Planning for Uncertainty

Using the capital plan to prepare your community for the many unknowns of environmental risk

BY MICHAEL GAUGHAN

In summer 2023, the State of Vermont suffered its second catastrophic flood and rain event in 12 years. Flooding was expected that summer, but the state didn't anticipate the severity and the attendant damage to municipal assets. Waste treatment plants were incapacitated, for example, and the state's capital was submerged. Costs to repair and replace public assets alone rose to $120 million as of October 2023.

And the state experienced other notable climate events in 2023. The winter of 2022 to 2023 was the third warmest on record in the City of Burlington, despite a short period of record low temperatures, including windchills that reached 43 degrees below zero. The wide temperature variations also created unpredictable problems like a surge in potholes, causing road and vehicle damage.

All this occurred in a state that major news publications have called a "climate haven." The lesson from Vermont's difficult year is that environmental volatility, both acute and chronic, is now a fact of life. Governments' ability to respond to these consequences—whether successful or insufficient—will have wide-ranging impacts on civic life and fiscal sustainability, which is why the situation requires special attention from government finance professionals.

This article will discuss capital planning considerations state and local governments need for adapting to the physical impacts of climate change and environmental risk, and using the capital plan to prepare for the physical impacts of climate change. The issue revolves around risk management, which has a potential upside and a potential downside. The decisions governments make will influence the long-term livability of their communities.

A capital plan that accounts for the risks and opportunities associated with climate change can help create communities that are better prepared to guard against the many unknowns of environmental impacts, take advantage of opportunities, and provide more desirable communities, all while ensuring a fiscally sustainable future.

RESPONSES TO CLIMATE ADAPTATION

The capital plan's purpose is to focus on the needs of the built environment and provide the infrastructure needed to meet the community's needs. The effects of climate change will be realized within this same built environment. Public works departments and community planners take an interdisciplinary approach to prioritizing projects within the capital plan. This same methodology lends itself to examining the disparate ways in which a changing climate can affect a municipality.

For example, many of the projects needed to address a community's climate change vulnerability will require years of advance planning and financing. But the capital plan may also have to be changed in response to the physical impacts of climate adaptation: most notably, governments must include new disciplines in the plan and widen its scope.

Climate events necessitate an even further-ranging evaluation of systems. Social infrastructure will become critical as cooling centers are identified and fortified, alongside more traditional responses like culvert expansion and levee reinforcement. Similarly, natural systems are even more important to mitigating urban heat island impacts as well as providing riparian buffers. In this way, climate change will likely drive capital planning to reimagine what constitutes "public" assets necessary to safeguard a community from climate change.

Vermont sustained significant flash flooding in July 2023 that caused extensive damage, including washed out roads and bridges and dozens of water rescues. Pictured above, downtown Montpelier sustained near-historic levels of flooding that came within one foot of breaching nearby Wrightsville Dam.

JOHN LAZENBY/ALAMY LIVE NEWS

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The capital plan framework can uniquely accommodate a diverse range of climate-related projects, being one of the documents produced by a local government that is long-term in its analysis—often, it is the only long-term financial planning document available for matching sources and uses. This long-term orientation is critical to recognizing the costs of unaddressed capital needs and facilitating preemptive action against environmental change that could become more costly over time. Similarly, the capital plan's focus on matching uses with sources requires governments to evaluate the comparative advantage of seeking sources of funding and financing before an environmental crisis, when terms can be negotiated from a place of relative stability.

This wide-ranging reevaluation of capital needs in the face of increasing environmental risk has the potential to put stress on a government's finances. Undertaking this work is difficult and requires great discipline, and many governments may be tempted to cast this hard work aside and rely on the Federal Emergency Management Agency (FEMA) as a pay-as-you-go tool for addressing environmental risk.

This reasonable but ultimately short-term thinking threatens to limit the options of future residents, since the scope and applicability of FEMA as insurance against major environmental events is unknown. From potential government shutdowns to the increasing amounts of disaster claims, FEMA will be stressed in coming years with unknown consequences. Moreover, FEMA doesn't yet recognize emerging hazards like severe heat. And this insurance is only available for disasters that take place during a defined period and will not necessarily help a government prepare for chronic risks like more frequent road replacement.

