MEMORANDUM

November 4, 2021

TO: T&E Committee

FROM: Stephanie Bryant, Legislative Analyst
Office of Legislative Oversight

Kaitlyn Simmons, Performance Management and Data Analyst
Office of Legislative Oversight

SUBJECT: **Worksession on OLO Report 2021-5: *Measuring Climate Resilience: A Review of Select Critical Infrastructure Sectors in Montgomery County***

On November 4th, the T&E Committee will discuss OLO Report 2021-5, which was released on April 6th. This report responds to Council's request to better understand how well Montgomery County's critical infrastructure are designed to handle extreme weather conditions. Critical infrastructure describes systems and assets so vital that their incapacity or destruction would have a debilitating impact on physical and economic security, public health, or safety. The Executive Summary for Report 2021-5 appears on ©1.

The following Executive Branch staff will be available at the worksession to provide comments and answer questions:

- Adriana Hochberg, Assistant CAO, Climate Change Officer
- Bill Musico, Department of Permitting Services
- Marche Taylor-Templeton, Baltimore Gas & Electric (BGE)
- Robert Taylor, Washington Suburban Sanitary Commission (WSSC)
- Tami Watkins, Pepco

COUNCILMEMBERS PREVIOUSLY RECEIVED COPIES OF REPORT 2021-5 AND SHOULD BRING A COPY OF THE REPORT TO THE WORKSESSION.

REPORT SUMMARY

This section summarizes key findings from Report 2021-5. Comments on these findings from Chief Administrative Officer Richard Madaleno are attached at ©3.

In this report, OLO examined six critical infrastructure sectors – Agriculture, Communication, Dams, Energy, Transportation, and Water & Wastewater Systems. OLO gathered information through document reviews, data analysis, and interviews with staff from Montgomery County Government, regional partners, and utility companies. This report identified County historical weather trends, the geographic impact of extreme weather events, and storm costs. In addition, for each sector, County assets and their climate and infrastructure risks were defined and potential next steps to address resiliency gaps were identified. In sum, OLO found that the County requires significantly more data and analysis to properly plan for the security and resiliency of County infrastructure. OLO's major findings are summarized below:

- The County is "behind the eight-ball" in resilience planning for critical infrastructure. Best practices recommend governments conduct facility risk assessments. The County has not conducted a risk assessment and staff report the County is barely meeting investment needs for maintaining existing infrastructure, let alone future risks.
- There is no central repository for climate change data and the County requires significant investment to address climate information data and analysis gaps. Stakeholders report a lack of climate data for the County and several departments report a lack of expertise among County staff to understand the extent of climate risks and adaptation strategies necessary to protect critical infrastructure.
- Among selected climate risks, Montgomery County infrastructure is most vulnerable to flooding. In particular, the County lacks sufficient resources to manage the growing threat of flash floods and nuisance flooding. The County has not comprehensively evaluated flood risk to existing infrastructure. A map of local flood events is attached at ©6.
- Key County drinking water assets are at the greatest risk due to lack of resiliency measures, including lack of redundancy and available off-grid backup power. WSSC's Potomac Water Filtration Plant supplies 70% of drinking water to Montgomery County and there is limited redundancy between WSSC Water's two water filtration plants for supplying finished drinking water.
- Privately-owned dams and ponds in the County are at risk for failure, with limited resources to monitor and repair these assets.
- Extreme weather events disproportionately affect low-income populations and communities of color. Further, funding for resilience projects, particularly utility improvements, will place an undue burden on low- or fixed-income County residents.

OLO RECOMMENDATIONS

Based on the findings of Report 2021-5, OLO had five recommendations:

1. **Conduct facility and asset risk assessments to evaluate climate risk and fill knowledge and data gaps. As a result, the County can set priorities, develop a resilience strategy, and implement projects.** Best practices indicate that these assessments be done before governments set priorities, develop a resilience strategy, and implement projects. The County has not conducted in depth risk assessments for critical infrastructure.
2. **Compile all climate-related data in a central repository for access and transparency.** County climate data is scattered across County departments and a central electronic repository could better facilitate information sharing across the County to aid in planning climate-resilient infrastructure.
3. **Assign a single point of contact to assess and manage flood risks to critical infrastructure and flood prevention programming.** This single contact could help coordinate stakeholders, resources, and better respond to community concerns.
4. **Increase coordination across departments and regional partners to promote security and resiliency of County critical infrastructure.** Climate change and extreme weather events can impact neighboring areas and local stakeholders reported a need for coordination between the County and outside stakeholders to better help pool resources and staff for resilience efforts.
5. **Improve communication and outreach activities to strengthen community preparedness for vulnerable populations in the County.** As existing socioeconomic issues are exacerbated by climate change, it is important to ensure that plans and strategies are developed to ensure these communities have equitable access to information and resources for preparedness.

