)
- Northern Virginia Building Industry Association (NVBIA)
- Northern Virginia Regional Commission (NVRC)
- Northern Virginia Transportation Authority (NVTA)
- RUCA Capital
- Virginia Department of Transportation (VDOT)
- Washington Metropolitan Area Transit Authority (WMATA)
- United States Department of Defense (DOD) – US Army – Fort Belvoir

Unable to Attend:

- Columbia Gas of Virginia
- Cox of Northern Virginia
- Dominion Energy
- Engineers & Surveyors Institute (ESI)
- Fairfax County Department of Transportation (FCDOT)
- Fairfax County Public Schools (FCPS)
- Federal Emergency Management Agency (FEMA)
- Northern Virginia Electric Cooperative (NOVEC)
- Verizon
- Virginia Department of Environmental Quality (DEQ)
- Virginia Department of Conservation & Recreation (DCR)
- Virginia Department of Emergency Management (VDEM)
- Washington Gas
- WTS International/ American Society of Highway Engineers (ASHE)

Meeting Start: 1:30 p.m.

Welcome & Project Update

Welcome

The Office of Environmental and Energy Coordination (OEEC) welcomed the Resilient Fairfax Infrastructure Advisory Group (IAG) members and introduced the project team.

OEEC shared updates since the last IAG meeting, including the following:

- The following deliverables have each been undergoing substantial updates thanks to feedback from the Infrastructure Advisory Group (IAG), Community Advisory Group (CAG), and the Planning Team:
    - The Climate Projections Report,
    - The Vulnerability and Risk Assessment
    - The Audit of Existing Policies, Plans, and Programs
- An initial list of adaptation and resilience strategies has been drafted, based on the preceding deliverables, in addition to stakeholder feedback and a national database of best practices.
    - The purpose of this workshop is to assist with the refinement of this draft list of strategies.
- Staff have continued making progress on the Interactive Climate GIS Viewer, which will be released to the public alongside the Resilient Fairfax plan.
- Staff have continued ongoing coordination at the local, state, regional, and national levels to help align various climate resiliency efforts.

Overview of Concurrent Plans, Programs, and Policy Updates

OEEC briefly described other plans, programs, and policy updates that relate at least partially to Resilient Fairfax, including the following: the Virginia Coastal Resilience Master Plan, NOVA Hazard Mitigation Plan, Fairfax County Strategic Plan, Fairfax County Emergency Operations Plan, Virginia Department of Environmental Quality Chesapeake Bay Regulations Amendment, and CSN IDF Curve research, in addition to concurrent resilience work from the Metropolitan Washington Council of Governments (MWCOG) and the Northern Virginia Regional Commission (NVRC). The Resilient Fairfax team is continuously coordinating with these entities to help everyone move in the same direction.

Key Players

OEEC reminded the IAG of the various stakeholders involved in Resilient Fairfax and their roles, specifically: the project managers (OEEC), consultant team (Cadmus, WSP, and Nspiregreen), the Planning Team (made up of 20 county departments and agencies), the Infrastructure Advisory Group (infrastructure managers and utilities), and the Community Advisory Group (residents, advocates, non-profits, and community groups).

Project Timeline updates

OEEC provided an overview of the project timeline. The project is currently in the strategy development phase, transitioning into the Implementation Roadmap Development phase later this month. This meeting is focused on strategies. There will be another IAG meeting in March to discuss the implementation roadmap. The IAG will have the opportunity to provide feedback on the compiled plan and all associated deliverables during the public comment period as well.

Meeting Agenda and Goals

Cadmus staff (the prime project consultant) outlined the meeting agenda, goals, and ground rules for the evening's discussion. Cadmus emphasized the strategies are in draft mode and asked the IAG to consider opportunities for potential partnerships as the project team previewed the forthcoming strategies.

Project Recap

Cadmus provided a brief summary of the project team's previous activity, including the Climate Projections Report, the Vulnerability & Risk Assessment, and the Audit of Existing Policies, and Plans. The final Resilient Fairfax will be rolled into one compiled plan that will be out for public comment in April 2022.

- Climate Projections Report: examines the climate conditions and hazards Fairfax County is likely to face by 2050 and 2085. Key findings include: warmer annual and seasonal temperatures, increase in frequency and intensity of hot days, reduction in cold days, increase in annual and seasonal precipitation, increase in coastal flooding, and increase in frequency and intensity of heavy precipitation events.
- Vulnerability & Risk Assessment: assesses the impacts of the projected climate hazards on key county sectors to determine what is vulnerable and what is most at risk.
- Audit of Existing Policies, Plans, and Programs: evaluates the county's existing climate-related plans, programs, and policies and identifies opportunities to expand or accelerate existing initiatives and gaps where new strategies may address needs.

