

Municipalities on the Frontline of Climate Change: What COVID-19 Has Taught Us About Resiliency



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The COVID-19 pandemic, initially considered a temporary pause in regular activities, clearly has changed life dramatically for municipalities. Municipal employees and elected officials can scarcely recall their old normal. They are too busy setting up coronavirus tracking systems, securing and distributing PPE, enforcing new rules for businesses and parks, collecting and sharing data with the state, ensuring the most vulnerable get food and other basic needs, negotiating delayed tax and water bills, and working to fit state and federal guidance with local conditions. Meanwhile, they are fretting

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over local tax receipts and the future of state aid, which are straining budgets required to provide critical services made all the more important by the crisis. And they are doing all this while continuing routine business from a city or town hall that is not completely open and staffed, with evenings filled with meetings migrated to video conferencing.

Against this backdrop, some may think it ludicrous to add climate change preparation to the backs of municipal officials. Yet the COVID-19 crisis has proven that resiliency starts at the hyperlocal level. When everyone is home, because of a pandemic, flood or nor'easter, it falls to municipalities to manage safety, basic services and recovery. This pandemic drives home the fact that while climate change may be a global challenge, municipalities are truly on its frontline.

Municipalities can take action and make decisions that mitigate climate impacts, or they can set it on the back burner. Neither

route will spare them from being on the frontline, but it will change what that frontline looks like for them and their global neighbors. Unlike the COVID-19 situation—where we are beholden to multinational epidemiology tracking and centralized testing and vaccine infrastructure—actionable, climate-friendly measures abound at the local level.

Climate Response Underway

Municipalities are not starting at zero. In fact, many communities across Massachusetts have been undertaking exercises as part of the [Municipal Vulnerability Preparedness](#) program, which was launched in 2017. Reaching out to a cross section of town and city governments, services, businesses, utilities and residents, MVP advisors are building awareness of the various threats associated with climate change and assessing appropriate response measures.

In Massachusetts, the major threats are grouped into four categories: drought,

flooding, extreme events (e.g. nor'easters) and extreme heat. Consequences run the gamut: from fire and power outages to mosquito- and tick-borne illnesses and local refugee management. The severity of, preparation for, and response to each threat varies depending on the community's specific situation. For example, a coastal town with buried electric lines will have a different hierarchy of concerns than an inland town with tall trees and lines on utility poles.

Similar programs are in various stages of development and implementation in other states throughout the country, each addressing serious threats and severe consequences, from fire and earthquakes in the West to floods and tornadoes in the Midwest.

Just as the pandemic response follows a trajectory, so too does climate change. One important difference is that we have fair warning so we can plan as well as respond. This allows municipalities to design measures that 1) prevent or mitigate, 2) absorb, 3) respond to, and/or 4) recover from climate impacts. In the aggregate, these measures establish the

basis for "community and infrastructure resilience" and communities should look to build a toolbox of actions that can offer "two-fers" or "three-fers" in services and benefits. A floodplain, for example, can be designed not just to accommodate an overflow of water, but perhaps store and even purify it for use in disaster recovery or drought. Such measures become particularly effective and justifiable if they also enhance the "normal" conditions. That same floodplain can be set up as a wildlife reserve or walking trail under normal conditions.

Amidst all its adverse impact and restrictiveness, COVID-19 is also opening doors to many new opportunities, some more conspicuous than others. A decisive shift to clean renewable technology and services offers significant economic benefits across a wide swath of the economy. Clean energy jobs range from high-tech and finance to manufacturing and construction. Embodied in virtually every facet of renewable energy from design to production and deployment is more labor per watt of capacity than conventional power. Large-scale power

plants and transmission involve lengthy siting processes, and limited and highly specialized production and construction contracts limited to large-scale elite firms. Most of the equipment used in green energy comes from manufacturing processes driven by scale and throughput. They inject much more "momentum" and deliver more "velocity" to economies than conventional power.

Many solar and wind installations are considered local or distributed energy resources. Distributed energy projects are typically installed and serviced by trained local tradespeople (e.g., electricians, roofers, plumbers). These are jobs that cannot be outsourced. In developing plans for economic recovery from COVID-19, policymakers should keep in mind that they can use distributed energy resources to drive and stimulate the local economy more quickly, while providing far more climate and resiliency benefits than conventional mega-projects.

Municipalities as Change Driver

Given that municipalities and communities are on the frontline of climate change, it

(photo by Moneer Azzam)



MUNICIPALITIES ON THE FRONTLINE OF CLIMATE CHANGE

only makes sense to view them as primary end users of sustainable and resilient technologies and services. Under this premise, green-tech firms should engage with these end-users in the early development of their products and services. This approach nurtures innovation, customer satisfaction and product launch efficacy.