Measuring Climate Resilience – A Review of Select Critical Infrastructure Sectors in Montgomery County

OLO Report 2021-5 **EXECUTIVE SUMMARY** **April 6, 2021**

This Office of Legislative Oversight (OLO) report responds to Council's request to better understand how well Montgomery County's critical infrastructure systems and assets are designed to handle extreme weather conditions. In sum, OLO found that the County requires significantly more data and analysis to properly plan for the security and resiliency of County infrastructure. OLO identified opportunities exist to build coordination, conduct risk assessments, and strengthen community preparedness.

Critical Infrastructure. Critical infrastructure describes vital systems and assets whose incapacity or destruction would have a debilitating impact on the County's physical or economic security, or public health or safety. There are 16 critical infrastructure sectors (on the right) - four of which are "lifeline" sectors, where the disruption or loss of functions would directly affect the security and resiliency of other sectors. These include: Communications, Energy, Transportation, and Water and Wastewater Systems. All sectors are connected – the loss or disruption of a lifeline function will have an immediate impact on the operation or mission of multiple sectors (known as cascading effects). Based on Councilmember and stakeholder feedback, this report examines six critical infrastructure sectors: **Agriculture, Communication, Dams, Energy, Transportation, and Water and Wastewater Systems.**

U.S. Department of Homeland Security Critical Infrastructure Sectors

- Chemical
- Commercial Facilities
- Communications
- Critical Manufacturing
- Dams
- Defense Industrial Base
- Emergency Services
- Energy
- Financial Services
- Food and Agriculture
- Government Facilities
- Healthcare and Public Health
- Information Technology
- Nuclear Reactors, Materials, and Waste Sector
- Transportation Systems
- Water and Wastewater Systems

County Weather Trends. OLO identified six climate risks to Montgomery County infrastructure systems and assets – floods, droughts, high winds, winter storms, hurricanes/tropical storms, and earthquakes. Of these, flooding poses the most serious risk. Historic data show:

- Increase in urban flooding from two to four occurrences per year before 2010 to 11 to 39 occurrences per year since 2010;
- Average of nine flash flood warnings per year; and
- Increase in the number of complaints related to nuisance flooding (e.g., water in basement, flooded yards).

The County's response to flooding is reactive – the County has not proactively evaluated its existing infrastructure to determine flood risks. Further, the County does not have a comprehensive model to show how water flows through the County and where potential problems lie. County department efforts are siloed and there is no single point of contact in the County to manage flood prevention programs.

County Infrastructure Security and Planning. According to stakeholders, the County is barely meeting investment needs for maintaining existing infrastructure, let alone future risks. There is a lack of climate data available, and available data is siloed in County departments (often offline). Stakeholders also report a lack of expertise among County staff to understand the extent of climate risks and adaptation strategies necessary to protect critical infrastructure. Other specific resiliency planning risks for the County include:

- **Risk assessments**. Best practices indicate governments should engage in risk assessments to identify vulnerable infrastructure assets. The County has not conducted a facility risk assessment.
- **Coordination**. Information sharing is key to building strong resiliency programs. OLO found that coordination within the County is reactive (after a disaster), rather than proactive and it was difficult to secure data, information, and contacts from relevant stakeholders, particularly non-County entities.
- **Storm Data**. The County does not maintain a central, electronic repository of storm cost data. Costs for FEMA-declared disasters are not available prior to 2008. For other storm events, data is tracked and recorded by individual departments.

County Infrastructure Sector Risks. For each of the six sectors reviewed, OLO identified assets, determined climate and infrastructure risks, and presented potential next steps to address risks. The following are selected high risks identified by OLO:

- Washington Suburban Sanitary Commission's (WSSC) Potomac Filtration Plant supplies 70% of the County's drinking water – the Plant does not have an off-grid backup power supply and there is limited redundancy to supply drinking water.
- Dams and ponds in the County, primarily owned by private entities, are at risk of failure. There are limited County resources to monitor and repair these assets.
- Tree maintenance is a preventative action that decreases risk of service outages. The County's tree maintenance program is underfunded and lacks policies aligned with strengthening resiliency.
- Few County facilities are reinforced with multiple pathways to ensure continued operations. In the event of a power outage, County facilities on the FiberNet network may not be able to provide vital services.

Community Preparedness and Economic Impact. OLO found that the County needs to increase investments in community preparedness about climate-related risks. Research shows low-income residents often have less access to information and resources to help prepare for extreme weather events. Further, climate change and the increase of extreme weather events will reinforce and amplify current socioeconomic disparities. Costs for new infrastructure projects and retrofitting existing assets to meet resiliency needs are increasingly expensive and would fall mostly on taxpayers, which would disparately impact low- and fixed-income County residents.