Cadmus staff described the process and goals of developing adaptation & resilience strategies for Resilient Fairfax. Cadmus presented a sample strategy template to display the type of content the strategies will capture (e.g., implementation leads, timeline, co-benefits, implementation actions, etc.).

Cadmus then provided an overview of the strategies to be discussed by the other advisory group, the Community Advisory Group (CAG), for general awareness. The IAG's discussions are more on infrastructure, while the CAG's discussions are focused more on communities.

Water Infrastructure Strategies

The next section of the meeting focused on strategies to enhance the resilience of water infrastructure, including stormwater, wastewater, and drinking water infrastructure.

Risks & Opportunities – Water Infrastructure Strategies

Cadmus outlined the top risks and opportunities for water infrastructure as determined by the Vulnerability and Risk Assessment, including:

- Drinking water infrastructure is highly vulnerable to severe storms and wind. The drinking water infrastructure system includes many above ground facilities and is heavily reliant on electricity and vulnerable to power outages.
- Stormwater infrastructure is vulnerable to heavy precipitation, which can overwhelm drainage and conveyance systems.
- Wastewater infrastructure is vulnerable to heavy precipitation. Flooding can lead to high groundwater tables (i.e., infiltration), backups, sanitation blockages, and capacity exceedance.

Cadmus also reviewed the following key opportunities that have arisen to reduce risk and enhance resiliency, including the following:

- Coordination between the county and Fairfax Water for drinking water infrastructure resilience upgrades
- Continuation of upgrades & improvements to critical stormwater & wastewater facilities and infrastructure
- Evaluation of floodplain regulations and exceptions
- Expansion of programs and policies for green infrastructure and nature-based solutions

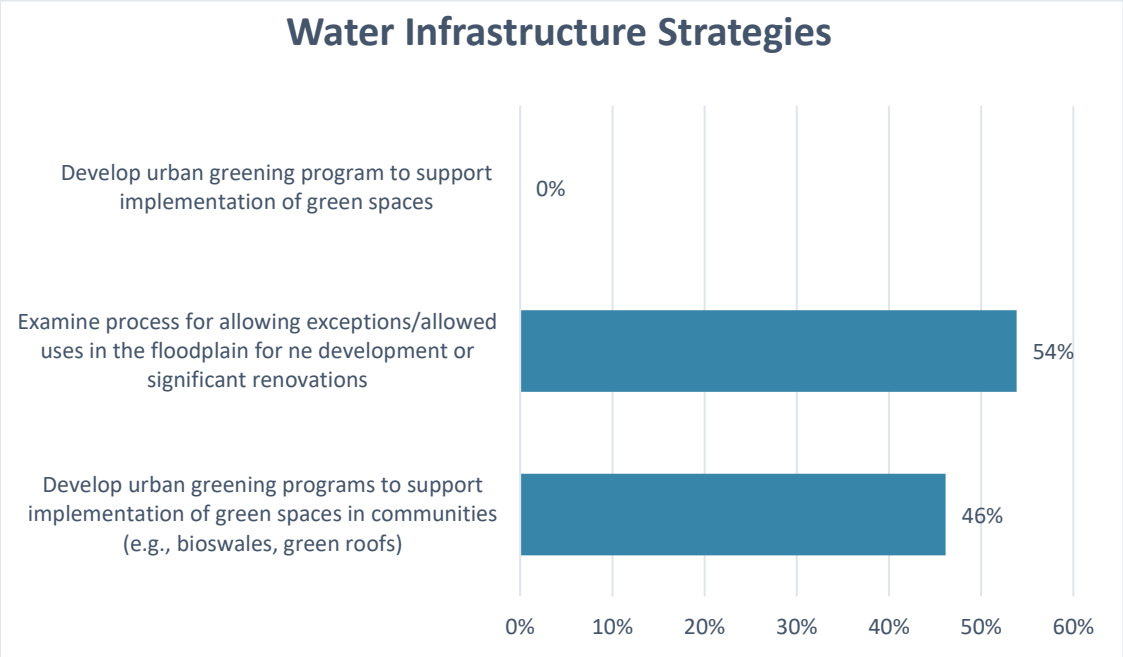
Strategies Overview – Water Infrastructure