Today, this practice is referred to as the “agile” methodology and typically applies to software development, but it has its roots in product development terminology, such as “Voice of the Customer,” rapid prototyping and “Quality Function Deployment.” One of the fundamental tenets of these methods is to capture customer input at the initial stage and then, with their intimate involvement, refine, test and pilot the product along its evolutionary curve. In the process, customers come to better understand their own needs, recognize the true potential of the new product or service, and better define their specifications. (Customers usually have a difficult time effectively articulating and harmonizing their wants and needs in the first engagement. It usually takes several iterations for a picture to become clear.)

Municipalities are risk averse, by both design and nature. As stewards of taxpayers’ money, they are justifiably reluctant to be a proving ground for technologies. On the other hand, each community has its own unique composition and set of conditions and circumstances. One-size-fits-all products or services are unlikely to fit at all. By engaging early with emerging technologies, by taking low-cost risks and enduring a modest tolerance for small-scale failures, municipalities will find that they not only reduce their overall risk, but also get the reward of valuable knowledge and infrastructure that can be scaled up. By implementing this “agile” method, a municipality can start with a low-risk pilot project that meets its needs while providing invaluable end-user feedback for the larger good. All parties benefit. The municipality becomes a source of innovation and refinement for both products and programs, while developing shared goals, metrics and language across a range of stakeholders, including residents, municipal

departments and vendors. There are ample examples of constructive municipal “living labs” across Massachusetts. These include smart solar-grid networked lighting systems along Community Bike Path in Somerville and a solar evacuation route in the city of Boston.

Common Pitfall

In undertaking climate pilot studies, language is crucial. Municipal and community services are anything but monolithically managed. Each department serves different constituents with distinct work-related languages of their own, even within the same city or town. Public education, emergency services, utilities, and public works have different functions, demanding different skills and mindsets. With COVID-19, we have witnessed how critical performance metrics in normal conditions can become secondary in crisis situations. Consider how grade point averages and standardized test scores have taken a back seat to “presence” and “well-being” in education during this time. Similarly, consider that standard utility reliability metrics (e.g., SAIDI, SAIFI) paint a picture of a utility grid’s performance for management, investors and regulators, but are not necessarily an accurate representation of customer experience in a crisis. Developing a common crisis language in advance of a crisis will save time, lives and costs versus waiting until we are in the thick of the next one.

While technology demonstrations and shared language are prerequisites to implementing comprehensive resiliency plans, they are futile unless such measures can ultimately be transformed into accepted standards and best practices. Establishing standards reduces risk and



Workers install networked, grid-connected and off-grid (solar and battery) “smart” lighting with sensing along a community bike path in Somerville.

(photo by Moneer Azzam)

speeds acceptance while protecting quality, installers and end-users.

COVID’s economic carnage has wreaked havoc on municipal budgets. Town and city officials have been overwhelmed. Instincts are to avoid pursuing anything new and to just get back to some form of normal. But it now seems clear that the old normal was not serving the collective very well. This is the time for towns and cities to embrace a new and improved normal and build climate resilience. Existing and emerging programs will offer technical and financial incentives for courageous communities with vision. State, city and local support for clean energy policies, vulnerability planning programs and infrastructure resilience are increasingly common. Massachusetts, for example, is allocating an estimated \$30 billion over the next decade for climate resilience.

The Federal Emergency Management Agency is rolling out its new [Building Resilient Infrastructure and Communities](#) program, perpetually setting aside 6 percent of its annual disaster relief receipts to technical support (e.g., standards development) and matching grant funding for innovative resilience projects. The private sector, from impact investing to crowdsourcing grassroots projects, is another important source of green infrastructure support for municipalities.

No Time To Wait

It is inevitable that municipalities and communities will be on the frontline of the climate crisis. The current pandemic has made us bear witness to how a lack of preparation and a shortage of critical materials results in major setbacks, including lost lives and livelihoods in

both the short and long run. In a stroke of irony, the COVID-19 lockdown has provided both a dress rehearsal and time to rethink and restructure our way of life to create a new and better normal, while bolstering our collective resilience against impending threats.

All major transitions come with major challenges. The level of hardship endured is a function of collaboration and empathy. A well-orchestrated, steady transition from today's fossil-based, fragile economy to one that is renewable and resilient can speed and sustain economic recovery. A successful transition will not be the product of a master plan resulting in an overnight metamorphosis to a zero-carbon society. Instead, it requires many incremental steps at all levels of society at a dramatically faster pace.

In short, to confront climate change,

we collectively need more investment, more demonstration, more development, and more deployment with more active feedback loops, accelerated learning and adaptation. Such rapid progress is facilitated through retuned, universal metrics and language around resilience, along with sound established standards for safe, reliable and accurate performance. In large part, the technologies and practices to achieve this exist today. We can optimistically transition in twenty and thirty years, but only if we make early and steady progress to flatten the climate curve and all its adverse implications. What stands in the way is the collective will. Municipalities sit at ground zero. They are the architect, end-user, customer and key beneficiary of this transition. Their voice and action are critical to design, implementation and success. 🌱