NAVIGATING ELECTRICAL OUTAGES:

Proactive Steps for Today and Tomorrow's Electrified World

Department of Planning & Sustainability

ADAPTATION & RESILIENCY

IN THIS PLAN

INTRODUCTION AND PURPOSE

Navigating Electrical Outages: Proactive Steps for Today and Tomorrow's Electrified World outlines specific actions that Tompkins County government and local partners can take to improve resiliency in an increasingly electrified future. Implementation of this Plan is intended to strengthen local resiliency as our community moves towards electrification of heating, cooling, and transportation by:

1. Preparing for electric grid outages now and in a future with anticipation of an increased reliance on electricity due to electrification, and
2. Working to reduce the frequency of electric grid outages.

TRENDS TOWARD INCREASED ELECTRIFICATION

Recent years have witnessed significant changes in policies, goals, and funding at all levels of government directed towards addressing climate change. This has spurred a major push to electrify buildings and vehicles. Powering these crucial sectors with electricity generated by renewable resources presents a vital strategy to reduce greenhouse gas (GHG) emissions. However, as governments implement these new policies and goals, there will be significant changes to everyday life.

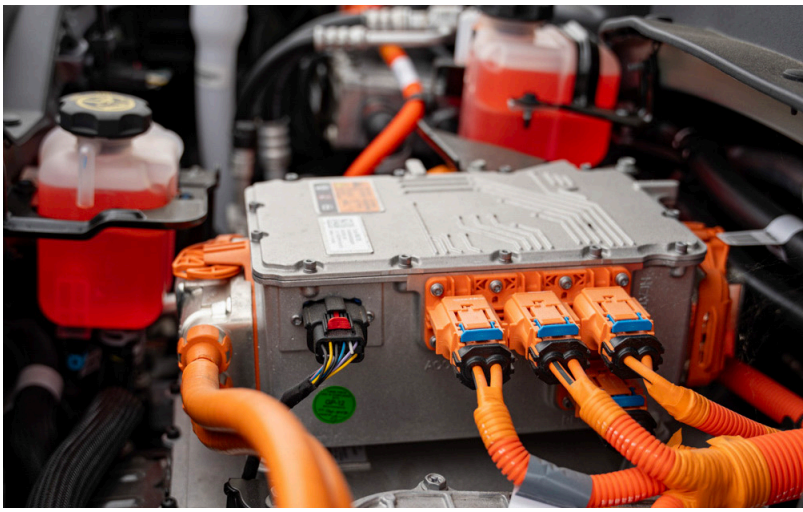
Most heating systems that run on fossil fuels require some amount of electricity for distribution. Many residents and businesses that rely on fossil fuels for heating are already left without heat when the power goes out unless they have a backup energy source like a generator. However, the scale of the problem is exacerbated by electric heat pumps, as the electric draw and capacity needed to power a generator for a fossil fuel system is much smaller than one needed to power a compressor for a heat pump. The change in transportation is a starker difference from the current situation where people can fill up their gas tanks at gas stations versus relying on the electric grid for vehicle charging. While electric vehicle (EV) users can charge in advance of an anticipated grid outage, access to EV charging during an emergency, especially a protracted multi-day emergency, poses different challenges.

The Inflation Reduction Act (IRA) is the largest investment in combating climate change that the United States has seen. With the IRA and its associated incentives in place, an uptick in adoption of energy efficiency measures, heat pumps, clean energy, EVs, and battery storage nation-wide is anticipated. Similarly, New York's Climate Leadership and Community Protection Act (CLCPA) sets ambitious goals for the state, including GHG emissions reductions of 40% by 2030 and 85% from 1990 levels by 2050, 100% emissions-free electricity sector by 2040, and 70% renewable energy by 2030. Locally, the Tompkins County Energy Strategy was adopted in August of 2019 with a goal of achieving net-zero GHG emissions for government operations in the shortest timeframe possible while remaining financially solvent. Additionally, the City of Ithaca and the Town of Ithaca adopted the Ithaca Green New Deal with the goal of reaching carbon-neutrality community-wide by 2030.

Combined with changes to heating and cooling systems, types of transportation, and energy use, climate change and efforts to mitigate its impacts result in a need to prepare for these changes while remaining resilient in times of emergency.

