



APPA Effective & Innovative Practice Award Application 2016

Michigan State University Infrastructure Planning and Facilities Emergency Response and Business Continuity Program

Overview

Infrastructure Planning and Facilities (IPF) plans, builds and maintains the physical environment for the university's education, research and outreach missions. The unit employs over 1,500 employees and students and is comprised of numerous professionals with dedicated areas of expertise, guaranteeing the best care and stewardship of MSU's campus. IPF staff maintains one of the biggest and greenest campuses in the nation with 5,200-acre campus, 538 buildings and approximately 19,600 acres throughout Michigan used for agricultural and natural resources research and education. This includes facilities with research animals and fully operating animal care and hospital operations. Fall 2014 there were 50,085 students enrolled at MSU with nearly 15,000 faculty, support staff and visitors interacting on the campus.

Like other universities, MSU's IPF team is challenged with maintaining and executing timely, efficient and effective emergency response procedures in a complex and ever-changing environment.

To meet this challenge, IPF has a detailed two-fold Emergency Response and Business Continuity Plan (ER/BCP) in place to:

- Respond to emergencies such as power outages, natural gas, chemical, biological and radiation incidents, steam, water supply or waste water emergencies, extreme weather, flood, snow, and damage due to weather; and
- Guide employees in the event that the University is required to modify, interrupt, suspend or curtail certain operations or services for a period of time.

Developing and distributing well-thought out procedures was an essential step, however the need to further mature our methodology and processes was recognized. A collaborative approach was established within MSU and with partners in the community to ensure comprehensive development and refinement of procedures. The criticality of these procedures and the timeliness of their execution warranted a digitize system with multiple layers of redundancy and processes to easily maintain and communicate changes. The procedures and sensitive information contained within then needed to be securely accessible to those who need them at all times. As a result, the ER/BC program was developed to meet those objectives.



“As a research-intensive university with one of the largest residential campuses in the nation, it is critically important to Michigan State to have the capacity to effectively respond to a wide array of emergencies. It also is important that we collaborate with surrounding municipalities and emergency responders so that an effective response can be assembled given most any situation. This plan brings together the resources to assure the highest degree of preparedness and stewardship of the campus's physical assets entrusted to us by the people of Michigan.” — Dr. Lou Anna K. Simon, President, Michigan State University

Institutional Benefit

IPF manages campus infrastructure and critical functions that could render MSU inoperable without proper continuity planning. Therefore, having an **informed, prepared and unified staff** is vital to the operation of MSU as a whole. The electronic ER/BCP supports that environment for IPF employees. Each IPF employee has secure, permission-based access to emergency response and business continuity procedures at the click of a mouse. This encourages regular review of the procedures and promotes a clear understanding of the required roles and responsibilities of IPF staff and leadership. **Increased confidence** in IPF's response to urgent facility issues and other emergency situations is fostered by knowing that everyone is using the most current and identical information.

The process of reviewing and updating procedures has been **streamlined**, decreasing the time taken to maintain the ER/BCP. Taking advantage of **technological advances** in implementing the online ER/BCP also supports **MSU Green Initiatives**. To ensure multiple layers of protection, the ER/BCP is securely available online, offline via flash drive and is backed up on a virtual server. In addition, hardcopy manuals are maintained by key personnel as another means of accessing the necessary information in emergency situations.

"The creation of...emergency response plan that incorporates the principles of business continuity is an industry standard in emergency management and a best practice example for other units/departments... The comprehensiveness of this plan and its ease of use make it a valuable tool for response and recovery of critical infrastructure and functions here at MSU. By placing it into an electronic format and securing it from cyber disruptive events, it has ensured that the plan can be accessed from many locations." – Captain Penny Fischer, PhD, J.D., Emergency Management Coordinator/Support Services Division Commander, MSU Police Department

Innovation, Creativity and Originality



"An emergency preparedness plan that can be kept current as well as accessible to many critical players is an absolute necessity, given the size, complexity and dynamic nature of the MSU campus. The collaborative approach taken by IPF to draft and update its emergency plans capitalizes on readily available technology that enables rapid access. Plans can be easily adjusted by stakeholders on and off campus to assure their continued relevancy. I have the utmost confidence that this robust, integrated approach positions IPF at the leading edge of emergency preparedness." — Satish Udpa, Executive Vice President for Administrative Services

The technological staff in IPF Computer and Networking Services was consulted and engaged to help create an electronic solution to address the operational challenges. This resulted in the development of an **online innovative and creative solution** to move the vision forward.

