# Chicopee's Local Emergency Planning Committee (LEPC) Electromagnetic Pulse (EMP) Tabletop Exercise (TTX)

After-Action Report/Improvement Plan

September 10, 2024

Updated 8 February 2025

# OVERVIEW

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| **Event Name** | Chicopee's Local Emergency Planning Committee (LEPC) Electromagnetic Pulse (EMP) Tabletop Exercise (TTX) |
| **Dates** | September 10, 2024 |
| **Scope** | Sponsored by the Chicopee LEPC, City of Chicopee, and Westover Air Reserve Base (ARB), the Chicopee's LEPC EMP TTX was a three-hour discussion-based exercise for participating agencies' leadership.<br>The goal was to discuss and develop an understanding of participating agencies' roles and responsibilities associated with support or response to a major regional disaster and identify and address potential pre-disaster policy issues to increase the capabilities and effectiveness during response operations. |
| **Mission Area(s)** | Response and Recovery |
| **Objectives** | Identify, Discuss, Evaluate<br>Identify gaps and vulnerabilities in resiliency capabilities of the 16 critical infrastructure sectors, identified by the federal government. The exercise focused on communications, defense, emergency services, energy, food and agriculture, local government services, healthcare and public health, information technology, transportation, water and wastewater. |
| **Threat or Hazard** | Electromagnetic Pulse event. |
| **Synopsis** | The exercise began with a quick overview of what an EMP is and the types of issues that it can cause to a community or the country. EMP's can be either a natural event, such as a solar flare or a man-made event such as a nuclear explosion in the upper atmosphere.<br><br>For purposes of this exercise two groups were identified who worked simultaneously on the same scenario and injects. Group A operated with no resources, while Group B operated with limited additional resources. Both groups convened separately to discuss the scenario disaster, and the follow-on injects. Group A subject matter experts (SME) mirrored the SMEs in Group B with both groups comprising emergency response organizations, hospital/medical professionals, utilities, cyber professionals and law enforcement.<br><br>The exercise was intended to help identify ways to prepare for disasters that may affect Critical Infrastructure and Key Resources (CIKR) through an EMP event. |
| **Participating Organizations** | Please see Addendum E |

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| **Event Name** | Chicopee's Local Emergency Planning Committee (LEPC) Electromagnetic Pulse (EMP) Tabletop Exercise (TTX) |
| **Point of Contact** | Dr. Robert Perreault/ Mr. Joseph Bernard<br>Installation Emergency Manager(s)<br>Westover ARB<br>413-557-3808 and 413-557-3698<br><br>Mr. Glen Joslyn<br>Emergency Management Director<br>Chicopee, MA<br>413-246-2310<br><br>Mr. Doug Stellato<br>LEPC Director<br>Chicopee, MA<br>413-244-2152<br><br>Karen "Jack" Magnus<br>Director of Mission Sustainment/Community Partnership<br>Westover ARB<br>413-557-2054<br><br>Charles (Chuck) Manto<br>CEO of Instant Access Networks, LLC<br>410-991-1469 |

# EXECUTIVE SUMMARY

On September 10, 2024, a dual-world tabletop exercise with parallel scenarios was performed on an Electro-Magnetic Pulse Event. In collaboration with the Chicopee Local Planning Commission, City of Chicopee and Westover Air Reserve Base, this Emergency Management led initiative was held in the emergency operations center, located at the public safety complex in Chicopee, MA. Several employees from all specialties attended to offer input and expertise on an electromagnetic pulse situation.

The exercise was conducted as a national pilot to assess response capabilities with existing resources, contrasted against response capabilities with enhanced EMP hardened power and communications. The discussion included participants identifying current limitations both individually (City of Chicopee and Westover ARB) and corporately as joint partners and what would enhance the local community and possibly the regions' ability to respond and recover.

The Chicopee's Local Emergency Planning Committee (LEPC) Electromagnetic Pulse Tabletop Exercise was a three-hour discussion-based event designed to identify the city of Chicopee and Westover ARB needs and participant roles, which included the state and FEMA Region 1 roles in responding to and managing response actions and policy during a catastrophic widespread power outage. Sponsored by the Chicopee LEPC, City of Chicopee and Westover air Reserve Base (ARB) this event brought together regional leadership, to include several military, federal and other outside agencies to address response and coordination during an emergency or disaster situation.

In this first ever dual TTX, Group A performed with no existing plans or capabilities, while Group B performed having a few of the resiliencies needed for preparation and recovery. The exercise highlighted the importance that even a small amount of planning and preparedness can be effective, immediately following such an event and later during the recovery phases, as one team floundered and the other had some successes. See the executive summary chart below for a summary of key results by evaluated critical infrastructure and the results of five key questions regarding the exercise results.

The scenario focus was to identify gaps and vulnerabilities in 16 critical infrastructure sectors outlined by CISA. 1. Chemical, 2. Commercial Facilities, 3. Communications, 4. Critical Manufacturing, 5. Dams, 6. Defense Industrial Base, 7. Emergency Services, 8. Energy, 9. Financial Services, 10. Food and Agriculture, 11. Government Services and Facilities, 12. Healthcare and Public Health, 13. Information Technology, 14. Nuclear Reactors, Materials, and Waste, 15. Transportation Systems, and 16. Water and Wastewater.

Objectives included: identify the local impact of an extended grid outage on a wide scale which prevents a significant federal response; discuss regional collaboration solutions to mitigate damage from an EMP incident between Chicopee and Westover ARB and other towns/cities nearby; identify what critical infrastructure should be hardened from EMP; discuss potential technologies that could be implemented to help mitigate the situation; identify what plans are in place for such an event and options for improvement; and discuss possible funding avenues that might be available to enhance current infrastructure. Primarily focused on communications, defense, emergency services, energy, food and agriculture, local government services, healthcare and public health, information technology, transportation, water and wastewater.

Throughout the TTX, each group developed a list of desired executable outcomes/solutions that would help minimize loss of life, loss of critical infrastructure and maintain order.

Our community recognizes the need to work collaboratively with Westover ARB to allow our community to protect its citizens, and our citizens support the base's ability to operate following events that threaten critical infrastructure. We have reviewed the work that Joint Base San Antonio has conducted to harden their community and support their base, and we seek to pilot this capability in a smaller metropolitan area.