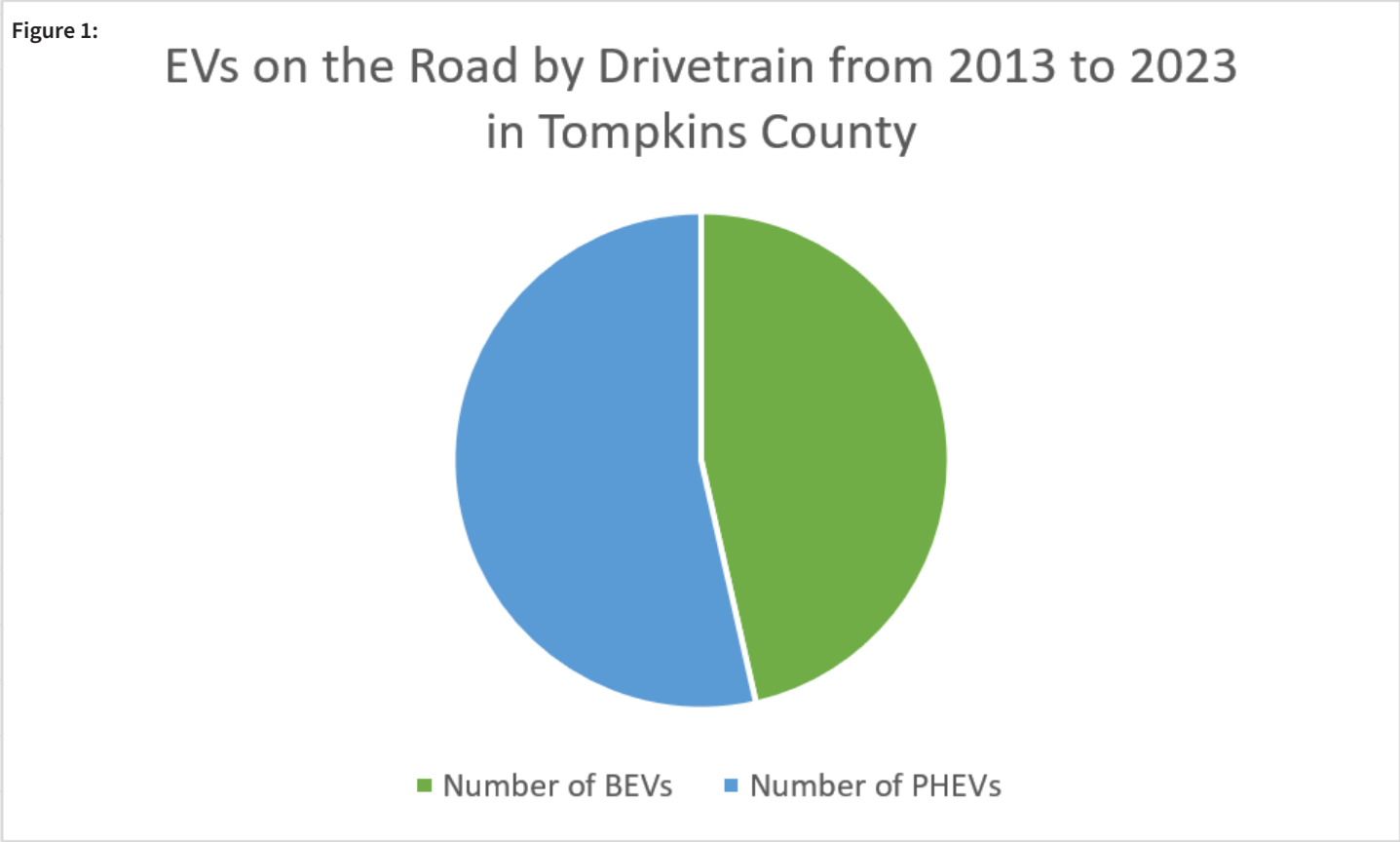
GROWTH IN ELECTRIC VEHICLES

To better understand the extent of the expected electrification in transportation, New York State Research and Development Authority's (NYSERDA) Electric Vehicle Registration Map[1] was used to analyze the number of EVs registered in the county from 2013 to 2023. As is shown in Figures 1 and 2, the transition from traditional vehicles to electric is accelerating. Acceleration may be occurring because of increased vehicle choice or the availability overall of cheaper EVs. Both New York State and the federal government are offering incentives on new and used EVs to encourage their adoption and make them price-competitive with their gasoline counterparts.