Cadmus described the following draft strategies relevant to water infrastructure:

SECTOR	#	STRATEGY DESCRIPTION
Water Infrastructure	22	**Update existing Stormwater Service District fee structure to support increase in permeable area and localized retention of stormwater.** **- Action**: Explore de-paving neighborhood targets. **- Action**: Develop stormwater retention credit system to incentivize the conversion of impervious surface are to green space/permeable surface area.
Water Infrastructure	24	**Examine process for allowing exceptions and allowed uses in the floodplain for new development or significant renovations.** **- Action**: Compile data on frequency and total of exceptions and allowed uses. **- Action**: Assess need for overlay district for flood prone areas. **- Action**: Develop elevated county review procedures for development in vulnerable areas.
Water Infrastructure	28	**Develop urban greening program to support implementation of green spaces in communities, including but not limited to: bioswales, community gardens, green roofs, and tree plantings.** **- Action**: Coordinate with VDOT to support urban greening in the right-of-way and develop structure for operations and maintenance. **- Action**: Develop a green streets policy. **- Action**: Enhance outreach and awareness for existing residential programs, such as the rain barrel program. **- Action**: Develop maintenance programs for green spaces. Consider community groups, volunteers, and students. Explore funding opportunities.

Polling – Water Infrastructure Strategies

An informal poll of attendees was conducted to gauge preliminary reactions to the draft strategies. The poll results were as follows:



Discussion – Water Infrastructure Strategies

An open discussion was held with the participants. The following are key takeaways from the discussion:

- One participant noted: The strategies are very prescriptive, can they go up a level? For example, if the intent of Strategy #22 is to minimize impervious area, should that be the strategy, and then a subsequent action would be restructuring the fee? This allows the strategy to be more flexible.
- Cadmus responded noting that strategy #28 is similar and asked whether the two strategies should be grouped or whether it is more meaningful to keep them separated.
- The participant responded that because it is in the water section and specifically tied to stormwater (vs heat) and Fairfax County has limited control in the right of way (re: green streets), it is more helpful to see a high-level strategy on reducing impervious surface specifically.
- Cadmus added that the project team had received feedback regarding the ongoing need for Operations and Maintenance for green infrastructure projects.
- OEEC noted that the county has spaces in community revitalization districts such as Tysons where maintenance costs are determined.

<u>Energy and Communications Infrastructure Strategies</u>

The next section of the meeting focused on the discussion of strategies to enhance the resilience of energy and communications infrastructure

Risks & Opportunities – Energy and Communications

Cadmus outlined the top risks and vulnerabilities of energy and communications infrastructure as determined by the Vulnerability and Risk Assessment including the following:

- Electricity infrastructure is highly vulnerable to severe storms & wind. This is especially true for above-ground infrastructure. Transmission & distribution infrastructure components are sensitive to high winds and severe storm events, which can lead to power outages and fires. Lightning can damage infrastructure.
- Natural gas infrastructure is vulnerable to both heavy precipitation and severe storms & wind. Gas lines in flood-prone areas can be infiltrated. There is moderate vulnerability to storm damage and power outages.

Cadmus also reviewed the following key opportunities that have arisen to reduce risk and enhance resiliency, including:

- Coordination between the county and NOVEC & Dominion to develop Energy Assurance Plan
- Coordination with county departments and partners for energy system upgrades & improvements: both critical facilities and neighborhood developments