Executive Summary Comparison Chart

| Westover/ Chicopee TTX 10Sep2024 | Group A | Group B |
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| **Resources** | As they currently exist. Nothing extra is on hand | About 30% of required power was available based on installed micro grids. Some pre-stocked bulk food in terms of rice and beans are available |
| **Capabilities After 1 month** | **Communication systems**: Most communications are by word of mouth and public meetings. Some HAM radios are operating.<br>**Emergency services**: Remain basically nonexistent based on lack of available employees, transportation and the inability to communicate.<br>**Energy:** Grid remains down and most emergency generators that survived the initial EMP event have run out of fuel.<br>**Food and Agriculture:** Most people have run out of food and starvation is starting to impact the population.<br>**Government Services and Facilities:** Are basically non-existent.<br>**Healthcare and Public Health:** Lack of work force, inadequate transportation, limited medicine and medical supplies coupled with the effects of unsanitary living conditions and dirty water have created a healthcare crisis.<br>**Water and Wastewater:** The towns water system is gravity fed and continues to flow, however, lack of power leads to making it non-potable. The inability to communicate that fact to the public leads to large amounts of water borne illnesses. Wastewater systems fail, leading to unsanitary living conditions. | **Communication systems**: Most communications initially are by word of mouth and public meetings. Use of pre-staged radios, public address systems and the base's giant voice become available within the first 24-hours.<br>**Emergency services**: Begin to come back online in a limited capacity using triage methods to determine priorities.<br>**Energy:** Microgrids and nano grids are operational and providing about 20% of what is needed.<br>**Food and Agriculture:** Pre-staged bulk dry goods (rice and beans) are keeping people from starving.<br>**Government Services and Facilities:** Are minimally operational and continue to improve over time due to pre-planning and pre-staging of some resources.<br>**Healthcare and Public Health:** Comes back online in a very limited capacity within the first 24-hours and gradually sees improvements over the next few months due to pre-staged supplies of medicine and a microgrid providing some electricity.<br>**Water and Wastewater:** The towns water system is gravity fed and continues to flow, and due to a microgrid has sufficient power restored to maintain some degree of water sanitation. |
| **Capabilities After 6 months** | **Communication Systems**: Some electronic systems have come back in a limited fashion. | **Communication Systems**: Pre-staged and protected equipment is back online and providing improved capability for some services. |

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| | **Emergency Services:** Survivors have consolidated and structured a limited ability to assist each other.<br>**Energy**: Pockets of power are available. The ability to refine fuel has not returned.<br>**Food and Agriculture**: Survivors have planted gardens, and the immediate fear of starvation has abated. Local wild game is depleted.<br>**Government Services and Facilities:** Limited local Government services have returned.<br>**Healthcare and Public Health:** Some services have returned; however, capabilities are severely limited.<br>**Water and Wastewater:** Water continues to flow by gravity and residents have figured out how to make it safe to drink. Wastewater systems remain non-operational; however, residents have implemented sewer workarounds and hygiene protocols. | **Emergency Services:** Due to pre-staged and protected resources, emergency services have continued to improve.<br>**Energy**: Due to microgrids and nano grids making it possible to maintain a percentage of capability, the electrical grid is gradually coming back online.<br>**Food and Agriculture**: Between dry goods that were ready for distribution to stave off starvation combined with partnerships with farms, food is no longer as scarce.<br>**Government Services and Facilities:** Most local Government services have returned.<br>**Healthcare and Public Health:** Most services have returned.<br>**Water and Wastewater:** Water continues to flow by gravity and microgrid has continued to keep water safe. |
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| Key Questions | | |
| 1. Was essential life support infrastructure maintained? (Electricity, Water, Sewer, etc.) | No. The lack of grid power, detrimental effect of EMP on emergency Generators and general lack of fuel led to no available power after the first several days. The lack of power, complete failure of standard communication and transportation systems, exasperated by the failure of the work force to show up to work led to a rapid cascade of failing critical infrastructure and the loss of essential life support infrastructure. The one bright spot is that the water system is gravity fed and there are multiple rivers. While water is running and available, it is non-potable, which created extensive health issues. | Yes, but only a percentage. However, that percentage was enough to speed up recovery and increase survival rates. Even with only 30% of power needed as provided by microgrids and nano grids, that is enough to begin the task of restoring the most critical infrastructure. It is also enough to change how quickly communication and transportation systems can return. Important safety requirements to maintain public health are better prepared to recover due to having some energy capability. |
| 2. Did Society Break Down | Yes. Lack of food, potable water and medicine coupled with a law enforcement force incapable of large-scale response led to residents taking matters into their own hands. Looting and violence were common events and led to a break down in society. | Yes, but not as drastically as it does for Group A. Bulk food (beans and rice) makes it possible to keep most first responders coming to work and provides a minimum amount of food to prevent starvation among the masses which reduces the level of societal break down. |
| 3. What was the estimated survival rate? | Tough to nail down with available information but estimated to be less than 50% (ranged from 25-50% survival) | Tough to nail down with available information but estimated to be greater than 50% (ranged from 50-75% survival. Average difference was 25% more of the population survived.) |
| 4. Did the work force come to work? | No. All participating agencies felt that most employees would stay at home to take care of their families and attempt to find food and other survival requirements. Issues with | Yes (most not all), but only because they receive rations of food and some other basic survival necessities as compensation. Travel distance is a factor in the beginning, but as transportation improves so does participation. |

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| | transportation and the large distances many employees commute exasperated the issue. | |
| 5. Did the military base maintain the ability to project the force? | No. The issues described in questions 1 - 4 led to a lack of available civilian and military personnel to project the force. The large distance most reservists are required to travel to their base exasperated the issue as did the inability to operate essential electrically powered equipment and to replenish fuel reserves. | Yes, on a limited capacity. See previous answers as the installation is anticipated to be able to recover on par with the community due to pre-planned strategies and pre-staged resources. |
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| | Summary / Key Findings | |
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| Effect on the Local Area | The local area was in chaos, loss of life was rampant and society as we knew it stopped | Society in the local area remained intact. Utilities continued to operate in a degraded manner and law enforcement and Emergency services were able to continue, again in a degraded manner. |
| Effect on Massachusetts | The local area required outside help (that was not available) and was unable to contribute to the stability of the state. The airbase was not able to "project the force". | The fact that Chicopee and the ARB had partial power, and an available work force became a lifeline for the State Government and key to the Governments Continuity including the ability to for Westover to "project the force". Additionally, residents of other portions of the state were drawn to the light and made the trek. While this increased the stresses in Chicopee and the ARB, lives were saved that otherwise would have been lost. |
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| Key Finding 1 | The small amount of available power provided the ability for key and essential services to continue and set the conditions for a relatively stable community. While loss of life certainly occurred, the potential to survive in scenario B was significantly better than scenario A. | |
| Key Finding 2 | Pre stocked bulk food proved key to success. Employees who otherwise would have stayed home to protect their family and/or to look for food, were gainfully working, helping to ensure essential community functions and critical infrastructure continued to operate. | |
| Key Finding 3 | Key assets (such as radios, generators and vehicles) need to be EMP protected. Even with some power, the loss of critical electrical components set the community back in Scenario B. | |
| Key Finding 4 | Local Bulk Fuel storage is important for communities. Lack of available fuel meant that the generators, vehicles and aircraft that remained operational after the initial EMP event, or were able to be fixed after the event, became lawn art based on the lack of available fuel. | |
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## Topic Area- CIKR #3 Communications and Information Technology- (Cyber, Radio, Phone, Cellphone, In-person, Internet, social media, Ham radio, Satellite phones, Copper lines, and Computers)