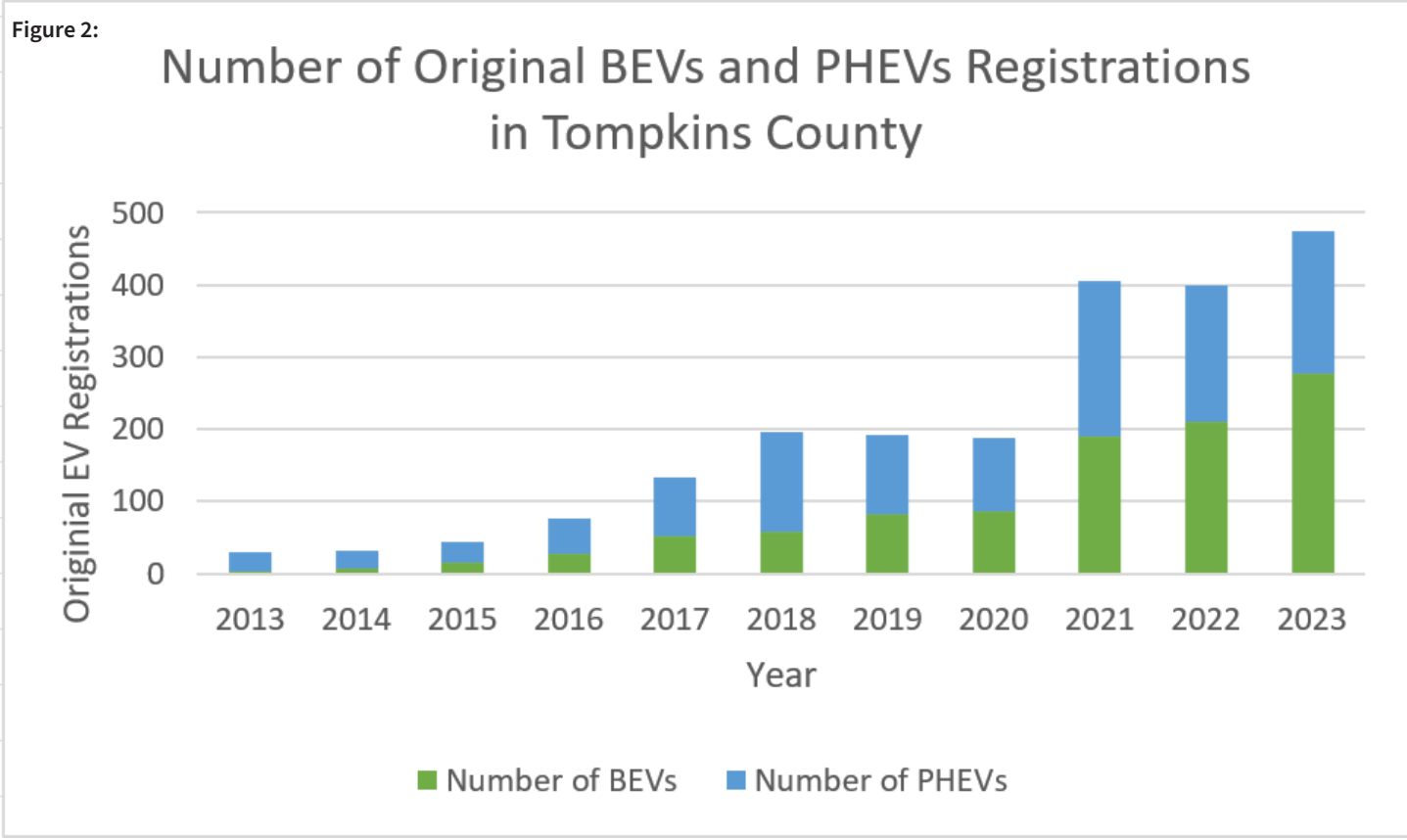
[1] https://www.nyserda.ny.gov/All-Programs/ChargeNY/Support-Electric/Map-of-EV-Registrations

Figure 1:



Source: NYSERDA Electric Vehicle Registration Map

Figure 2:



Source: NYSERDA Electric Vehicle Registration Map

GROWTH IN HEAT PUMPS

There is no single data source to track the growth of heat pump installations in the residential and commercial sectors. However, local, state, and federal policies are driving the adoption of heat pumps. Locally, the Ithaca Energy Code Supplement (in use in the City and Town of Ithaca) encourages the use of heat pumps for heating, cooling, and domestic water heating. At the state level, the Climate Leadership and Protection Act calls for ambitious reductions in GHG emissions. The currently preferred pathway for reducing GHG from heating and cooling is heat pumps. Also, the state's mandates to install heat pumps in public housing and facilities are spurring an uptick in heat pump usage. Additionally, Governor Hochul signed New York State's All-Electric Building Act, which requires all new buildings seven stories and under to be all electric by 2026 and 2029 for buildings taller than seven stories[2]. Federal incentives for heat pump installations are also helping to bring costs down on these electrified systems. Combined, these local, state, and federal incentives and policies have driven tremendous growth in installations of heat pumps in Tompkins County, and this growth is expected to accelerate.

ELECTRIC GRID

While electrification efforts are essential for combating climate change, the impacts of climate change on the electric grid are already being experienced in the form of more frequent and intense storm events, which in turn increase the potential for electricity outages. Increased electrification can also result in vulnerabilities by concentrating reliance on a single energy source and straining the electric grid's ability to meet growing demand.

While this plan does not address these grid capacity concerns, which are already being studied extensively at both the state and federal levels, those issues inform local actions. The growing reliance on electricity for heating, cooling, and transportation, combined with the heightened risk of outages, contributes to why preparing for such disruptions is important for our community's resiliency.

To determine actions where local influence can improve preparation for outages while reducing their frequency, an understanding of recent outages and the electric grid's vulnerabilities and strengths is necessary.