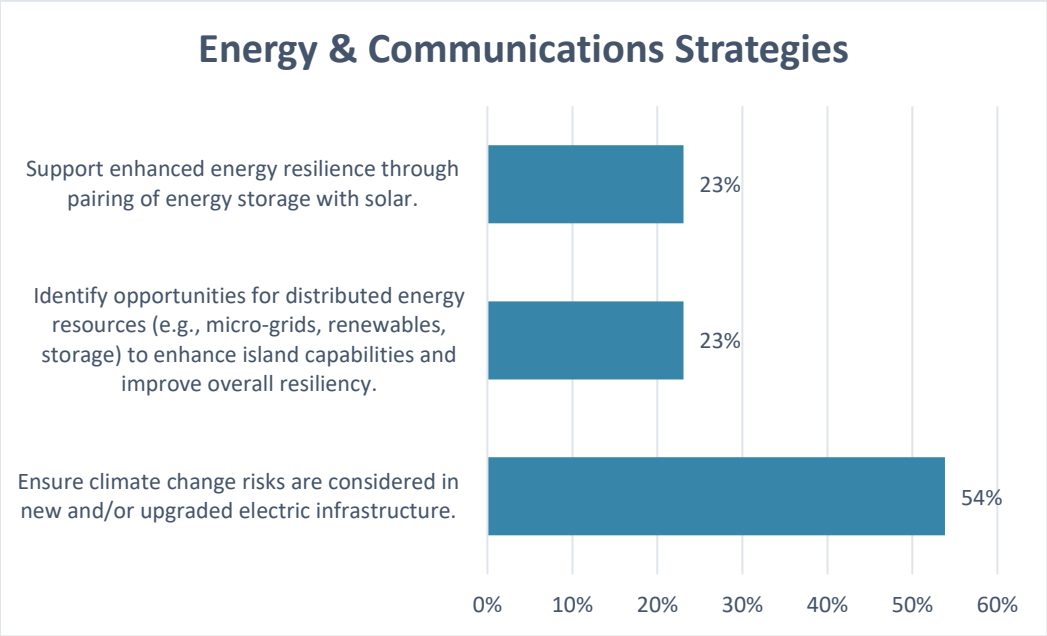
Strategies Overview – Energy and Communications Infrastructure

Cadmus described the walked through the following strategies relevant to energy:

SECTOR	#	STRATEGY DESCRIPTION
Energy	30	**Support enhanced energy resilience through pairing of energy storage with solar. Ensure energy storage locations are floodproof and/or elevated.** **- Action:** Assess feasibility of solar-plus-storage at public buildings. **- Action:** Provide resources to help residents and businesses navigate the solar storage permitting process. **- Action:** Explore feasibility to deploy renewable energy and energy storage at wastewater facilities for renewable back-up power generation.
Energy	*	**Identify opportunity for distributed energy resources, including micro-grids, renewables, and storage to enhance islanding capabilities and improve overall resiliency.**
Energy	*	**Ensure climate change risks are considered in new and/or upgraded electric infrastructure.** Examples: flood proofing of substations, undergrounding of powerlines, permanent backup power at critical facilities, and a fleet of portable generators for on-demand backup power.

Polling – Energy and Communications Infrastructure Strategies

An informal poll of attendees was conducted to gauge preliminary reactions to the draft strategies. The poll results were as follows:



Discussion – Energy and Communications Infrastructure Strategies

An open discussion was held with the advisory group participants on the draft energy and communications infrastructure resilience strategies. Below are key takeaways from the discussion:

- OEEC noted representatives from Dominion and NOVEC, key contacts for this sector, were not available at the meeting.
- The project team asked for insights on how other organizations are approaching energy resilience.
- One participant added in the chat: for the Energy strategies - actions under the second bullet could include identifying resilience hub locations in potentially vulnerable communities and identify potential of DER as part of small area plan updates.

Transportation Strategies

The next section of the meeting focused on the draft strategies to enhance transportation resilience.

Risks & Opportunities – Transportation Infrastructure

Cadmus the top risks and vulnerabilities of transportation infrastructure as determined by the Vulnerability and Risk Assessment including the following:

- The roadway system is vulnerable to severe storms & wind and heavy precipitation. Overwhelmed stormwater drainage system causes flooded, blocked roads. Storms present unsafe travel conditions.
- The public transit system is vulnerable to extreme heat, heavy precipitation, and storms & wind. Extreme heat can disrupt and damage rail, overheat electrical equipment, interfere with voltage, cause power outages, and cause unsafe conditions for public transit workers and users. Heavy precipitation can flood stations, stops, and infrastructure. Storms & wind can damage infrastructure and can cause power outages.

- Bicycle and pedestrian infrastructure is vulnerable to extreme heat, storms & wind, and heavy precipitation. These hazards create dangerous conditions for cyclists and pedestrians and can create facility flooding and damage.