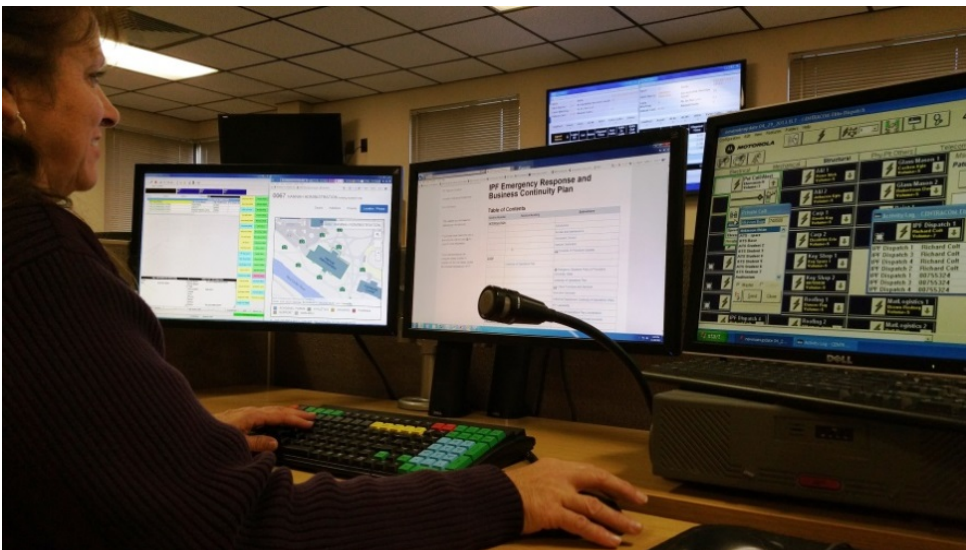
The ER/BCP program resides on an open source wiki named Dokuwiki. Dokuwiki is **versatile and simple to use and maintain**. The wiki resides on a virtual windows server that runs on a VMware ESX cluster.

This configuration allows disaster recovery services. Every evening the virtual server is mirrored to IPF's co-location across campus. This data contains a complete copy of the server that can be brought up at a moment's notice. Along with the daily backup, the virtual server is backed up hourly so that data can be retrieved in hourly intervals.

To support the portability of this program, the full wiki application and contents imaged onto flash drives for external use in case of network and/or power failure. Key individuals in IPF and the university are given two flash drives; one that is kept by them and the other is retained by the ER/BCP coordinator. Updates to the flash drives are done on scheduled intervals. When major changes are made to the ER/BCP, staff is provided a new flash drive to ensure they have updated procedures at all times. The user can then plug the flash drive into any Windows based computer and run an instance of the ER/BCP locally on their computer. Utilizing this version of the wiki on the flash drive does not require network access and with the laptop you can use battery backup in case of power disruption.

Every effort is made to improve processes in regards to the ER/BCP. A process is currently being worked on that should be in place by the end of the 2015 calendar year that will allow the individuals with flash drives to independently update their flash drives, enhancing efficiencies.

This solution has been in place for a couple of years of which MSU and IPF realize will not last forever. We



have already made huge leaps forward and with each leap we are looking to the future. We will not use the wiki technology forever, but we now have a much better idea of the future solution needed to allow us the ability to make more informed future solutions to enhance our systems and processes.

“With a key word search I have the procedure up that I need to follow.” Sue Clark, IPF Dispatcher

Portability and Sustainability



“As one of the critical lead responders during facility interruptions and emergencies, I have confidence in the ER/BCP we have developed, regularly tested, and refined. This program provides the necessary structure to allow rapid assembly of the appropriate professionals and provides those responders ready access to the resources needed.” — John Nurenberg, Electrical Supervisor, IPF

The IPF ER/BCP Plan is a **highly portable and sustainable**. This critical resource is housed in an online wiki **allowing broad access to real-time information**. This format permits updates/revisions of documents and procedures to be made **as they occur**. Users can take advantage of the search capability to enable **quick access and retrieval of information**. Facilitators also find this tool essential to assist in efficient updates of personnel and operational changes.