[2] https://nyassembly.gov/all-electric-buildings/

ELECTRIC GRID OUTAGES

Table 1.0 Number of Electrical Outages in Tompkins County by Cause from 2020 to 2023

Cause of Outage	Number of Outages	Percent of Outages by Cause
Vegetation Interference	1,210	54.11%
Equipment Failure	571	25.54%
Animal Interference	156	6.98%
Maintenance	129	5.77%
Weather	104	4.65%
Miscellaneous	66	2.95%
Total Number of Outages	2,236	

Source: NYSEG.

The NYS Public Service Commission is increasingly focused on investing in strengthening the resiliency of the electricity grid. At the local level, understanding the frequency, duration, and causes of electrical outages is crucial for anticipating potential future outages. To this end, outage data provided by the electric utility, New York State Electric and Gas (NYSEG) for the last three years in Tompkins County is presented above.

Table 1.0 shows the number of electrical outages in Tompkins County from 2020 to 2023. NYSEG tracks the causes for each outage. Those detailed descriptions were grouped into six categories: vegetation interference, equipment failure, animal interference, maintenance, weather, and miscellaneous. It is clear the largest number of outages arise from vegetative interference, such as a tree or branch falling on a transmission line. Equipment failures account for 25.5% of all outages and could include anything from defective switch to transformer damage. The Miscellaneous category includes outages caused by installation of cable lines, adding new customer loads, or loss of supply[3]. The outages totaled 2,236 over the 1,095 days (three years) in the data set reviewed. This averages at two outages per day in Tompkins County over the last three years.

Beyond the number of outages, another important consideration is the duration of those outages. Table 2.0 shows the Outage Duration Statistics for Tompkins County from 2020 to 2023. The minimum outage in Tompkins County was ten minutes with the longest outage lasting fourteen hours and forty-three minutes. The average outage duration was 3 hours and 20 minutes. Understanding the duration of outages will help tailor short-term or long-term solutions for grid outages.

Table 2.0 Outage Duration Statistics in Tompkins County by Cause

	Hours
Minimum	0.17
Average	3.33
Maximum	14.71

Source: NYSEG.

[3] NYSEG provided all the outage data, which is publicly available. For each of the following combination: incident number + date + circuit, the entry is unique with only the longest outage being counted.

GRID VULNERABILITIES AND STRENGTHS

As electrification is increasingly adopted in New York State, the State and utility partners are implementing steps to address electric grid vulnerabilities and strengths to reduce the likelihood of outages. This section outlines some of the major issues being studied and addressed by those partners.

Tompkins County and other Upstate New York communities may be somewhat better insulated from future brownouts due to their relatively lower electric load compared to Downstate areas. Additionally, the Upstate grid's large amount of hydroelectric power lends some stability to the electric supply in Upstate New York[4]. However, the intermittent nature of wind and solar energy, which supplement hydroelectric power as the grid moves towards more renewable energy sources, presents challenges. Solar generation peaks during the day and during the summer, and declines before evening loads rise, while wind generation is greater at night when demand is typically lower. In the winter, there is generally lower solar generation from limited daylight, which must be considered as cold weather impacts EV battery consumption and capacity and demands for electrified building heating systems increase. Understanding these nuances and how to manage generation versus demand will be key to reducing stress on the grid as electrification grows.

Climate change and the strengthening of storms and extreme temperatures can also further exacerbate grid vulnerabilities. Renewable energy power shortages are likely to arise if there are co-occurring high temperatures with wind or water droughts in the summer or lower temperatures with wind droughts in the winter[5]. Similarly, higher temperatures lead to higher energy demands for cooling, which strains the grid. This is more likely as the planet's temperature is expected to rise. Similarly, severe storms or increased instances of drought can impact infrastructure that's already running at capacity.

In an electrified future the amount of electric energy needed will increase because the transportation and building sectors will increasingly be requiring electricity to power vehicles and heating loads. The change in electric energy demand will result in New York State transitioning from a summer-peaking to a winter-peaking region. This introduces additional challenges for a future where electrification is standard. Peaking is the time when the electric grid has the highest electricity demand system-wide, and it introduces vulnerabilities to outages if supply cannot keep pace with demand. Current summer-peaking typically occurs on high-temperature days when demand for cooling is highest. As building HVAC systems move from fossil fuel to heat pumps, the resulting increase in electricity usage for heating is expected to reconfigure the system so that the highest electricity demand occurs in winter months during the coldest hours of the year. This is a concern as the risks for loss of heat in the winter are significant.

As the grid becomes increasingly "smart," it also provides more openings for bad actors to access the system and thus becomes more susceptible to cyber attacks. Cyber attacks to the grid could disrupt service and cause outages. The Department of Energy's Office of Cybersecurity, Energy Security, and Emergency Response (CESER) has seen significant investments from the federal government to help reduce cyber risks and strengthen the resilience of the grid[6]. Additionally, New York State participates in the Local Cybersecurity Grant Program that receives funding from the federal government to respond to and prevent cyber attacks[7].