**First 48 hours discussion:** Immediate realization that no standard communication options are viable. Led to a discussion of having a plan in place for how, where, and when people should report in-person to get information and determine courses of action. Reestablishing communication for everyone is crucial. Pre-designated rally points for work recovery are essential. Local fire departments play a pivotal role in these plans. Identify campuses that can provide a level of communication or support beyond primary concerns.

**Days 1-30 Discussion:** Ham radios and CB radios could be provided to dispatch teams and linked with fire departments to maintain communication when phones and other systems fail. Runners might be used to relay information between neighborhoods and the fire department when electronic communication is unavailable. High school TV systems with two channels can be used for communication once there is a way to broadcast. PA systems exist on police vehicles and Westover has "giant voice." Pre-staged and non-affected methods of communication become available within the first couple of days. Some other types of communication are coming back in limited capacities. Communication routines have been developed to keep citizens informed on recovery activities.

**Days 31-180 Discussion:** Methods of communication continue to improve as technology and equipment are repaired and restored to working order. The idea of providing old-school transistor radios to key community members for emergency communication is discussed. This would enable low-power communication between community leaders during a crisis. Some radios don't require licensing, allowing for broader use in emergencies. Radios could be distributed to key personnel who might not already have access to such communication tools.

**Analysis:** Group B was able to use some communication methods, but they were performed with many challenges even with pre planning and the availability of EMP hardened nano-grids and micro-grids. Group A relied primarily on oral / word of mouth communications coupled with a limited number of HAM radios. Standard electronic communications capabilities were basically non-existent.

**Questions to be answered:** See Addendum A, for a full list that was brought up during this TTX.

## Topic Area- CIKR #7 Emergency Services- (Fire, Paramedic, Medical, Law Enforcement, Military, and FEMA/MEMA)

**First 48 hours discussion:** These services are unable to respond to any emergency initially because communication systems are down. Implement face-to-face communication and stand up EOC. Implement plan to communicate with citizens. Stand up community access points for communication. Auxiliary teams of LE, EM, and FD may be able to assist with protecting critical infrastructure or run neighborhood emergency operations centers.

**Days 1-30 discussion:** As communication methods are established, emergency services can begin limited response based on pre-determined priorities. One key location suggested to function as an emergency center is Chicopee Comp (Chicopee Comprehensive High School) due to its large size (270,000 square feet) and available telecom infrastructure. Larger buildings such as hotels, senior centers, libraries, or even stadiums can be used for emergency response or community centers. Grocery stores could be repurposed to manage food distribution. Schools and soft points in neighborhoods could be hardened to act as emergency centers, providing essential services like food and medical aid.

In the specific case of group A, except in rare and isolated cases, emergency functions failed to ever become functional. In addition to the issues with communications, the lack of transportation and the unwillingness of a large percentage of the work force to leave their families created a scenario of gutted agencies without the ability to respond.

**Days 31-180 discussion:** Services have limited response capabilities by now. Improvements continue slowly.

**Analysis:** Group B was able to have some emergency response since they were able to have limited power capabilities with the use of EMP hardened nano-grids and available food rations for responders and their families set the conditions for employees to report to work. Group A was not able to respond to most emergencies which has a significant negative affect on the local population.

**Questions to be answered:** See Addendum A, for a full list that was brought up during this TTX.

## Topic Area- CIKR #8 Energy- (Electricity, Gas, Fuel, Oil, and Hydro-electric)

**First 48 hours discussion:** Only locations with protected infrastructure and generators, microgrids, mobile microgrids have some capability. One suggestion is to create rooms protected against EMP (Electromagnetic Pulse) along with microgrids to ensure power stability in emergencies. Microgrids could act as a backup battery system for critical infrastructure. Identify 10 locations for microgrids and make a list of potential places that need protected power infrastructure. Examples include hospitals, public safety complexes, water, wastewater plants, and food banks. Focus on acquiring generators like those used in cities along hurricane-prone southern shores. Implement solar-powered streetlights with batteries, which could provide light in critical areas like downtown during power outages. Chicopee's hydroelectric potential is noted as a stable, continuous energy source, because of flowing water, which can also be harnessed for microgrids. Niagara power is mentioned as an example of a facility that maintains manual control in case electronic systems fail.

**Days 1-30 discussion:** Pre-arranged locations with microgrid capability were back online quickly and allowed for providing some capability for the most essential services as identified by pre-planned prioritized requirements. Most essential and emergency services identified. Fuel depots in Springfield are referred to as "Gasoline Alley," and they will play a critical role in fuel distribution during the crisis. The proximity of fuel depots makes them a key resource to secure.

**Days 31-180 discussion:** Because Group B had limited capability was available immediately, it made it possible to maintain the most essential and emergency services and gradually increase capacity. Massachusetts Municipal Wholesale Electric Company (MMWEC) has solar and wind power capabilities, which are seen as critical backup power sources if protected from EMP and cyber threats. These local energy sources could provide power even if the national grid goes down. The initial setup of microgrids and resource distribution that occurred in the first 30 days is viewed as a positive step. However, by month four, progress has stagnated, and the survivability rate is decreasing without significant forward advancements.

**Analysis:** Given that Group B was given some capabilities of hardened Nano-Grids or Micro-grids they were able to have partial essential functions back with a limited capability. Group A was not able to have essential service back online at all. It is important to note that the availability of food in Group B set the conditions for essential energy sector employees to report to work, versus staying at home trying to provide for their families.

