Heat Exposure White Paper

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1. Introduction

On September 14, 2024, the Biden-Harris Administration held the first-ever White House Summit on Extreme Heat, highlighting the growing threat of extreme heat on public health, infrastructure, and safety.[1] The summit was convened in response to alarming climate data, including the National Oceanic and Atmospheric Administration's announcement that the U.S. had experienced its fourth-hottest summer on record and that August 2024 was the warmest August globally since records began.

The summit brought together over 100 participants, including government officials, healthcare professionals, emergency responders, and community leaders, to share lessons learned from the recent extreme heat events and to promote effective practices for managing heat impacts. National Climate Advisor Ali Zaidi announced a new **Extreme Heat Call to Action**, encouraging local, state, Tribal, and private sector entities to take proactive measures to protect communities from extreme heat before the 2025 heat season.

Key initiatives discussed included:

- **Long-term resilience actions**, such as enhancing tree canopies and cooling infrastructure.
- **Heat preparedness and planning**, including community heat exercises and emergency response resources.
- **Immediate response actions**, such as opening cooling centers during extreme heat events.

This White Paper will outline the problem of Heat Exposure, who the problem affects, and how Montgomery County Green Bank (MCGB of "the Green Bank") can combat the problem through capital investment and mobilization.

[1] https://www.whitehouse.gov/briefing-room/statements-releases/2024/09/14/readout-of-first-ever-white-house-summit-on-extreme-heat/

2. What Is The Problem and Who Does This Problem Affect?

“Extreme heat does not affect all people equally. We must pay special attention to populations that are especially at risk from heat-related illness.”

Above is a quote from the 2024-2030 National Heat Strategy created by the National Integrated Heat Health Information System and Interagency Working Group on Extreme Heat.[2] According to the strategy plan, “Heat-related deaths and illnesses, after staying steady or declining for decades, have risen dramatically in the past four years, indicating a failure of adoption and an urgent need to act.” These deaths and illnesses are also disproportionately affecting certain groups of people. This includes but is not limited to: workers in hot environments, socioeconomically disadvantaged people, older adults, people with disabilities, people with chronic health conditions, people who are unhoused or poorly housed, communities of color, pregnant people, children, Tribal Nations, Indigenous communities, rural communities, members of the military, and more

Heat exposure resiliency must take the form of an inclusive approach that will require the Green Bank to evaluate how its operations impact diverse communities and explore ways to support them.

3. What Can We Do?

“The federal government is taking steps to build a heat-resilient future for our entire country, from helping families get air conditioners to protecting farm workers from heat events and unsafe air. Every action we take, and every dollar invested in prevention, preparation, and heat health resilience, is a vital step towards ensuring a healthier and safer future for all.” - U.S. Secretary of Health and Human Services (HHS) Xavier Becerra

The National Heat Strategy proposes a set of guiding principles that include proactive, equitable, and people-centered approaches, with a strong emphasis on addressing environmental justice and promoting collaboration across sectors.

The Green Bank can engage in a three-fold response that involves:

- Data Gathering and Analysis
- Community Outreach and Engagement

[2] https://cpo.noaa.gov/wp-content/uploads/2024/07/National_Heat_Strategy-2024-2030.pdf

- Capital Mobilization and Investment

Luckily, there have already been a variety of efforts at the local, state, and federal levels across both the public and private sectors that the Green Bank can model its responses to the White House and National Heat Strategy's principles and calls to action. These efforts and other literature were researched and can be summarized below for each of the 3 areas of response.

3.1 Data Gathering and Analysis

In order to see where, when, and how heat exposure will manifest itself in Montgomery County, the Green Bank is going to need to perform some sort of data gathering and analysis exercise that points its efforts in the right direction. These efforts include, but are not limited to:

- Conducting surveys to assess community awareness and perceptions of heat exposure risks.
- Analyzing historical temperature and weather data to identify trends and patterns in heat events.
- Mapping vulnerable populations and areas with limited access to cooling resources, such as parks or community centers.
- Collaborating with local health departments to understand the health impacts of heat exposure on different demographics.
- Implementing remote sensing technologies to monitor urban heat islands and their effects on local microclimates.
- Collecting data on energy consumption patterns to identify potential correlations between heat exposure and electricity usage.
- Engaging with community organizations to gather qualitative data on experiences and concerns related to heat exposure.
- Evaluating existing infrastructure and resources to determine gaps in cooling centers or emergency response plans.
- Assessing land use and vegetation cover to understand how urban planning contributes to heat exposure.