Several solutions can help manage electricity demands or usage patterns to use the grid more effectively. For example, charging electric vehicles in the middle of the night rather than during peak evening hours, when many households are using lights, cooking appliances, laundry equipment, etc., can help ease the strain on the power grid. There are also opportunities for utility-level grid management through Virtual Power Plants. Virtual Power Plants are "… comprised of hundreds or thousands of households and businesses that offer the latent potential of their thermostats, electric vehicles (EVs), appliances,

[4] https://www.nyiso.com/
[5] https://arxiv.org/pdf/2307.15079
[6] Investments in Cybersecurity, https://www.energy.gov/articles/doe-announces-45-million-protect-americans-cyber-threats-and-improve-cybersecurity
[7] https://www.dhses.ny.gov/cyber-incident-response-team

batteries, and solar arrays to support the grid. These devices can be flexibly charged, discharged, or managed to meet grid needs. When these devices are aggregated and coordinated, they can provide many of the same energy services (capacity, energy, ancillary services) as a traditional power plant[8].” For instance, electricity customers could opt-in to a smart thermostat program where the utility would anticipate a strain on the grid and adjust the thermostats of those who have opted in by a few degrees to prevent a brownout on the grid. Effectively managing electricity demand during peak and non-peak periods will be critical when electricity is the only source of energy that most consumers will utilize in the future.

In addition to grid management benefits, some electrification technologies have ancillary benefits. For example, certain EVs have bi-directional charging — the ability to charge, but also be plugged into —allowing them to act as generators during emergencies. Additionally, there are all-in-one solar power solutions that can generate electricity, store it in a battery, and then use that energy to charge an electric vehicle. In an electrified future, taking stock of current assets and their available functions is another way to build resiliency. Also, understanding the capabilities of new electrification equipment will be important when making future purchases.

[8] Definition from Rocky Mountain Institute, https://rmi.org/clean-energy-101-virtual-power-plants/

ACTIONS TO IMPROVE RESILIENCY IN AN INCREASINGLY ELECTRIFIED FUTURE

The following actions represent tangible steps to enhance community resiliency as the building and transportation sectors electrify. These actions were prioritized through discussions with industry experts, local partners, and county advisory boards. The Tompkins County Department of Planning and Sustainability will likely lead most of these efforts in close collaboration with community partners. The Department anticipates at least beginning to implement these actions over the next five years.

LOCAL ACTIONS TO REDUCE THE IMPACT OF OUTAGES ON COMMUNITY MEMBERS

ACTION ONE

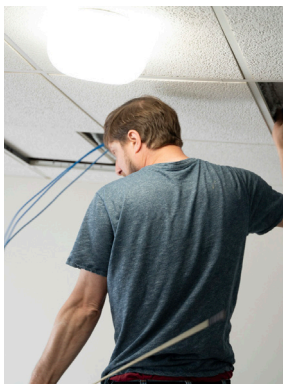
Collaborate with the Tompkins County Department of Emergency Response to establish resilience hubs throughout the County. Work with community facilities (potentially including libraries, schools, and fire departments) with a focus on rural areas, to seek opportunities that would enable and prepare them to serve as resilience hubs during an outage.

ACTION TWO

Purchase diesel- or solar-powered “always-full” mobile electric power banks. These would be deployed during emergencies in areas severely impacted by outages.

ACTION THREE

Support businesses to manage peak demand and become more resilient. Expand the Business Energy Advisors program to help businesses become more resilient in an electrified future and to manage their peak demand to reduce costs associated with commercial electricity usage.



ACTION FOUR

Support building owners to right-size backup systems for outages. Identify and engage owners of fully electrified buildings and facilities to help them understand their critical loads and create guidance to help them right-size backup systems to prepare them for future electrical outages.

ACTION FIVE

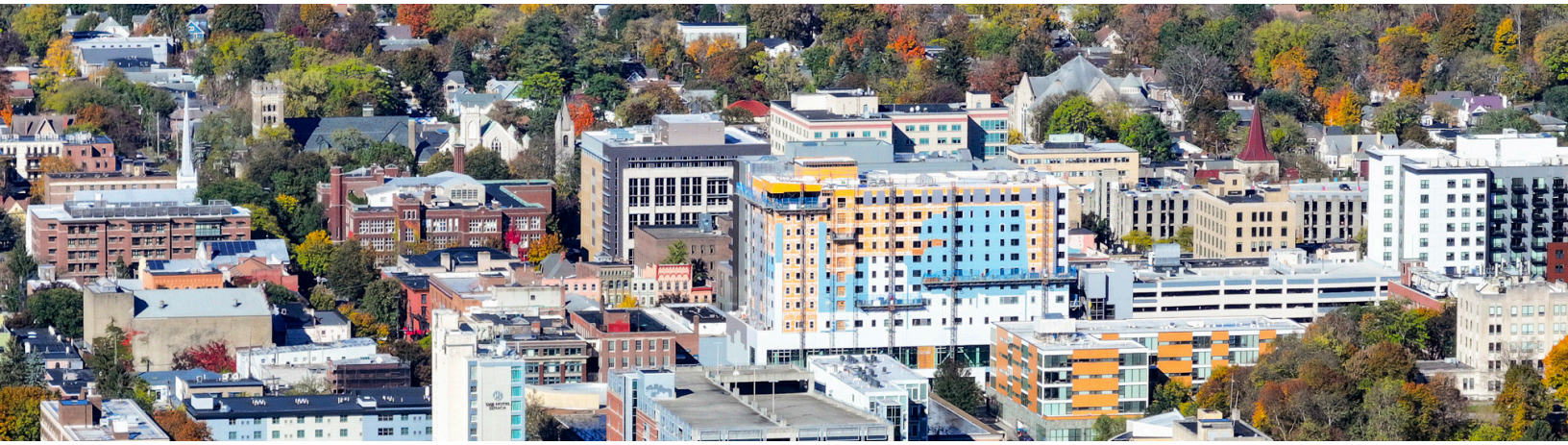
Establish an educational campaign to prepare residents and small businesses for outages. Materials would be particularly tailored to EV owners and residents with air source or ground source heat pumps. Additionally, information and education about smaller electrification devices that can be used during an emergency, such as solar powered phone chargers and lanterns, etc., would be included.