**Questions to be answered:** See Addendum A, for a full list that was brought up during this TTX.

## Topic Area- CIKR #10 Food and Agriculture- (Dry goods, Perishables, Food Banks, Lorraine's Soup Kitchen, and Drinking Water)

**First 48 hours discussion:** Food Banks would likely require microgrids and security to remain operational during crises. Grocery stores might need to move their supplies to protected locations, as security might not be possible. Rice and beans are essential, as they are compact and don't require refrigeration. They can be stored in large quantities, providing enough food to keep people alive during crises. Suggestion to keep a year's worth of non-perishable food supply on hand. Stores like Whole Foods typically have a few days' supply in stock. The idea of keeping extra stock (around two weeks) in warehouses is highlighted. Food distribution is essential when people are hungry to prevent potential unrest. Focus on identifying what non-perishable items would be best to store long-term.

**Days 1-30 discussion:** Strategies for growing food and storing water are being considered for long-term survival, such as utilizing rooftops for water storage. There's a grim recognition that many people may not survive the first month due to disease, which underscores the urgency of these preparations. Local manufacturers could be retooled to help with community resilience. Past examples include retooling distilleries during COVID-19 to create water supplies, and possibly using existing technologies like atmospheric water generators. Not everyone will have access to these supplies, and some people will be left without sufficient resources. Prioritization is given to those who are deemed the most useful and trustworthy—those with guns, food, and safe places to stay. The crisis is described as entering a triage phase, where those who have resources survive, while others who are less trusted or lack resources are left to suffer, often in tents or inadequate shelters.

**Days 31-180 discussion:** Assess the role of farms in supporting resilience. Western Massachusetts is heavily agricultural, with farms across most towns. Farmers and agricultural workers will be critical in growing food beyond the first year if the crisis extends. Essential workers, like farmers, will ensure that next year's food production is secured, as a year's worth of rice and beans alone will not be enough. Discussion emphasized the importance of citizens becoming subsistence farmers, where every household is encouraged to grow food, especially in the winter months. There is a push to involve agricultural extension programs to teach people how to sustain themselves through farming, a skill that two-thirds of the world relies on. There is a suggestion to implement neighborhood gardens, where each community could contribute to local food production. Additionally, neighborhoods could collaborate with farms, offering labor in exchange for food and helping ease labor shortages that might occur due to the crisis. Progress is slow but steady, and communities are becoming more resilient. There are plans to provide extra food like rice and beans to people, possibly through high schools or other locations, in coordination with fire departments. In a crisis, a strategy like what was used in the collapse of the Soviet Union could be applied, where workers received IOUs and food rations like rice and beans in return for continued work.

**Analysis:** Group B was able to continue feeding the population at a subsistence level of nourishment due to preplanning activities. While Group A with no preplanning ran out of food resources within a few weeks. Lack of available food led to employees of all types failing to report to work (accelerating the failure of multiple infrastructure sectors) and eventually large-scale social unrest, disease and starvation.

## Topic Area- CIKR #11 Government Service and Facilities- (LE, FD, EM, and the Military Installation)

**First 48 hours discussion:** Ensure the base remains a power projection platform to support Airmen. Assess the situation. Identify chain of command between the installation and the city to work together. Anticipate potential involvement of the local police department for external security. Military forces should take the lead in protecting the installation perimeter if needed. Coordinating resources with local entities is essential. Protecting the base from intruders is a priority, with federal protection at secured locations like airports. Setting up command posts at secured locations (e.g., airports and hotels) is recommended for broader community protection. Martial law might be declared within the first 30 days of the crisis, especially if there are significant issues with maintaining order. By six weeks into the crisis, it is unlikely that the situation would continue without martial law in place. The Sheriff's Department, along with the Defense Department, will play a role in managing martial law.

**Days 1-30 discussion:** Police, fire, water, sewer, and food depots are available, with plans to secure fuel depots from sabotage or theft. By month three of the crisis, there is a growing realization that external support (the cavalry) is not coming, and local entities will need to become self-sufficient. The Massachusetts governor's continuity of government plan is in place, ensuring some level of governance and coordination with federal defense resources. There's a discussion of martial law being potentially implemented by the third month of the crisis. The move from a state of emergency to martial law is anticipated as resources become scarce and maintaining order becomes increasingly difficult. The idea of maintaining order is crucial, with the suggestion that if order is lost, no amount of planning or resources will make a difference.

**Days 31-180 discussion:** Northern Command (a military command responsible for North American defense) will oversee aspects of martial law, but their focus will be on providing strategic advice rather than deploying large numbers of troops. Under Title 10, military forces cannot directly support law enforcement unless authorized by a presidential executive order. In cases where local stability is compromised, there is some leeway for Title 10 forces to be involved. The Sheriff of Hampden County holds the authority to deputize people if necessary, during emergencies. Massachusetts law does not allow for an auxiliary law enforcement force. All law enforcement officers must be full-time. The main options for additional law enforcement during emergencies are for the sheriff or mayor to deputize local people. National Guard members under Title 32 (state control) can provide law enforcement, but this changes if they are under federal (Title 10) control.

**Analysis:** Group B was able to maintain a limited capability in the Military and Defense structure as opposed to Group A maintaining no capacity after a short amount of time. It is important to note that in Group B the military maintained a limited ability to project the force, while in Group A that ability was basically non-existent.

## Topic Area- CIKR #12 Healthcare and Public Health- (Hospitals, Medical Personnel, and First Responders)

**First 48 hours discussion:** Hospitals and clinics are considered vital, and medical personnel (doctors, military medical units) will be essential in managing the health crisis that follows. Triage methods used to identify how very limited resources will be managed.

**Days 1-30 discussion:** Northern Command will help with medical logistics and management advice, but no personnel will be sent. Essential services like hospitals, electric utilities, and other critical infrastructure must be maintained throughout the crisis, with a focus on keeping society functioning. Individuals on electric life support systems will likely perish within the first 30 days of the crisis, accounting for a significant number of deaths. Beyond these initial losses, the document estimates that around 15% of the general population may be lost due to various factors, including lack of medical care and essential resources.

**Days 31-180 discussion:** Due to continued crises, healthcare is severely limited due to lack of energy, water, medications, and staffing. There has been an influx of people seeking food, shelter, and medicine, which overwhelms the available resources. People who rely on life-saving medications have died due to the shortages. Hospitals are limited in terms of bed capacity for about 20,000 people. In Group A's scenario it is estimated that between six months and one year into the crisis, around two-thirds of the population will die, primarily due to lack of resources and medical care. The most vulnerable people, particularly the sick, will be the first to die off.