To effectively gather data on heat exposure in Montgomery County, several key sources and methodologies can be utilized. These include community surveys, analysis of historical weather data, and mapping of vulnerable populations. Here were the main data sources identified.

A. **Community Data:** Qualitative data can be collected through direct engagement with community organizations to understand local experiences and concerns (which will be touched more in in the next section.[3] *This area of data would be the most integral to the Green Bank's efforts.*

B. **Public Health Data**: Tools like the CDC's Heat & Health Tracker can provide insights into community awareness regarding heat risks, including how different

[3] https://www.planning.org/planning/2024/oct/4-tools-for-sharing-extreme-heat-risk-information/

demographics experience and perceive these risks. This tool aids in visualizing areas lacking access to cooling resources, such as parks or community centers, which is critical for targeted interventionsThis platform also offers data on emergency department visits, hospitalizations, and mortality rates linked to heat exposure.[4]

C. **Historical Weather and Temperature Data**: Organizations such as NASA provide extensive datasets on temperature trends, including data related to urban heat islands and climatic changes that exacerbate heat events. Their resources can help identify historical patterns and the influence of urban planning on heat exposure.[5] Analyzing these trends is crucial for understanding the potential future impacts of rising temperatures on local communities

In summary, a multi-faceted approach combining surveys, historical data analysis, and community engagement is essential for gathering comprehensive insights into heat exposure risks in Montgomery County. These data sources can inform effective strategies to mitigate heat-related health impacts.

3.2 Community Outreach Engagement

As noted, Community Outreach and Engagement will be crucial in integrating any sort of pilot program for heat exposure resiliency in Montgomery County.To effectively engage the community regarding their difficulties with heat exposure, a variety of surveys can be designed to gather valuable insights and feedback. Here are some key types of surveys you might consider:

A. **Community Awareness and Perception Surveys**: These surveys can assess residents' understanding of heat exposure risks, available resources, and how they perceive their vulnerability. Questions could focus on how informed they feel about heat-related health issues and what actions they take to mitigate risks during heat events.
B. **Access and Resource Evaluation Surveys**: This type of survey can help identify gaps in community resources, such as access to cooling centers, public transportation to these centers, and availability of air conditioning. Questions can include:
    i. How far do you live from the nearest cooling center?
    ii. Do you have access to air conditioning at home?
    iii. What barriers do you face in accessing cooling resources during heat events?

[4] https://www.cdc.gov/environmental-health-tracking/php/data-research/tracking-heat-events.html
[5] https://www.earthdata.nasa.gov/topics/human-dimensions/heat

C. **Health Impact Surveys**: These surveys can gather data on how extreme heat has affected residents' health. Questions could explore:
    i. Have you or anyone in your household experienced heat-related illnesses?
    ii. What symptoms do you associate with extreme heat exposure?
    iii. How often do you seek medical help during heat waves?
    .
D. **Behavioral and Coping Strategy Surveys**: Understanding how community members cope with heat can inform better support strategies. Questions might include:
    i. What strategies do you use to stay cool during hot weather?
    ii. How often do you change your daily routine during heat waves?
    iii. What additional resources or information would help you cope better with extreme heat?

E. **Feedback on Community Programs**: If your area has existing heat mitigation programs, surveys can gather feedback on their effectiveness. Questions can focus on:
    i. How satisfied are you with the current heat response programs?
    ii. What improvements would you suggest for these programs?
    .

Using a combination of these survey types will help create a comprehensive understanding of community needs and difficulties regarding heat exposure. Engaging the community through various methods, including online platforms, in-person interviews, and focus groups, can maximize participation and provide deeper insights. For more information on effective survey design and community engagement, you can refer to resources from the CDC and local public health departments.

Additionally, identifying local partners is essential for effectively tackling heat exposure in Montgomery County. Public health departments can provide crucial data on health impacts related to extreme heat and assist in disseminating vital information to the community. Community organizations, especially those focused on vulnerable populations, can facilitate outreach and ensure that messaging reaches those most at risk. Local schools and universities can contribute research support and serve as venues for community programs, while environmental groups can promote green infrastructure initiatives to combat urban heat. Finally, collaboration with local government agencies, such as city planners and emergency management teams, can integrate heat resilience strategies into urban planning and disaster response efforts. By leveraging these partnerships, Montgomery County can create a more comprehensive approach to addressing heat exposure challenges.