Given that this program is a critical resource during emergencies, it is at risk to be impacted during those emergencies. To prevent any situational risks during an incident, enhanced **care was taken to ensure multiple redundancies, portability and accessibility**.

Flash drives are assigned to key personnel, allowing convenient remote operational access and necessary backup for business continuity and disaster recovery support. Staff assigned with flash drives can access procedures, contacts and resource documents from their computer or laptop. With network access, the web links contained within the wiki are also available for viewing.

To organize this program, the staff responsible for each document or procedure in the ER/BCP were identified and designated as “document owners.” The facilitators of the program created an annual review schedule to ensure that all documents and procedures are reassessed at least once annually. This schedule is agreed upon by the document owners and program facilitators. Reminders are sent to the document owners during the month their documents are due for review. Within a two week period, the document is reviewed and revised or approved as is.

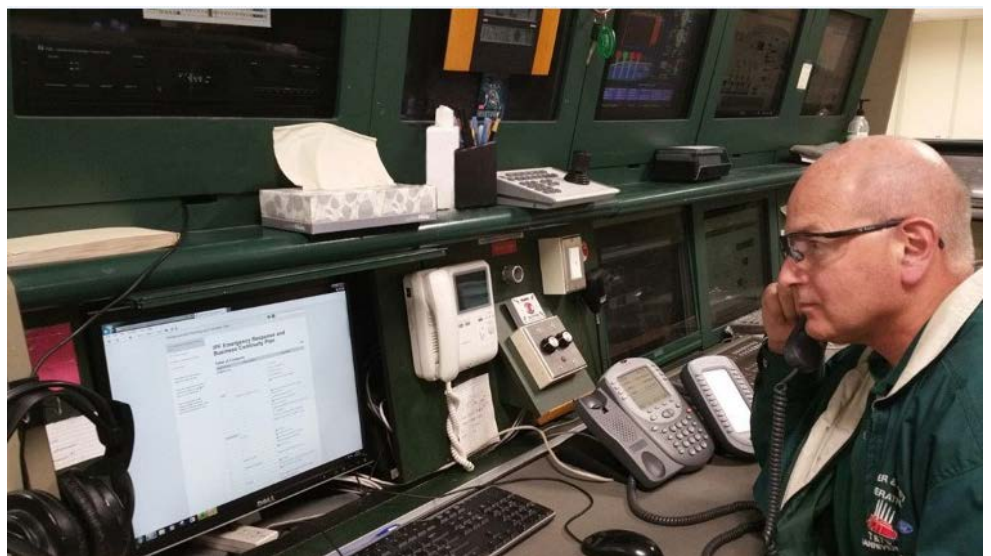
Document owners or program facilitators may become aware of changes that need to be made between annually scheduled review dates. In other cases, those that execute the procedures may request a revision of said procedure. These intermittent revisions are handled much like the annual reviews. The revision requests are submitted, approved/disapproved by the document owner and implemented when needed. In each instance the revisions are documented and tracked in a Wiki Change Log, noting the date of the change as well.

Monthly email notifications outlining document revisions are sent to all stakeholders. The email provides an opportunity to briefly review the changes and determine what information directly impacts their team and may need to be shared accordingly. For the convenience of the few leaders who requested to maintain manuals, the updated procedures are attached in printable PDFs.

There is also an annual process to assure that all departments within IPF are able to maintain the continuity of operations related to their unit in the event that the university is required to modify, interrupt, suspend or curtail certain operations or services for a period of time. Each area has an assigned continuity of operations coordinator who facilitates their departments review and ensures that department staff is educated on expectations noted in the plan.

With scheduled reviews, revision information tracking, real-time updates, built in redundancies and the future state of secure portal for self-updates, this program is a tool that can be sustained for decades to come.