Cadmus reviewed the following key opportunities that have arisen to reduce risk and enhance resiliency, including the following:

- Coordination between the county and WMATA, VDOT, FCDOT, and/or MWCOG for systematic resiliency upgrades & improvements
- Resiliency improvements for public transit infrastructure
- Pursue and advocate for updated design standards for roadways

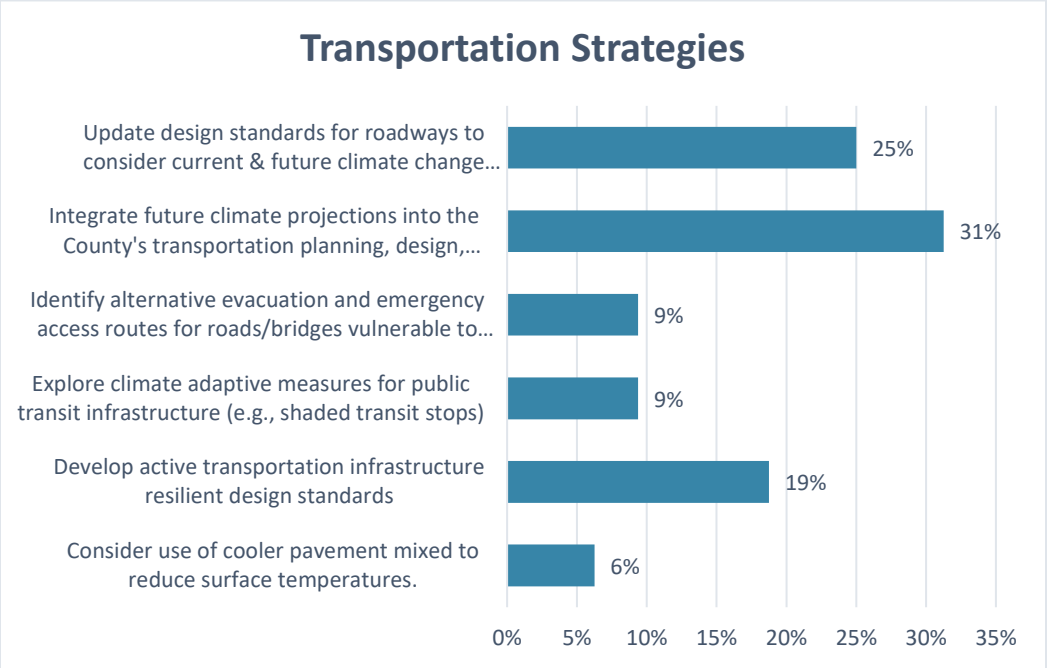
Strategies Overview – Transportation Infrastructure

Cadmus walked through the following strategies relevant to transportation infrastructure.

SECTOR	#	STRATEGY DESCRIPTION
Transportation	16	**Identify alternative evacuation and emergency access routes for roads and bridges identified as vulnerable to flooding. Consider public safety dispatch data, frequency of roadway closures, and swift water rescues in route development.**
Transportation	18	**Integrate future climate projections into the county's transportation planning, design, engineering, and operations & maintenance of projects.** **- Action**: Consolidate existing, currently separate databases of flood-prone and storm affected roadways to provide comprehensive documentation of vulnerabilities and identify opportunities. **- Action:** Build redundancies into transportation network, including public transit and active transportation networks. **- Action**: Coordinate with regional, state, and federal transportation agencies for aligned transportation planning that climate change risks and impacts to transportation network**.**
Transportation	*	**Update design standards for roadways to consider current and future climate change impacts, such as flooding.**
Transportation	*	**Develop ordinance to allow roadways only as special exceptions, and not as generally permittable uses in floodplains and RPAs.**
Transportation	*	**Consider the use of cooler pavement mixes (e.g., light colored aggregate) to reduce surface temperatures.** Adjust paving mix for higher extreme heat thresholds to minimize rutting.
Transportation	*	**Explore climate adaptive measures for public transit infrastructure, such as shaded transit stops, green bus stops, seating, or alternate paving materials.**
Transportation	*	**Develop active transportation infrastructure resilient design standards.** **- Action:** Develop shade standard for active transportation infrastructure to build heat resilience (e.g., shade trees along popular commute trails).

Polling – Transportation Strategies

An informal poll of attendees was conducted to gauge preliminary reactions to the draft strategies. The poll results were as follows:



Discussion – Transportation Strategies

Cadmus facilitated an open discussion with the participants. Below are key takeaways from the discussion:

- One participant noted that the first two strategies resonate strongly. Their organization is currently updating their long-range transportation plans. One of the top concerns is ensuring the investments being made today will not turn obsolete in the future. The participant noted the importance of redundancy in systems. They also noted the existing collaboration with Fairfax County, but are interested in learning more about what Fairfax County is doing and making sure there is a consistent approach in the long-range transportation plan.
- Another participant noted they will take a closer look at the strategies proposed to identify opportunities for coordination. They recommended collaborating with emergency service providers such that there is a proper communication challenges in place.