RISK MANAGEMENT AND THE CAPITAL PLAN

The capital plan is also the home of long-term risk management because it is where governments identify the investments needed to address an existing or long-term liability. Preparing for climate and environmental risks is an emerging requirement for many risk management programs. Risk management typically

becomes a priority after a major system failure exposes vulnerabilities or areas of specific risk, but finance professionals are active in managing risk on a day-to-day basis. Nowhere is this silent work more important than within the capital plan, which contains the improvements that will ensure the community's water is clean, its bridges are safe, and the equipment used by its emergency services providers is reliable. All of these become critical when a community is faced with a climate change-related disaster.

Risks associated with physical changes that can be attributed to climate change, along with general environmental hazards, are quite evident after the fact. What is less understood are the capital investments required to mitigate climate risk *before* major and minor events, to ensure community sustainability. Some are obvious—for example, flood plains expand as 100-year events become more common, requiring facilities to be relocated or rebuilt to avoid becoming stranded. Additionally, the useful lives of assets may need to be shortened and the replacement horizon accelerated. Other effects will be subtle, like the previously mentioned increases in freeze/thaw cycles in Vermont that are causing more potholes, more road repairs, and more vehicle replacement than was needed in the past.

The capital plan must therefore adapt to uncertainty. Traditionally conceived of as a way to provide certainty in capital spending, the capital plan needs to be reimagined to accommodate greater flexibility, with an increased discussion of risk in developing the capital reserve recommendations. This builds on the work of communities with reserves associated with FEMA matches and expands the concept to address the uncertainty around capital spending resulting from increased environmental volatility, while also managing risk due to the lack of clear insurance products for things like road repair following floods.

THIS WILL AFFECT THE COST OF ALL CAPITAL

The intricacies of modifying the capital planning process can seem daunting, given that many communities struggle to pull together the political will to establish a capital plan in the first place.

Globally, 2023 was the warmest on record, with cities like Phoenix, Arizona experiencing historic heat waves. Phoenix went 30 days with daily high temperatures recorded at 110 degrees or higher.

PATRICK T. FALLON/AFP VIA GETTY IMAGES

But the municipal bond market is starting to create incentives for undertaking the work, increasingly reviewing bond issuers' mitigation and adaptation plans. As a result, all capital improvement projects are potentially subject to higher costs if environmental risk goes unaddressed and related risk premiums take hold in the wider marketplace.

To some degree, a focus on environmental risk has always been a part of municipal credit review. Coastal communities were evaluated for resilience to hurricanes and other storm events, for example. The changing nature of where and when climate events occur has vastly expanded the geographies where climate related events can create financial stress and, as a result, affect the risk of delayed payment or default on debt securities. Evidence of this growing level of analysis starts with the major rating agencies including Standard & Poor's and Moody's, which incorporate environmental risks in their credit rating reports.

Perhaps more important is the focus on the "buy side," or institutional investors, in municipal bonds that focus on climate risk and use climate data to identify portfolio-wide risk. As the final purchasers of municipal bonds, these investors will ultimately be the source of pricing penalties for communities with high levels of unaddressed climate risk.

Municipal investors like Breckinridge Capital Advisors report that in reviewing relevant climate risks they review various components of issuers' disclosure, notably their capital plan, to see how communities are responding. In particular, investors seek to match known climate risks with responses in the capital plan and to determine if appropriate actions are being taken to protect against future risks.

To date, the pricing impact of this elevated analysis is unknown or unclear—indicating an opportunity for issuers to invest in adaptation before the possibility of pricing penalties for both climate and more routine infrastructure.

PRAGMATIC CONSIDERATIONS FOR MAKING MODIFICATIONS

The above discussion is intended to place climate adaptation measures squarely in the capital plan and as a result, in the purview of the finance professional, who is often responsible for assembling and implementing the funding of the plan. Practitioners may be wondering what can be done in the short term, as best practices for implementing climate adaptation measures emerge. The following provides basic concepts for integrating climate and environmental risk in the capital plan.

> Climate and environmental risks are becoming an unavoidable component of municipal management, and mitigation strategies should be similarly integrated within the existing capital plan.

Identify and adopt a climate model that looks to the future. From the nonprofit First Street Foundation to state agencies, forward-looking climate data is increasingly available to inform long-term predictions of risk related to flooding, wind, heat, and fire. Accepting a common model will give contributors and users of the capital plan a starting place for evaluating impact.