**Analysis:** Group B was able to sustain limited capabilities due to having set up a nano-grid at the hospitals. Group A was only able to have capabilities until the resource to maintain support were depleted. The difference in the loss of life percentage between the two scenarios was significant.

**Questions to be answered:** See Addendum A, for a full list that was brought up during this TTX.

## Topic Area- CIKR #15 Transportation Systems- (Automobiles, Trucks, Emergency vehicles, and Refrigerated vehicles)

**First 48 hours discussion:** Vehicles with the capacity to charge multiple devices are important. Trucks are seen as essential for moving resources. There is a need to ensure refrigeration trailers are available for perishable items. There is currently no backup for certain transportation needs. Suggest considering microgrids in key storage or transportation areas as part of resilience planning. Note that many vehicles are thought to be non-operational based on the effects of EMP. The assumption was made that older vehicles without electronics would remain functional until they ran out of fuel. Alternate transportation means such as bicycles or horses will become critical.

**Days 1-30 discussion:** Critical services like communication and vehicles may rely on small nano-grids to ensure continued operation. There are spare parts for vehicles and critical systems, ensuring continued operation for important tasks.

**Analysis:** Group B had some spare parts that were kept protected from EMP effects enabling them to fix essential vehicles (ambulances, refrigerator trucks, and fire trucks). Group A was only able to use vehicles that were manufactured without heavy electronic parts (computer board, micro-chips, sensors). In both groups, fuel availability quickly became the limiting factor in this topic area.

## Topic Area- CIKR #16 Water and Wastewater

**First 48 hours discussion:** Backup power systems for water and sewer are crucial to prevent the spread of disease during service interruptions. Industrial areas near waterways are vulnerable if they lose access to water; some need cooling systems to avoid hazardous leaks. Consideration of chemical plants and their potential to leak hazardous materials if not properly maintained during power losses.

**Days 1-30 discussion:** Discussed the importance of hydroelectric generation and filters to manage water resources effectively.

In the case of Group A, because the local water system is gravity fed, water continued to flow through the pipes. Unfortunately, it became non-potable and the lack of communications ability to inform the public to take appropriate precautions led to large scale health issues.

**Analysis:** Group B had placed a nano-grid at the wastewater plants to help with disease control and contamination control. Also had nano-grid placed at water treatment plants pumping stations to ensure clean water. Group A was not able to have these same capabilities which did not ensure health safety of population.

# Appendix A: QUESTIONS TO BE ANSWERED

These are the questions from specific CIKR that were brought up in the TTX that are still to be answered:

CIKR #3 Communications.

- Is there a plan developed for what to do when there is a communication blackout and is everyone trained on it? Where will the Emergency Operations Center (EOC) be located for the community? Will the military EOC co-locate? Is there a space that would accommodate everyone so community and installation can work together? Was any equipment pre-staged in a protected location to be accessed for use in emergencies? What methods of communication may still work under this scenario? Ham radios? Old technology that may not be affected, have we kept some in working order so it can be made available for use? Have the citizens been briefed on how to access communication in the event of a technological communication blackout? Where are their community access points? Mindful of the fact that transportation may not be an option, can citizens walk, bike or get to their access points without a car? Where is the FEMA equipped EMP protected radio station located, what are their broadcast frequencies and how do we contact them in time of crisis?

CIKR #7 Emergency Services.

- Have citizens been provided information and training on how to prepare for a disaster? Do they know what emergency supplies they should have on hand when emergency services may not be available for days or weeks? Have citizens been provided with information and training on where to go for information during a communication blackout? Are there any pre-screened auxiliary teams set up to help with law enforcement (LE), emergency management (EM), fire department (FD)?

CIKR #8 Energy.

- Which locations have power? Baystate, EOC, FD, LE, other? Determine where to place EMP protected microgrids to gain a strategic advantage.

CIKR #12 Healthcare and Public Health.

- Do hospitals have a plan to maintain enough supplies for 6 months (for patients, staff and their families)? Have they developed a triage plan for how to prioritize who will be treated during the initial phases of the disaster?

CIKR #15 Transportation Systems- (Automobiles, Trucks, Emergency vehicles, and Refrigerated vehicles)

- What are our essential vehicles and how do we protect them from the effects of EMP?

CIKR #16 Water and Wastewater

- What are the power requirements to keep potable water flowing and to sustain the ability to treat wastewater?

# Appendix B: DESIRED EXECUTABLES – LOCAL / REGIONAL

1. Law enforcement: Emergency mobile power source (truck/trailer based) which has EMP hardened features; Portable communications system such as Ham radio or satellite phone.
2. Non-perishable sustenance; encourage citizens to maintain at least a 7-day supply of non-perishables for emergencies. City should investigate a rotating stock (storage capacity?) of large-scale provisions to feed 25-50k people over a period of 30 days. One option might be MREs.
3. City look at creating and maintaining a seed vault in the event a long-term event created food scarcity, and citizens would need to be able to grow some food for themselves.
4. Identify crucial communications equipment for critical city functions and determine shielding methods to protect.
5. Citizens encouraged to maintain 30-day supplies of bottled water and over-the-counter medications and first aid supplies.
6. Chicopee Electric Light: "EMP-hardened" or "EMP-hardening" equipment for transformers; all sizes, but particularly the bulk transformers at their two substations.
7. Identify top 15 locations for microgrid capability with EMP protections. (hospital, public safety, water, food bank)
8. Develop communication plan for BLACKOUT scenario.
9. Maintain auxiliary groups for LE, EM, FD.
10. Identify activities that will need to be secured/safed in the event of an extended electrical outage: chemical plant.
11. Make a long-term plan for non-perishable food supply to feed communities for 30-days or more.
12. Create a seed bank to help people have their own vegetable gardens if food is scarce.
13. Determine if other military units should relocate to Westover to consolidate resources. Should Barnes move jets to Westover? What other units' missions should be considered? What microgrid capability does Westover need?
14. Review how Amish/conservative Mennonites live without electricity as a way to plan for alternatives.
15. Develop a plan for where perishable foods would be moved immediately to be distributed and where non-perishables would also be consolidated for security and distribution.
16. Develop plan to store fuel to run emergency vehicles and other priority services for at least 30 days.
17. Identify vehicles that would not be destroyed by EMP and identify vehicles that can be protected from EMP.
18. Distribute resources and communication systems strategically to allow communities to function more effectively during a crisis.