<u>Buildings Strategies</u>

Risks & Opportunities - Buildings

Cadmus outlined the top climate risks and vulnerabilities of buildings as determined by the vulnerability and risk assessment, including the following:

- Heavy precipitation, inland flooding, and coastal flooding can cause property damage to buildings and contents (e.g., electrical equipment, structural elements). These hazards may result in sanitary sewer overflow or mold exposure.
- Severe storms & wind can cause building damage, power outages, and fallen trees.

- Extreme heat exposure of buildings can cause danger to human health if poorly ventilated or no AC, blistering & cracking of roofs, damage to foundations, increased AC use. (This is a lower vulnerability compared to the others).

Cadmus also reviewed the following key opportunities that have arisen to reduce risk and enhance resiliency, including:

- Coordination between the county and the Northern Virginia Building Industry Association (NVBIA) to advocate for resilience-related building code updates
- Develop a database of high exposure county buildings
- Explore resiliency retrofit program possibilities

Strategies Overview - Buildings

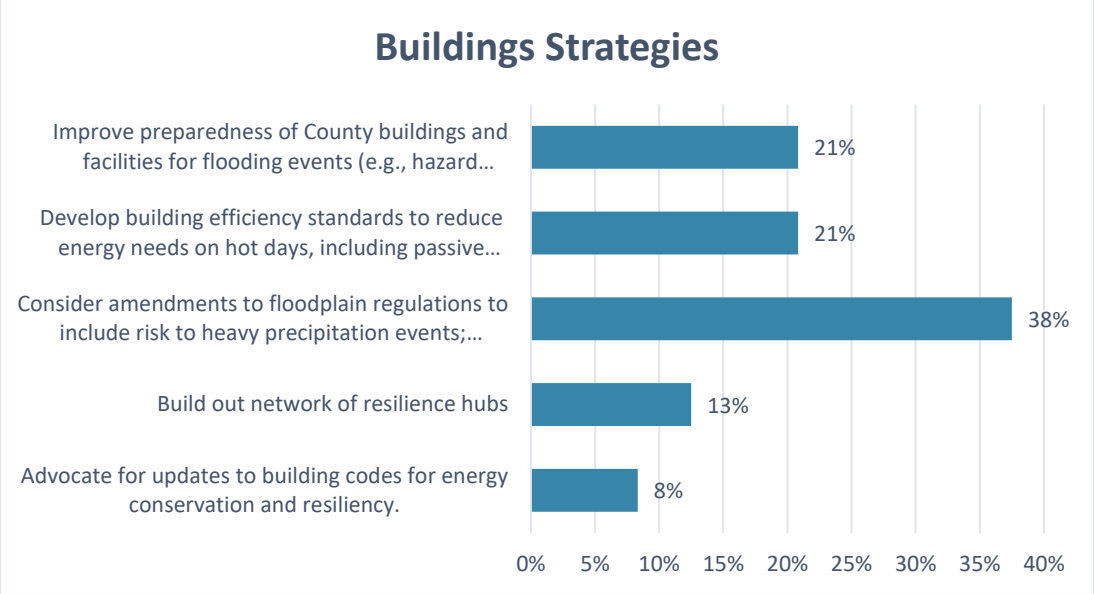
Cadmus described through the following strategies relevant to buildings.

SECTOR	#	STRATEGY DESCRIPTION
Population	12	**Build out network of resilience hubs. Prioritize community centers (NCS), schools, and transit system, public health lab and homeless shelters first. Ensure ability of resilience hubs to function during emergency or disaster.** **- Action**: Increase deployment of back-up power and redundancy at shelters and critical facilities. Upgrade electrical panel to accept generators. **- Action**: Leverage resilience hubs and other county facilities to enhance access to cooling or warming centers. Evaluate existing network of extreme temperatures centers to assess whether they meet community need, assess barriers to access, such as transportation to and from, facility capacity, and hours of operation. **- Action:** Utilize One Fairfax to prioritize expansion resilience hub network in areas of extreme temperature exposure with more vulnerable populations.
Buildings	40	**Consider amendments to floodplain regulations to include current and future risk to heavy precipitation events. Develop flood resilience guidelines for current and future floodplain for new development or redevelopment projects.**
Buildings	43	**Improve preparedness of county buildings and facilities for flooding events.** **- Action**: Conduct inventory of county buildings and facilities to identify exposure and level of risk to future flood events. Prioritize buildings and facilities for hazard mitigation retrofits based on level of risk. **- Action:** Create tracking database to record hazard mitigation retrofits as well as future cost savings/expenditures related to climate hazard impacts (Facilities Management Department). **- Action**: Increase coordination between the Department of Public Works and Environmental Services (DPWES) and Neighborhood and Community Services (NCS) to identify flood risk and implement flood mitigation actions at community center sites and athletic facilities.
Buildings	*	**Advocate for updates to building codes for energy conservation and hardening of structures against new or increased vulnerabilities (increased heat, increase rain and flooding and higher winds)**