Ron Rushing, Power and Water Operations Supervisor, T.B. Simon Power Plant



Management Commitment and Employee Involvement



“The Infrastructure Planning and Facilities Division at MSU is a key partner in emergency planning for the university. Because of the critical functions and infrastructure that this division manages, MSU cannot operate without continuity planning for business functions. IPF is also a member of the university’s Emergency Management Accreditation Program, Planning and Advisory Team working to attain accreditation to the university’s emergency management programming. Their role on this team and in the development of an “all-hazards” approach to Continuity of Operations and Continuity of Operations planning is vital for our successful completion of that program.” — Captain Penny Fischer, PhD, J.D., Emergency Management Coordinator/Support Services Division Commander, MSU Police Department

Dan Bollman, IPF Assistant Vice President, serves as executive sponsor for this vital program. Staff at all levels has been involved in the development, maintenance and execution of this program, ranging from dispatchers and responding crew to supervisors and the leadership and executive team in the university’s Emergency Operations Center. In addition, MSU’s Environmental Health and Safety, City of East Lansing and East Lansing Fire Department have partnered with IPF to ensure the best plan and response for fire, gas, chemical events and water disruption events.

Joanna Young, Vice President and Chief Information Officer recently suggested utilizing a secure portal for document retrieval, this then led to the idea of allowing staff assigned flash drives to go to the secure portal to image and update their devices. Both suggestions will be implemented at the end of this calendar year.

Support from management and involving staff in the creation and ongoing maintenance and response has been critical in the success of this program.

Documentation, Analysis, Customer Input and Benchmarking

In 2010, IPF had emergency procedures documented in a paper manual distributed to 13 managers. The Business and Personnel office facilitated the maintenance of the procedures and requested procedural reviews annually in April, following book distribution in July. This was a task assigned on top of operational responsibilities and out of the realm of the day-to-day responsibilities for this individual. Challenges associated with this process included knowing who to request to review and update the documents, obtaining timely responses, interpreting and applying the recommendations into the documents all while being detached from the actual process during an emergency. In addition, the physical access to manuals was restricted by location, generally kept within a manager’s office, and not readily available 24/7/365.

Changes and incorrect information was usually discovered by the IPF dispatch team when responding and facilitating the communications during an emergency, adversely impacting the time to bring key responders on-site. Changes would then be hand-written to that specific procedure in the IPF Dispatchers manual. The change may have impacted several other procedures throughout the manual, however due to the extensive time needed to search through the book, was rarely completed. In addition, there wasn’t a process in place to take the corrected information to update the other paper manuals across the division, resulting in changes that were not incorporated into the annual update process.

IPF staff realized the need to improve the current process to achieve better results. The IPF Dispatch team had previously partnered with the IPF Computer and Networking Services team to migrate their policies, procedures and resources into an organized and easily searchable wiki solution. The partnership started with

a trial of moving the EPM as a PDF document into the wiki for better access and search features for the dispatcher responding to the emergency. This quickly led to the decision to migrate the individual procedures into the wiki for faster retrieval and maintenance. The initial plan was to continue with the existing process facilitator in the Business and Personnel office. Soon it was realized that engaging those directly involved in the process with assuming responsibility for the ongoing maintenance was beneficial.

May 2013, the IPF Dispatch team sought and obtained approval from the IPF Executives and Directors to maintain the IPF Emergency Procedures Manual (EPM) and move the manual to an online document/reference. Document owners were identified for every procedure and processes were developed for regular review when operations or staff changes impacted the procedure, and for notification of changes to key stakeholders.

The online tool enabled searching the location of key words in all documents, thus finding all the documents that required the update. Another benefit included the ease in which dispatchers could search to bring up the specific procedure needed to guide their response. Transitioning from a paper manual to broader online access at each dispatch workstation enabled a team approach to executing the response.

A change in the skilled trades culture occurred as the process moved from paper to electronic resulting in real-time accurate information from a formerly stagnant process. This **encouraged two-way sharing of information and instilled a greater trust in the process** and in the dispatch team facilitating and executing the procedures.

The plan has five main sections: Introduction, Access and Maintenance; Continuity of Operations; Emergency Response Procedures, Contacts and Resources. Procedures are labeled to indicate the document owner and the latest revision date. Supporting resource documents are linked to the procedures as well as being listed in the resource section for convenience. Resources added to provide a centralized and comprehensive tool include:

- Web links: Accident Procedures, Building Contacts List, Campus Maps, Emergency Management – MSU Police, Emergency Medical Care Procedure, Facility Explorer Map, Facilities Information Tool, Flood Map – MSU GIS, Flood River Levels – NOAA, GIS Infrastructure levels, IPF Alerts, MSU IT Service Status Alerts, Munsys, IPF Organization Chart, Safety Guidelines for Active Shooter.
- File Share links: River Flood Plan, Building Small Scale Drawings.
- PDF's for supporting documents: Circuit maps, Electrical System Schematic, Campus Water Map, Water Interconnect maps, etc.