OLO Recommendations

Recommendation #1: Conduct facility and asset risk assessments to identify assets, evaluate climate risk, and close knowledge and data gaps. As a result, the County can develop a resilience strategy and implement projects.

Recommendation #2: Compile all climate-related data, including related costs, in a central repository for access and transparency.

Recommendation #3: Assign a single point of contact to assess and manage flood risks to critical infrastructure and flood prevention programming.

Recommendation #4: Increase coordination across departments and regional partners to promote security and resiliency of County critical infrastructure.

Recommendation #5: Improve communication and outreach activities to strengthen community preparedness for vulnerability populations in the County.

OFFICE OF THE COUNTY EXECUTIVE

Marc Elrich
County Executive

Richard S. Madaleno
Chief Administrative Officer

M E M O R A N D U M

March 16, 2021

TO: Chris Cihlar, Director
Office of Legislative Oversight

FROM: Richard S. Madaleno, Chief Administrative Officer for

SUBJECT: Draft OLO Report 2021-X: Measuring Climate Resilience

Thank you for the opportunity to comment on the Office of Legislative Oversight's (OLO) Draft Report 2021-X: Measuring Climate Resilience. This report is timely in that it coincides with the County's recent issuance of the Draft Climate Action Plan. The draft report included the following recommendations:

Recommendation #1: Request that the County Executive conduct facility and asset risk assessments to evaluate climate risks and fill knowledge and data gaps.

CAO Response: We agree with this recommendation. The Draft Climate Action Plan includes an action (G-15) for conducting climate vulnerability detailed assessments. The County will develop a list of critical or sensitive facilities and determine if a higher regulatory floodplain standard is appropriate. The County will also review the defunct Executive Order 11988 for the construction and renovation of critical infrastructure to determine if this Executive Order should be restored. Specifically, EO 11988 specifies the design event for critical infrastructure as the 500-year floodplain or +3.0 ft. vertically over the 100-year base flood elevation. Funding and staff resources will need to be identified for this effort.

Recommendation #2: Request that the County Executive compile all climate-related data in central electronic repository for easier access and transparency.

CAO Response: We agree with this recommendation. The Draft Climate Action Plan includes an action (G-16) for consolidating County climate data. A consolidated location where climate and statistical data from the various departments and agencies can be uploaded and shared will expedite planning and development for climate initiatives. As an example, data on rainfall intensity, duration, and frequency for storm events should be shared across departments. Funding and staff resources will need to be identified for this effort.

Recommendation #3: Request that the County Executive assign a single point of contact to assess and manage flood risk to critical infrastructure and flood prevention programming.

CAO Response: We partially agree with this recommendation. The County already has a single point of contact for all of the regulatory and compliance aspects of floodplain management. The Department of Permitting Services (DPS) is the lead agency for all regulatory aspects of floodplain management and appoints a single person to the position of Floodplain Administrator. However, the County does not have a single point of contact to manage all of the non-regulatory aspects of floodplain management, such as grant acquisitions, environmental improvement projects, removal of repetitive loss structures, public outreach, and the National Flood Insurance Program Community Rating System. As noted below, multiple departments and agencies play a role in these aspects of floodplain management, and it would not be practical to combine all of these functions into a single point of contact. Funding and staff resources would need to be identified to provide inter-departmental coordination of floodplain management issues.

In addition to DPS floodplain administrator role indicated above, department roles in floodplain management include:

- The identification of critical facilities in the floodplain as done by Office of Emergency Management and Homeland Security (OEMHS).

- Capital improvement projects for the planned improvement or resiliency of the County's transportation assets are completed by the Department of Transportation.

- Environmental improvement projects for planned stream restoration projects as completed by the Department of Environmental Protection.

- Pursuance of federal grants for the removal of repetitive loss structures for the purpose of creating parks as done by Maryland National Capital Park and Planning Commission.

Recommendation #4: Request that the County Executive increase coordination across departments and regional partners to promote and increase security and resiliency of County critical infrastructure.

CAO Response: We agree with this recommendation. The staff of the Maryland Public Service Commission is an important partner in discussions about electric and gas utility security and resiliency in the County.