Buildings	*	**Develop building efficiency standards to reduce energy needs on hot days, including passive cooling, insulation, and retrofits. Building codes need upgrading to ensure all populations are able to utilize efficient (low energy use, insulated, etc.) dwellings.**

Polling – Buildings Strategies

An informal poll of attendees was conducted to gauge preliminary reactions to the draft strategies. The poll results were as follows:



Discussion – Buildings Strategies

An open discussion was held with the participants. Below are key takeaways from the discussion:

- One participant asked in the chat: For the code actions, are you talking about advocacy for inclusion in state building codes? Virginia is a Dillon Rule state, so the county is unable to make building code changes on its own.
    - The project team confirmed.
- The project team clarified that the second to last bullet is related to updating codes for hardening of structures against climate impacts as opposed to the last bullet that focuses on energy efficiency.

Other Strategies

Cadmus described four additional strategies that did not fit neatly into the previous sector groupings, including the following:

SECTOR	STRATEGY DESCRIPTION
Governance	Collaborate with agencies such as: Virginia DNR, MWCOG, and NVRC to ensure consistency in climate projections data and approach, share scenarios, maintain cohesion in approaches across the region and explore options for collaborating on regional funding. **Action:** OEEC to be vocal advocate to strategies not within county control

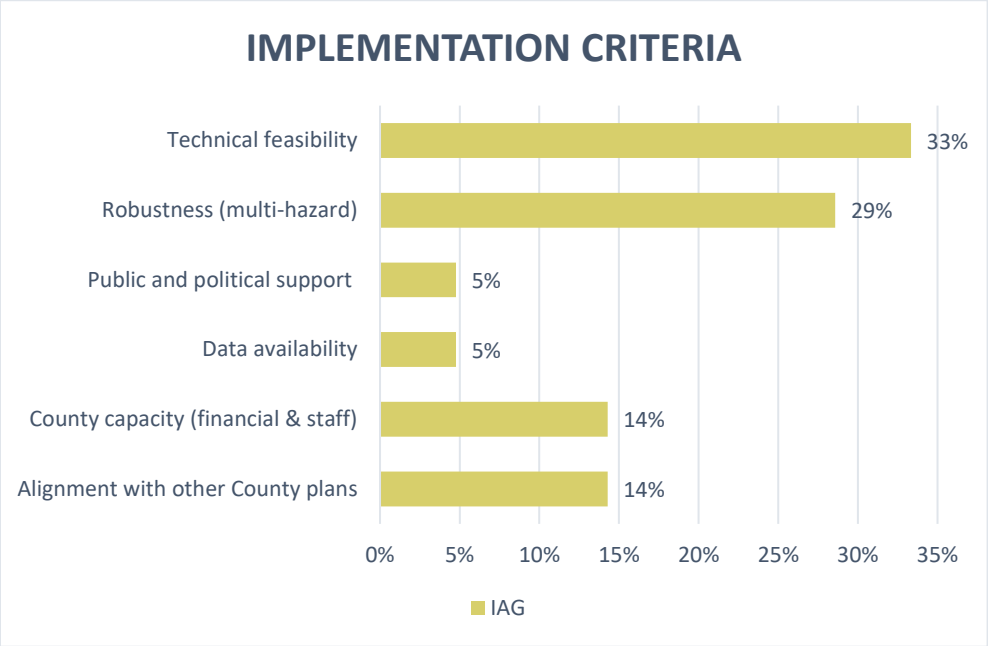
Cross-Cutting	Build youth awareness and engagement in climate resilience and climate action. Partner with schools to establish climate change curriculum for all levels of education. Develop climate internships or shadowing opportunities for high school/college students to learn about County climate efforts.
Natural & Cultural Resources	Establish areas that can accommodate development necessary for relocation or moving assets or services outside the range of flooding.
Natural & Cultural Resources	Pursue the idea of wetland mitigation banks specifically designed for climate change impacts within the county. Any wetland disturbance permitted should have at least 2x the acreage to ensure a 2:1 replacement ratio.