ACTION SIX

Establish a network of emergency phone charging stations. Work with the Department of Emergency Response to create a list of where public phone charging will be available during an electric outage. Annually update the list and share widely to assist with communication during outages.

ACTION SEVEN

Support efforts to establish microgrids and thermal energy networks. Develop criteria to identify optimal sites in Tompkins County for microgrid or thermal energy network installation[9] that would allow them to shut off from the electric grid as needed and continue to power operations for a limited duration. Reach out to those site owners to share results, explore potential funding sources, and discuss implementation possibilities.



[9] NYSEG and the Ithaca Sciencenter are working to utilize existing geothermal wells to determine the feasibility of a Utility Thermal Energy Network (UTEN) pilot project in Ithaca.

ACTION EIGHT

Collaborate with the Tompkins County Department of Emergency Response and municipal partners to determine how best to engage owners and developers of multifamily buildings, with the goal of reducing reliance on external shelters for residents in multifamily developments during outages by ensuring continuity of power and heat in shared spaces.

ACTION NINE

Explore the feasibility of establishing charging stations for emergency response equipment at local solar farms. Work with the Department of Emergency Response and Sheriff's Office to determine whether it would be possible for essential emergency response equipment to utilize EV chargers and plugs if they were located at local solar farms. If feasible, encourage municipalities to request that solar farm benefit packages include resiliency measures such as EV chargers and plugs.

ACTION TEN

Create an inventory of County assets that could serve a role during outages. County facilities and equipment, including buildings, electric vehicles, and battery storage, could help provide support during outages. Conduct tests on how those assets may be used and how they perform during a simulated emergency and share any useful information learned with local municipalities to help inform their purchasing and emergency response efforts.

LOCAL ACTIONS TO REDUCE THE LIKELIHOOD OF OUTAGES OCCURRING

ACTION ONE

Identify a list of major energy consumers in the residential, commercial, and industrial sectors in Tompkins County. Work with NYSEG and these large energy users to develop tools and programs that incentivize all parties to proactively reduce electricity consumption during peak demand periods when the energy supply is strained.

ACTION TWO

Request that NYSEG select Tompkins County to serve as a model to test and collaborate in creating useful demand response and emergency response programs[10]. Work with NYSEG to use the results of that partnership to create incentives for a wider group of customers to implement demand management techniques.

ACTION THREE

Continue to participate in NYSEG rate cases and other proceedings and encourage other municipalities in Tompkins County, and possibly within the broader utility service territory, to participate to ensure the County's interests are represented and continued investments are made in the community[11].

ACTION FOUR

Play a coordination and facilitation role with other New York State counties within NYSEG's service territory to jointly advocate for municipal electrification needs and programs.

ACTION FIVE

Develop a best practice guide and/or training for how to install and place heat pumps, electric vehicle chargers, back-up energy systems, and other similar technologies to be better protected from flood waters, snow, wind, and other aspects of a changing climate.

ACTION SIX

Incorporate this plan in the next iteration of the Hazard Mitigation Plan. Share this updated plan and lessons learned with the Hazard Mitigation Partners group, enabling them to consider how to build electricity resiliency into their municipal plans and activities.

ACTION SEVEN

Create educational campaign(s) to provide tools to residents, businesses, and governments on actions that can be taken to manage their demand on the electric grid (and potentially save money). Topics that could be addressed include backup power (generators, batteries, etc.); managing daily peak; virtual power plants; energy efficiency; and load shedding (reducing energy during peak times).

[10] Note there were a series of pilot program from 2017 to 2022 in Tompkins County focused on demand management. This action would be an effort to build upon and possibly reinvigorate those programs.