# ANNEX B (2) RECOMMENDATIONS – STATE/FEDERAL

1. **Encourage the development of cyber and electromagnetic-protected local critical infrastructure that can operate in island-mode, including energy, water, and communications.** In addition to implementing policy / law facilitating the electromagnetic and cyber hardening of US regional commercial power grids and gas pipelines, immediately encourage and financially support the development of electromagnetic and cyber hardened local energy systems and microgrids so that they may operate in island-mode as recommended by the Defense Threat Reduction Agency (DTRA). If critical infrastructure could be powered by resilient energy systems capable of operating in island-mode, then they could withstand the loss of the commercial regional grid from any cause and continuity of government and survival rates in the affected areas will dramatically increase.

2. **Implement executive orders and federal guidance for EMP protection.** At the Federal level, immediately implement the guidance found in Executive Order #13865 "Coordinating National Resilience to Electromagnetic Pulses" dtd March 2019 The executive order directs the federal government to foster sustainable, efficient and cost-effective approaches to improving the Nation's resilience to the effects of an EMP.

3. **Fund resilient local energy systems and food reserves capable of feeding the population for a year.** At all levels of Government – work to implement and then fund a program to ensure that food and fuel is available to feed the residents of a state and to allow some movement of vehicles and powering of emergency generations in a long-term power outage scenario. (The current policy of merely providing the federal government with funds to use to purchase food after an emergency will not be viable in a nationwide loss of power for an extended period of time when food will not be readily available to be purchased.)

4. **Coordinate DOD facilities planning with local communities.** DOD should require that every installation has a planning/coordination group with their local community to design and implement the requirements for resilient infrastructure. No DOD installation is an island and support from the local community is essential to project the force.

5. **Require long term power planning / coordination in every state.** Potential leads are the National Guard or the State office of Homeland Security.

6. Coordinate with shareholders on follow-on Table Top exercises (TTX) using a pre-defined list of executables.

# Appendix C: SUMMARY DISCUSSIONS

- Springfield and Ludlow are highlighted as important hubs. Ludlow has a jail, horses, and agricultural land, making it a valuable location for resources. These cities form a "three-legged stool" along with Chicopee for essential support and resource management.
- The importance of maintaining hope and conversation is stressed. It is crucial to keep people engaged and focused on survival while working toward solutions for the months beyond the initial crisis period.
- The need for organized food storage and preparation systems within the community is emphasized as part of long-term survival.
- Encourage citizens to prepare by having crank radios and emergency generators.
- Suggest helping communities build a phase of scenario preparation to get emergency supplies ready.
- Mobile units can be set up at fire stations to create communication networks.
- Microgrids are considered an essential part of ensuring that vital locations have the power to function even if large parts of the system fail.
- The focus is on giving critical locations the tools and flexibility to generate power independently.
- Although not every place can be powered, some key locations (like those with microgrids) would ensure that basic survival needs are met.
- Initially, the use of these resources would help sustain more people, preventing widespread deaths from shortages.
- By the end of the first or second month, the advantages of having key resources like microgrids and fuel security become evident. These measures would significantly improve survival rates during long-term crises.
- Discussion about managing around 300,000 people, mainly in areas like Chicopee, Westover, West Springfield, and Springfield.
- Out of this population, fewer than half would be able to contribute to recovery efforts.
- In a crisis, the discussion questions how many people would show up to work without pay. The estimated participation rate is suggested at around 10% for essential services like fire departments.
- Factors like patriotism and understanding the situation can motivate people to show up for work.
- Essential workers would be incentivized by survival necessities, such as rice and beans for their families.
- Providing food rations, specifically a year's supply of rice and beans, is noted as a key motivator for people to come to work.
- First responders, military personnel, and other key security figures would likely show up (if receiving food was a requirement) because their survival and their families' well-being depend on their participation.
- It's suggested that most police and fire personnel would show up for work, knowing their families would be taken care of.
- Housing solutions would be necessary to accommodate families of essential workers to ensure their continued participation in recovery efforts.
- The estimated participation rate is between 70% or higher for essential workers, as their survival would be tied to showing up to work.

- The discussion emphasizes that without food, many wouldn't show up, but with resources like rice and beans, most would participate.
- Priority is given to workers in critical roles, particularly those with "guns" (i.e., security or law enforcement), ensuring their families are fed first.
- Additional food resources, especially rice and beans, are provided, but not everyone will receive these supplies.
- Surge protectors and repairs will be crucial in maintaining critical infrastructure.
- There is a focus on having spares for microgrids and other critical infrastructure. Even having half the needed spares would still allow for a partial power supply (20% of net power instead of 0%).
- There is a growing realization that everyone will need to contribute to survival, including turning dispensaries into agricultural centers to grow food.
- The community will need to work together to ensure food production and survival through collaboration.
- By month five of the crisis, efforts are being made to sustain those who remain through resource management and community cooperation.
- Discussion emphasizes preparing for the harsh conditions of winter, especially for those without reliable heating.
- Families with propane (assuming they have enough or can get more) or wood-burning fireplaces will have an advantage in terms of staying warm. However, many will struggle with keeping their homes heated.
- Solutions like chopping wood or utilizing fireplaces are suggested, but others without these resources are at risk of exposure to the cold.
- Multiple families may need to live together in small spaces to stay warm.
- Churches and community groups will play a critical role in connecting people and providing support, particularly through food banks and social cohesion.
- Churches are typically tied to food distribution systems, which will be essential during the crisis.
- Families will need to band together with trusted groups to share resources and protect themselves from looters or others who might try to take advantage.
- This concept is likened to military psychological operations (PSYOPS), emphasizing the importance of trust and social networking in survival.
- There is a strong emphasis on utilizing close-knit communities, such as those in Chicopee, with shared connections like schools (Chicopee Comp, Chicopee High) and churches.
- Communication will be the "glue" that holds the community together during the crisis, allowing them to coordinate and support one another effectively.
- It is suggested that one-third to one-half of the neighborhoods could be powered by microgrids, enabling them to stay warm and survive during the crisis.
- Schools could act as central communication or warning centers for these neighborhoods, helping coordinate efforts across the community.
- The document mentions adapting to crisis conditions by adopting shared living models similar to densely populated urban areas like Hong Kong.