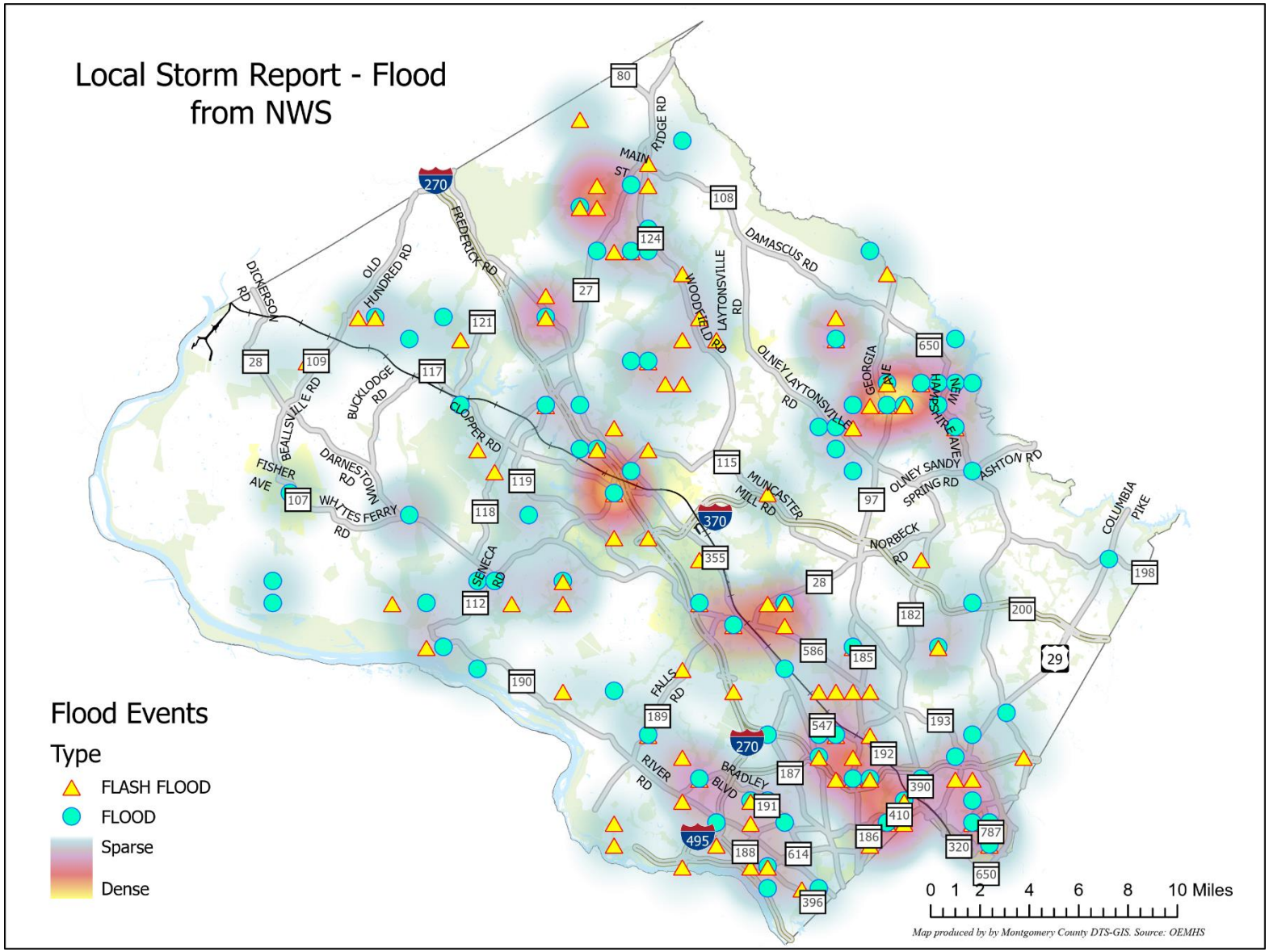
Recommendation #5: Request that the County Executive strengthen communication and outreach activities to strengthen preparedness and mitigation activities for vulnerable populations in the County.

CAO Response: We agree with this recommendation. The Draft Climate Action Plan includes an action (G-7) for evaluating and updating County planning, policy, and operations activities to account for the risks of climate change impacts and prioritize the needs of vulnerable residents. These include the needs of children, the elderly, those with underlying health conditions, and economic disadvantaged communities. The Draft Climate Action Plan also includes an action (P-1) for public outreach to empower the public with information on how to reduce emissions and adapt to the impacts from climate change. This includes giving residents and businesses access to information and resources that enable them to protect their families and homes from the impacts of climate change, such as tips on high heat preparedness and information about the National Flood Insurance Program.

We look forward to discussing these items at the Council session.

c: Fariba Kassiri, Deputy Chief Administrative Officer
Adriana Hochberg, Assistant Chief Administrative Officer
Earl Stoddard, Director, Office of Emergency Management and Homeland Security
Marc Hansen, County Attorney, Office of the County Attorney
Jeremy Criss, Director, Office of Agriculture
Mitra Pedoeem, Director, Department of Permitting Services
Adam Ortiz, Director, Department of Environmental Protection
David Dise, Director, Department of General Services
Chris Conklin, Director, Department of Transportation

Map 4. National Weather Service Location of Floods and Flash Floods



Source: DTS