[11] In speaking with the City of Boulder, staff of the Department of Planning and Sustainability learned about a consortium Colorado has developed called Colorado Communities for Climate Action (CC4CA). CC4CA is a consortium of 42 municipalities throughout Colorado that are all in the same utility service area. They come together and lobby for their interests. They do this not only with their local utility, but also on climate policy at the state and federal level.

CONCLUSION

The actions Tompkins County and its local partners can take now to prepare for the future will position the County to embrace electrification, capitalize on available funding to assist with that transition, minimize negative impacts when outages occur, and increase community resiliency in the event of grid outages. Tompkins County is fortunate to have a community concerned about the environment and willing to embrace changes to protect it. This plan outlines several action steps to increase the County's resiliency during emergencies as electrification progresses.

In developing this plan, valuable connections were made that can be nurtured and fostered to continue work around emergency responses and electrical outages. The Department of Planning and Sustainability would like to thank all the interviewees whose valuable insights strengthened this plan and provided the basis for many of the suggested actions.

Department of Planning & Sustainability

TOMPKINS COUNTY Building a Sustainable Future

ADAPTATION & RESILIENCY

APPENDIX

BACKGROUND DATA

To identify the local, New York State, and national work being done around electrification resiliency, staff of the Department of Planning and Sustainability conducted extensive interviews with experts and practitioners in related fields. Although no identical plan was found, valuable insights were gleaned from their experiences. Some common themes began to evolve through the conversations, including grid vulnerability, emergency response and resilience, and the importance of strong community and utility partnerships. A list of interviewees, and the questions asked, is included below.

SAMPLE INTERVIEW QUESTIONS

- Explain the proposed plan and why the Department of Planning and Sustainability is looking into this.
- Initial thoughts?
- Has _____done any planning around electrification and critical services?
- As the County explores this plan, what should we keep in mind?
- Any solutions come to mind?
- What are _____ concerns?
- What happens now during an electric grid outage?
- What is ____ status of electrification?
- Have you identified any electrification vulnerabilities?
- Have you considered if forecasting would be valuable?
- Do you know of other communities working on a plan like this?
- Are there areas or sectors we haven't thought about or are critical to include?
- What should we keep in mind?
- Any innovative solutions? Duality?

INTERVIEWEES

Steve Abbott - Principal, US Program, Rocky Mountain Institute
C. Lindsay Anderson - Professor, Biological and Environmental Engineering, Cornell University
Robert R. Bland - Associate Vice President, Energy & Sustainability, Cornell University
Scott Bochenek – Director, Smart Grid Innovation, Avangrid
Sarah Carson - Director, Campus Sustainability Office, Cornell University
Sara Culotta - Chair, Tompkins County Climate and Sustainability Board; Market and Lead – Higher Education, Energy & Sustainability, Business to Society Programs, Siemens
Jordan Decker - Member, Tompkins County Planning Advisory Board, and Associate, The Cadmus Group
Rachel DiFranco - Sustainability Manager, City of Fremont
Scott Doyle - Director of Energy Management and Sustainability, Ithaca College
Stacey Edwards - Energy Transition Program Manager, Cornell University
Rebecca Evans - Sustainability Director, City of Ithaca
Thomas Garrity - Regional Manager, Government and Community Relations, NYSEG
Joe Gentilcore - Manager, Regional Operations, NYSEG
Angelica Greco - Program Officer, ICLEI USA
Adam Helman - Director, Emergency Operations, Avangrid
Brett Jackson - Mechanical Engineer, Colorado Springs Utilities
David Kay - Professor, Department of Global Development, Cornell University
Jonathan Koehn - Chief Sustainability and Resilience Officer, City of Boulder
Josh LaPenna - Director, Utilities Production, Cornell University
Michael Liebman - Manager, Global South, Rocky Mountain Institute
Cynthia McInerney - Disaster Program Manager, American Red Cross, Southern Tier Chapter
Gavin Mosely - Manager, Government and Community Relations, NYSEG
Deborah Newman - Analyst, Office of Innovation, City of Colorado Springs
Zachariah Riley - Executive Director, Red Cross, Southern Tier Chapter
Kale Roberts - Deputy Director, ICLEI USA
Michael Stitley - Director, Tompkins County Department of Emergency Response
Sean Sullivan – Director, Smart Grid Innovation, Avangrid
Carlos Tamayo - Innovation Manager, City of Colorado Springs
Cole M. Tucker - Director, Utilities Distribution & Energy Management, Cornell University
Ken Turner - Regional Disaster Program Officer, Red Cross, Southern Tier Chapter
Jessica Verfuss - Deputy Director, Tompkins County Department of Emergency Response
Ke Wei - Senior Advisor, NYSERDA
Jaimee Wilson - Senior Sustainability and Energy Engineer, Cornell University
P. Josh Wilson - Sustainability Director, Erie County
K. Max Zhang - Professor, Sibley School of Mechanical and Aerospace Engineering, Cornell University

HIGHLIGHTS FROM INTERVIEWS

Consideration of Grid Resiliency in Planning: Tompkins County has a Resiliency and Recovery Plan, as well as a Hazard Mitigation Plan, which is updated every three years. The Hazard Mitigation Plan is due for an update in 2026, and this plan will help inform that update. Additionally, the County Department of Emergency Response has a Comprehensive Emergency Management Plan, updated every two years, which is also expected to benefit from the insights gained in this plan.