3.3 Capital Mobilization and Investment

The most important part of the Green Bank's efforts against heat exposure will be how it mobilizes capital. Capital mobilization in Montgomery County can facilitate the development of various programs aimed at improving heat exposure resiliency. Of course how capital mobilization will happen is dependent on the previous two sections involving data gathering/analysis and community outreach. The Green Bank can engage in two primary ways of capital mobilization:

1. Direct Subsidy
2. Debt Instruments

In terms of providing direct subsidies into the community, there are a few potential initiatives that the Green Bank could pursue related to heat exposure:

A. **Cooling Center Network**: Establishing a network of designated cooling centers in community spaces, such as libraries, schools, and community centers, can provide safe havens for residents during extreme heat events. Funding could also be sourced from local government, nonprofits, and private donors to support the operational costs of these centers, including staffing and supplies.
B. **Public Awareness Campaigns**: Mobilizing capital to fund comprehensive public awareness campaigns can educate residents about the risks associated with heat exposure and promote available resources. This could include distributing informational materials, hosting workshops, and using social media to reach diverse populations. Collaborations with local organizations can enhance outreach efforts to ensure the messages reach vulnerable communities effectively.
C. **Green Infrastructure Projects**: Investing in urban greening initiatives, such as planting trees, creating green roofs, and enhancing parks, can help mitigate the urban heat island effect. Funding for these projects can also be obtained through grants, local business sponsorships, and partnerships with environmental organizations. Green spaces not only provide shade and cooling but also promote community well-being and engagement.
D. **Energy Assistance Programs**: Establishing programs that provide financial assistance for low-income households to purchase or repair air conditioning units can significantly improve resilience to extreme heat.
E. **Heat Health Response Teams**: Creating community-based heat health response teams, trained to monitor at-risk populations during heat events, can enhance local preparedness. These teams can be mobilized through community organizations and funded via local health departments or grants aimed at public health improvements.

By leveraging capital through local partnerships and strategic funding sources, Montgomery County can implement these programs to enhance community resilience against heat exposure, ultimately promoting a healthier and more sustainable environment for all residents.

Additionally, the Green Bank can delve into more traditional debt financing to target heat exposure in Montgomery County. Some potential initiatives include:

A. **Microloan Program**: Establish a microloan program targeting low-income households to assist with purchasing air conditioning units or making energy efficiency improvements. These loans would feature lower interest rates and flexible repayment terms, improving accessibility for vulnerable populations and enhancing living conditions during extreme heat events.
B. **Expansion of CPACE Funding**: Expand CPACE (Commercial Property Assessed Clean Energy) funding to facilitate energy efficiency upgrades in commercial and residential properties. This program allows property owners to finance improvements, such as high-efficiency HVAC systems or advanced cooling technologies, repaying the investment through property tax assessments over an extended period. This approach mitigates the urban heat island effect and attracts investments in sustainability.
C. **Other Financing Options**: Explore additional financing options, including conventional loans or energy efficiency loans specifically for building owners seeking to enhance their air conditioning systems. These loans can be designed with favorable terms to incentivize upgrades to more energy-efficient models, reducing energy consumption and lowering operating costs.
D. **Public-Private Partnerships (PPPs)**: Leverage Public-Private Partnerships to secure funding for large-scale infrastructure projects aimed at mitigating urban heat. Collaborating with private investors can optimize resources and expertise, leading to more sustainable and resilient urban environments.

By combining these financing strategies, Montgomery County can effectively address the challenges posed by heat exposure while supporting its most vulnerable residents.

4. Conclusion

In conclusion, addressing heat exposure in Montgomery County requires a comprehensive and collaborative approach that integrates data gathering, community engagement, and strategic capital mobilization. By prioritizing vulnerable populations and employing innovative programs such as microloans, cooling centers, and public awareness campaigns, the Green Bank can play a pivotal role in enhancing community resilience against extreme heat. Additionally, leveraging partnerships with local organizations, public health departments, and private investors will maximize resources and expertise, ensuring that interventions are effective and inclusive. As climate change continues to exacerbate heat-related risks, proactive measures and investments will be essential in safeguarding public health, protecting infrastructure, and fostering a sustainable environment for all residents. The Green Bank's commitment to these initiatives will not only address immediate challenges but also lay the groundwork for a more resilient and equitable future.