Categorize equipment, facilities, and infrastructure by level of vulnerability to both acute and chronic risk. Acute risk comes from a significant and often isolated event. This is typically the evaluation completed as part of local hazard mitigation plans. But a changing environment is resulting in ongoing challenges that will be faced on a shorter timeline than expected—like potholes.

Integrate these findings into the capital plan. Climate and environmental risks are becoming an unavoidable component of municipal management, and mitigation strategies should be similarly integrated with existing documents.

Additionally, the following broad concepts should be reevaluated within the existing capital plan and capital budget.

Move some portion of operating reserves typically used for unexpected repair and replacement to capital reserves to help anticipate the unexpected. This could be a component of a traditional risk management fund or a separate, unique reserve for disasters and capital expenses that match with useful life expectations. Events related to environmental hazards are not one-time events, and the level of spending in responding to them typically crosses into capital spending thresholds.

Modify capital project scoring to also include furthering adaptation in the scoring criteria for capital projects. This should also recognize that the impacts of climate events are not equal. Some communities or neighborhoods will be disproportionately affected or otherwise have fewer available resources for responding to events.

Top left: The Cordelia B. Hunt Community Center served as one of the three cooling centers opened across Tampa, Florida, due to extreme heat in August 2023. **Bottom left:** Coastal wetlands like these pictured in Duck, North Carolina, help protect coastlines and remove carbon dioxide from the air.

CHLOE TROFATTER/TAMPA BAY TIMES VIA ZUMA PRESS WIRE; SPRING IMAGES / ALAMY

Let GFOA Best Practices Be Your Guide

A government's capital plan is the appropriate place for long-term strategies for adapting to the physical impacts of climate change. These are articulated in multiple GFOA best practices, including:

Environmentally Responsible Practices in Capital Planning, which considers the use of an environmental factor when scoring/prioritizing capital needs.

Capital Planning Policies, which discusses policy focus on multi-departmental stakeholder engagement.

Multi-Year Capital Planning, which focuses on multi-year capital plans to allow for fiscally sustainable governments.

Strategies for Establishing Capital Asset Renewal and Replacement Reserve Policies, which recommends setting aside reserves for unforeseen or catastrophic capital needs.

You might also want to refer to "ESG: The Missing Piece to Better Planning" (*GFR*, December 2022), which explored ways in which the capital plan can facilitate discussions with rating agencies and bond investors to address environmental and other risks.

- Read the article at **gfoa.org/materials/gfr1222-better-planning**
- View GFOA Best Practices at **gfoa.org/best-practices**

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In August 2023, the Hawaii wildfires killed at least 100 people and caused an estimated $5.5 billion in damage, predominantly on the island of Maui. In Lahaina alone, FEMA estimated that over 2,200 buildings were destroyed.

Reexamine useful life calculations of all assets. Many capital asset policies were developed decades ago and are revisited only when the auditors arrive. Make these dynamic documents across asset classes.

Dedicate chapters or sections to social infrastructure and natural systems such as cooling centers and wetlands. The role of these systems in adapting to climate change will not be recognized unless their role in responding to climate and environmental risk is recognized with funding from the capital plan.

FURTHER RESEARCH NEEDED

The capital plan is the appropriate place for a government to respond to climate and environmental risk. Examples are limited at this point, but more are likely to emerge. Research is needed on several key topics:

What climate-influenced capital benchmarks can managers use to develop a responsive capital plan? For example, what is an appropriate depreciation asset ratio or useful life in consideration of temperature or precipitation volatility?

How can communities in the path of unfavorable climate trends respond so that municipal bond buyers will recognize their adaptation and mitigation efforts? An increasing reliance on large datasets presents a challenge in telling a unique and highly idiosyncratic story. Relatedly, what role can state-level capital providers like bond banks and state revolving fund loans play in blunting investor pricing penalties to help with adaption.

What is an appropriate debt capacity benchmark or analysis, given the risks involved? Intergenerational equity takes on new meaning when the potential survival of a community is at play.

CONCLUSION

This article is intended as the starting point for more thinking on the role of capital plans in responding to climate and environmental risk. Many governments are likely to modify their capital plans with climate specific considerations in the coming years, and best practices will be developed alongside emerging policies. For the time being, just start reconsidering the role of the capital plan in ensuring a long term and resilient community.

Michael Gaughan *is executive director of the Vermont Bond Bank and the executive director of the Vermont Educational and Health Buildings Financing Agency.*

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