Resilience Hubs: In Erie County, New York, an initiative is underway to convert rural libraries into resilience hubs based on experiences from the devastating blizzard that hit Buffalo in December 2022. A resilience hub is a location that can operate independently of the grid via microgrid or other backup systems, providing critical services to community members during an emergency. Unlike traditional heating/cooling shelters,

resilience hubs are designed with built-in backup systems to ensure the hub can provide services regardless of the state of grid.

Mobile Generators: During a discussion with the City of Boulder, Colorado, staff from the Department of Planning and Sustainability learned about an innovative application of electric vehicle technology. The city employed an electric bus to act as a generator for a local community center turned shelter during a multi-day snowstorm. This experience not only demonstrated the potential for electrification to reduce GHG emissions but also highlighted how new technology and equipment can serve as an asset during an emergency, providing additional avenues for community resiliency.

Solar Farm Assets: Similarly, the Department of Planning and Sustainability heard from interviewees at Cornell University about a potential resilience measure: using solar farm assets in the County as charging stations for EVs and cell phones during emergencies. While currently grid-tied, these assets can still collect energy even when the grid is down, making it theoretically possible to install infrastructure that would enable them to be used during an emergency.

Shared Planning and Partnerships: NYSEG engages with the County Department of Emergency Response through regular Blue Sky planning meetings, this is a meeting held under normal conditions or not during an emergency. Blue Sky meetings present an opportunity to include electricity emergency response planning at the utility level. NYSEG also has a Hazard Resilience Plan that details resources being deployed to upgrade the grid. As a regulated monopoly, NYSEG must participate in rate cases overseen by the Public Service Commission to determine rates and allocate rate payer funds. In the most recent rate case, Ithaca saw a commitment from the utility for resilience upgrades to the local grid based on the Ithaca Green New Deal and the City's commitment to reaching net-zero by 2030. As demand for electricity increases, maintaining a reliable grid becomes even more critical.

Community Emergency Response Planning: Ensuring communication between local groups is important to make sure individual efforts aren't being duplicated or overlooked. There is a lot of work being done on electrification and emergency response, and making sure the groups behind these efforts mix and share information will be crucial for success. Existing emergency response plans are robust, but it's also important to consider the needs of an electrified future. Local institutions like Cornell University and Ithaca College may have a greater role to play in future emergencies. Their extensive facilities could be valuable resources if current-day emergency plans become insufficient. Maintaining strong relationships and communication will help add resiliency to Tompkins County.

Heating and Cooling Shelters: While speaking to the Red Cross, Department of Planning and Sustainability staff learned about shelters (facilities providing overnight sleeping during and emergency) and heating and cooling centers (temporary facilities that provide heating or cooling relief for a few hours) that can be deployed during an emergency. As those facilities get electrified, it will be critical to ensure their backup system is sized correctly.

Considering Flooding in Locating Electrification Technology: Discussions with the City of Ithaca highlighted the importance of climate-resilient siting for new electrification technologies. For example, locating EV charging stations outside flood zones is crucial. Similarly, placing HVAC or back-up systems in areas less vulnerable to extreme weather impacts is vital. Strategic placement of these new electrification measures can ensure their continued operation during emergencies.

Communication: One challenge noted by the Tompkins County Department of Emergency Response, which they anticipate will be consistent in an electrified future as it is now, is the need for effective and efficient communication during an emergency. There are several plans already implemented to ensure cell phone service is available during an emergency, with backup systems in place at cell towers. Additionally, the County has employed a mass notification system called SIREN, which disseminates critical information through various mediums. However, targeted outreach around storm preparedness for those who have electrified is currently lacking. As electrification increases, it will be important to account for residents with electrified homes and businesses too as they require different emergency preparation measures compared to those with traditional utilities. For example, while an unelectrified household might fill their car's gas tank before a storm, their electrified counterpart should fully charge their EV battery.

Community and Utility Partnerships: From institution partners and other municipalities nationwide, Department of Planning and Sustainability staff heard the importance of fostering a relationship with the utility. This partnership is crucial not only for collaborating on anticipated electrification projects to help them plan transmission and distribution updates, but also for developing plans for resilience. The City of Ithaca resilience updates derived, in large part, from consistent communication with the utility about policy changes resulting from the Ithaca Green New Deal, permit requirements from the Ithaca Energy Code Supplement, and anticipated electrification projects. Similarly, there are several ways the community and the utility can work together to integrate demand management practices, such as establishing demand management incentives that can help reduce the strain on the grid.

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Rob Henry, Tompkins County Public Information
Cover photos of Downtown Ithaca at night, Ryan Young, Cornell University

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