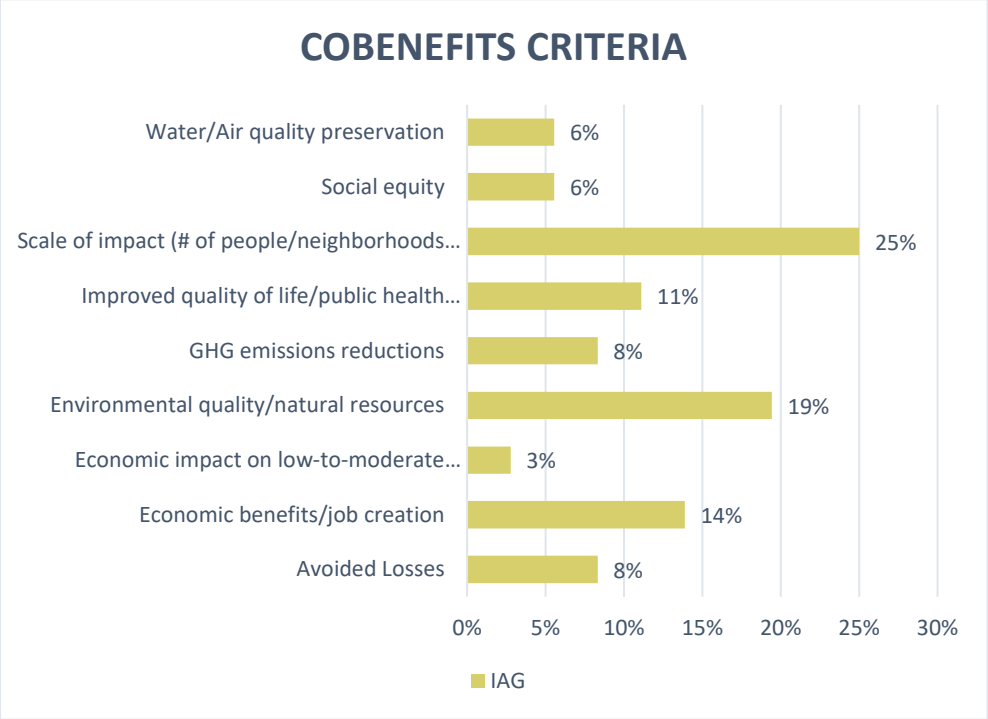
An open discussion with the participants. Below are key takeaways from the discussion:

- One participant flagged that Virginia "DNR" should be "DEQ."
- Another participant asked where the wetland mitigation banks are envisioned to be located. They noted the county does not have place to generate new wetlands and has little access to the shoreline.
- Cadmus agreed and offered the lens of increasing resiliency of existing wetlands and enhancing wetlands restorations.
- Cadmus also made a connection to the Repetitive Loss program's challenges meeting its program goals and asked whether there is an opportunity to pair this effort with the repetitive loss process. The participant recommended broadening the statement to preserving and creating wetlands because the term "banking" comes with challenges.
- OEEC noted there is an opportunity to examine parcels in the floodplain for creation of wetlands or restoration through some mechanism that allows generation of funds to allow for those efforts as alternatives.
- Another participant asked in the chat whether there is a broader community/public engagement strategy beyond youth or is youth engagement considered a higher priority demographic to engage?
- Cadmus responded yes. We are focused today mainly on the infrastructure strategies, but others that were more community-facing were reviewed last night by the Community Advisory Group. All strategies can be found in the spreadsheet sent via email.

Prioritization Criteria

The full list of strategies will need to be prioritized to determine top priority strategies. Cadmus reminded the stakeholders of the goals of the strategies and introduced the concept of prioritization criteria. The project team is aiming to have a mix of strategy types, sizes, costs, and timelines. The IAG participants were polled on two sets of draft prioritization criteria, including implementation criteria, and co-benefits criteria. The poll results were as follows:





Next Steps & Action Items

The meeting concluded with a summary of the next steps. The project team reminded participants that they will have an extra week to review the strategies spreadsheet and provide feedback.

Meeting Adjourned: 3:00 p.m.