- Families or individuals may need to rent out bunks for a portion of the day, sharing living spaces with others in shifts to avoid freezing at night while also enabling people to continue working during the day.
- There will be a significant cultural shock as people adapt to living in such close quarters and sharing resources. The tension between the "haves" and "have-nots" is expected to create conflict.
- Discussion highlights the potential for violence, as people without resources may resort to taking from those who have what they need to survive.
- There is a concern about people being shot or harmed in conflicts over resources, with both sides (the person defending their home and the person trying to take resources) likely to be armed.
- Beyond resource shortages, disease will also claim lives, and some people will die simply because they cannot cooperate or get along with others in such challenging conditions.
- Guns are distributed to select individuals, with the understanding that in such a crisis, there may be a need to defend homes from intruders who may try to take resources.
- Social cohesion is expected to hold up in some areas, particularly where neighbors already know and trust one another. However, there is concern that only a third of the population may have reliable resources, and distrust may lead to violence.
- The community must focus on helping those they know and trust, but they may not be able to feed or help everyone.
- Communities like the Amish are mentioned as examples of groups that have strong preparation models focused on survival.
- The idea of using horse-based transportation and communication and bicycles for transportation is proposed, highlighting alternative methods for maintaining contact during the crisis.
- Churches and religious groups are expected to play a key role in preparing meals and providing community support.
- Discussion references groups like the Mormons, who are known for long-term food storage practices, suggesting that a goal of having two years' worth of food would be ideal, although realistically only 7-10% of people may be adequately prepared.
- By the time month six arrives, the situation is bleak, with an assumption that half of the population will be struggling to survive. Losses are significant, despite efforts to manage the situation.
- The lack of a major pandemic is noted as a relief, but resource scarcity, lack of proper shelter, and cold conditions are leading to deaths.
- The estimated range of population loss by the end of the crisis (up to month six) is between 25% and 60%.
- The early days of the crisis see a significant loss of vulnerable people, particularly those on life support systems and the homeless, who are already in vulnerable positions.
- The rate of loss is expected to slow down after the initial period, but vulnerable groups will experience the most significant early losses.
- By month six, a substantial portion of the population is expected to have perished due to a lack of resources and other factors.

- People relying on life support and those who are already vulnerable (like the homeless) are expected to be the first to succumb.
- The population that survives the initial stages of the crisis will be those who are able to maintain some level of resilience and access to resources.
- Those who are "hardy" and manage to survive the early stages of the crisis will be responsible for bringing society back online and stabilizing what remains.

# Appendix D: ABBREVIATIONS/ACRONYMS

| Acronym/Abbreviation | Definition |
|---|---|
| AAR | After Action Report |
| CIKR | Critical Infrastructure and Key Resources |
| CISA | Cybersecurity and Infrastructure Security Agency |
| DTRA | Defense Threat Reduction Agency |
| EM | Emergency Management |
| EMP | Electro-Magnetic Pulse |
| EOC | Emergency Operations Center |
| EPLO | Emergency Preparedness Liaison Officer |
| FD | Fire Department |
| FEMA | Federal Emergency Management Agency |
| LEPC | Local Emergency Planning Committee |
| MEMA | Massachusetts Emergency Management Agency |
| MMWEC | Massachusetts Municipal Wholesale Electric Company |
| SCADA | Supervisory Control and Data Acquisition |
| SME | Subject Matter Expert |
| TTX | Table Top Exercise |
| | |
| | |
| | |

# Appendix E: PARTICIPANTS

The below agencies are where some of the 150+ participants came from.

| | |
|---|---|
| Former Hospital CEOs | Westover ARB Base Civil Engineer |
| Baystate Health Department | Westover Inspector General |
| Altuda Energy Corp, San Antonio, TX | Westover Inspector General of Exercises |
| ISO New England | Westover Plans |
| TCI, Alabama | Westover Security Force/ Anti-Terrorism |
| Executive Director, JBSA-EDI & 5G. JBSA-Fort Sam Houston, TX | Westover Operations Group |
| Homeland Security Consulting | Westover Maintenance Group |
| The National director for Logistics Resources with EMP Homeland National Securirty | Westover Emergency Management |
| PJM Interconnection | 1 Air Force EPLO |
| DHS/CISA | Chicopee Mayor |
| Springfield, MA Emergency Management Director | Chicopee Fire Department |
| Booz-Allen | Chicopee Polic Department |
| Hampden Country Sheriffs Office | Chicopee Public Health |
| Penske | Chicopee Council on Aging |
| Massasachusetts Emergency Management Agency | Chicopee Department of Veteran Services |
| Massachusetts Red Cross | Chicopee Public Library |
| Holyoke Emergency Management | Chicopee City hall |
| Solenis | Chicopee Building Department |
| Westcomm Dispatch | Chicopee DPW |
| Headquarters AF/A4 | Chicopee Emergency Management |
| Westover ARB Wing Commander | Chicopee Facilities Department |
| Westover Mission Support Group Commander | Chicopee LEPC |
| Westover Mission Sustainment Office | Chicopee Human Resources |
| Westover Communication Squadron | Chicopee Safety |
| Westover ARB Fire Department | Chicopee Infromation Technology |

# Appendix F: MEDIA AND PUBLICATIONS ENGAGEMENT

Pre-TTX publicity and engagement with EmergencyPreparedness.com:
https://www.domesticpreparedness.com/articles/dual-world-tabletop-exercises-addressing-unmet-infrastructure-needs

Local Television Coverage on the day of the activity:
Channel 22: https://www.youtube.com/watch?v=067t9nZ8MFo

MassLive: https://www.masslive.com/westernmass/2024/09/westover-chicopee-officials-mull-response-to-electromagnetic-pulse-attack.html

Spectrum News: https://spectrumnews1.com/ma/worcester/news/2024/09/10/chicopee-westover-joint-electromagnetic-pulse

# APPENDIX G: SUPPORTING LETTERS

DEPARTMENT OF THE AIR FORCE
AIR FORCE RESERVE COMMAND

19 Nov 2024

MEMORANDUM FOR WHOM IT MAY CONCERN

FROM: 439 AW/CC

SUBJECT: Electromagnetic Pulse (EMP) National Pilot Program Support Letter

I am writing to express my strong support for the joint partnership between Westover Air Reserve Base (ARB) and the City of Chicopee for the designation as a Medium Sized Community National Pilot Program for Electro-Magnetic Pulse (EMP) protection. As the 439 Air Wing Commander, I understand the importance of protecting our critical infrastructure and national security assets from the devastating effects of an EMP.

The partnership between Westover ARB and the City of Chicopee is an innovative approach to addressing this critical issue. Westover ARB is home to several key military units and is a critical hub for transportation and logistics. In addition, the City of Chicopee is a vibrant community with a diverse range of critical infrastructure assets, including local area hospitals, schools, and commercial businesses. This will allow for a comprehensive approach to EMP protection, leveraging the strengths and expertise of both partners. Westover ARB has the necessary infrastructure, personnel, and expertise to successfully implement this important initiative. Meanwhile, Chicopee has strong relationships with local and state partners, which will be essential to the success of the program.

EMP protection is a crucial component of our national security strategy. An EMP attack could have catastrophic consequences, disrupting critical infrastructure, communications, and transportation networks. As such, it is imperative that we take proactive measures to protect our most critical assets.

Finally, this partnership between Westover and Chicopee is an effective approach to addressing this critical issue. I strongly support the designation of this joint partnership as the national pilot program for EMP protection. This is critical to our national security and the protection of our most critical assets. I urge you to support this important effort and look forward to working with you to ensure its success.

Thank you for your time and consideration.

GREGORY D. BUCHANAN, Col, USAF
Commander

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF PUBLIC SAFETY AND SECURITY

MASSACHUSETTS EMERGENCY MANAGEMENT AGENCY
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Maura T. Healey
Governor

Kimberley Driscoll
Lt. Governor

Terrence M. Reidy
Secretary

Dawn Brantley
Director

To Whom It May Concern:

The Massachusetts Emergency Management Agency (MEMA) is pleased to provide this letter of support to the City of Chicopee, as they pursue consideration for the National Pilot Program for Electromagnetic Pulse (EMP).

Chicopee has been an excellent partner in emergency management, and has been on the forefront of ensuring the full realm of emergency management activities is maintained, keeping a state of constant readiness in the city. Further, they engage Westover Air Reserve Base (ARB) in many emergency management functions, on a regular basis. For example, Westover has been involved in the city's Local Emergency Planning Committee (LEPC) for several years.

The recent tabletop exercise with Westover ARB surrounding an EMP, and the subsequent After Action Report (AAR), identified several proactive steps the city could take to bolster their emergency preparedness surrounding EMP.

If Chicopee was granted the opportunity, they could utilize this National Pilot Program, working with Westover ARB, to implement federal funding for infrastructure resiliency for this middle level population.

I am pleased to offer this letter of support for the City of Chicopee's inclusion in the National Pilot Program for Electromagnetic Pulse (EMP).

Thank you for your consideration.

Sincerely,

Dawn Brantley

Director
Massachusetts Emergency Management Agency

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P.O. Box 116
365 East Street
Tewksbury, MA 01876
Tel: 978-328-1500 Fax: 978-851-8218

Region II
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Franklin, MA 02038
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Region III / IV
1002 Suffield Street
Agawam, MA 01001
Tel: 413-750-1400 Fax: 413-821-1599

# MAYOR JOHN L. VIEAU

CITY HALL • MARKET SQUARE • 17 SPRINGFIELD STREET • CHICOPEE, MA 01013

To Whom It May Concern:

The City of Chicopee would like to partner with Westover ARB to determine how we can together make our community and our critical infrastructure more resilient to any High-altitude Electromagnetic Pulse event, ("EMP"). Our objective is to form a pilot group from the City and Westover ARB to build infrastructure resiliency for an EMP event, increase survivability, and mitigate the effects of an EMP event in the community.

The City of Chicopee and Westover ARB have conducted a tabletop exercise to learn of the risks, impacts and disruption of our community if an EMP event should occur. This exercise was productive and made members of the community and military installation aware of the impact on several critical infrastructures to the local community and installation. This disruption of services and collapse of systems, including needs for energy, water, waste, communications and financial support would not only affect the local community, but impact the mission readiness and operations of Westover ARB. Base personnel live in our community and the base relies upon water and energy from municipal services. The city and base have had a cooperative relationship to provide the goods and services which allow both to prosper and grow, achieving our objectives and mission of helping our communities and our nation.

The city would like to continue to expand our partnership with Westover ARB by mitigating the impacts of an EMP event, increasing the resiliency of both the community and military installation. A pilot program was suggested for the City of Chicopee, private sector service providers, and Westover ARB to explore solutions and address hazards encountered by an EMP to provide resiliency and improve recovery. Chicopee as a medium sized community, looks forward to working with our partners, having the opportunity to participate in a National Pilot Program to address these challenges.

I thank you for your consideration as we work together to improve our City, our community and our safety. I look forward to your response or suggestions.

Very truly yours,

John L. Vieau
Mayor
City of Chicopee

Daniel Stamborski
Fire Chief
City of Chicopee

Patrick Major
Police Chief
City of Chicopee

Frank Laflamme
President
Chicopee City Council

Robert Zygarowski
Vice President
Chicopee City Council

Glenn Joslyn
Emergency Management Director
City of Chicopee

CITY OF CHICOPEE MAYOR'S OFFICE

413-594-1500 • MAYORVIEAU@CHICOPEEMA.GOV • WWW.CHICOPEEMA.GOV


Terry Boston
Vice President
GPA Board

Dear EMP Leadership Team,

I want to commend both the local military and the Chicopee Emergency Preparedness Team on an excellent EMP tabletop exercise and workshop on September 10, 2024. I spent my entire career of over 50 years working on the reliability, robustness, and resilience of the power system. Clearly EMP is an existential threat to society as we know it.

In 2004 the first EMP commission report was issued. I remember Earl Gjelde (who I greatly respect, former undersecretary of energy and later the Secretary of Interior), briefing the NERC Board of Directors on the seriousness of an EMP attack. We have known about the threat since 1962 or even earlier. Unfortunately, we have not taken corrective action to harden our systems. Such corrective action would not only protect against the threat; but would likely remove an adversary's likelihood of using such a weapon. Given the vastness of the power grid, the most likely solution is to establish hardened microgrids and communities' resilience centers.

Your workshop was excellent, and I really liked having two different scenarios to show that without any electricity, life as we know it is very uncertain. To date we have mostly talked about the threat and talk is cheap. I hope your leadership encourages enthusiasm and political support for tackling and solving the risk we have of an EMP event. I look forward to working with you and other resilient communities on micro grids to limit the threat of an event. Again, by reducing the impact, we can reduce the likelihood of an EMP attack.

Warmest regards,
Terry Boston