The plan and all of its components are **regularly reviewed, updated, and re-distributed** to emergency responders and IPF leaders so they can inform and educate their staff. The wiki software maintains previous procedure revisions and a log is kept of all procedural updates made to the ER/BCP. The log tracks the date the revision was approved, details of the revised information, the person who approved the revision and the person that documented the revision in the wiki.

IPF customers are an integral part of the ER/BCP documentation. IPF regularly contacts affected units to collaborate on appropriate procedures and collect current contact information. Stakeholders also contact IPF with suggestions to review, revise or improve procedures due to lessons learned. This creates an **interactive partnership in the regular execution, assessment and improvement of the ER/BCP**.

Customers of this process include all the staff engaged in emergency planning and response from the dispatcher receiving notice of the incident to the responding staff and the executives who are updated throughout the event. Suggestions for process improvement and enhancements are received and implemented timely.

Before implementing the online wiki formatted ER/BCP, the revision process was completed annually. With the electronic ER/BCP revisions are made as they occur. There are also regularly scheduled procedure reviews with monthly notice of changes to constituents.



“In my 12 years in emergency management and over 35 years in law enforcement, I have seen many versions of plans. Those plans are only valuable when the end-user is part of the plan and knows how to access the information in a time of crisis. MSU has distinguished itself as an institution that values planning for emergency response and business continuity. The format that IPF has created for these plans allows appropriate users of the plan instant access in a variety of formats. In previous paper versions, our emergency managers were constantly striving to keep the most current content available and invariably some part of the plan was obsolete. In the new format, ease of updating and access in real-time allows emergency managers to be confident that the version being used is the most current and accessible.” — Capt. Penny Fischer, PhD, J.D., Emergency Management Coordinator/Support Services Division Commander, MSU Police Department

Adaptability / Transferability for implementation to other Universities/Businesses



“The process for drafting and updating contingency procedures, the technological accessibility and the structure for engagement of multiple participants provide an innovative approach to emergency preparedness that is easily transferable to other campuses and communities. IPF is eager to share the methods at the foundation of this plan as an expression of MSU’s land-grant commitment to service, outreach and engagement.” — Dan Bollman, PE, LEED AP, CFP Assistant Vice President for Strategic Infrastructure Planning and Facilities

Michigan State University



Michigan State University Spartans work every day to advance the common good in uncommon ways. Together we tackle some of the world's toughest problems to find solutions that make life better.

The nation's pioneer land-grant university, MSU is one of the top research universities in the world. Home to nationally ranked and recognized academic, residential college, and service-learning programs, MSU is a diverse community of dedicated students and scholars, athletes and artists, scientists and leaders.

Infrastructure Planning and Facilities

Infrastructure Planning and Facilities (IPF) plans, builds and maintains the physical environment for the university's education, research and outreach missions. The unit is comprised of numerous professionals who specialize in their areas of expertise, guaranteeing the best care and stewardship of MSU's campus. As a unit, our collective vision is to be the most high-performing, innovative, leading-edge facilities organization in the nation, with a focus on quality, customer satisfaction and value in all we do.

Departments include: Administration, Building Services, Communications, FRIB Civil Infrastructure, Human Resources, Landscape Services, Occupational Safety and Compliance, Planning, Design and Construction, Power and Water, Support Services, Surplus and Recycling, Sustainability, Telecommunications Systems, Transportation Services.

Sustainability

As MSU works to reduce energy consumption and transition to more renewable sources, hundreds of buildings on MSU's campus must be brought up to date to operate more efficiently. IPF is leading the way with several significant energy-conservation initiatives. These will build the foundation needed to make the transition to renewable energy sources and meet campus energy-conservation goals.

T.B. Simon Power Plant

MSU is unique in that its campus is home of the T.B. Simon Power Plant, a co-generation plant that provides steam, heat and electricity for the university.

IPF Strategic Objectives

- Enhance MSU Stewardship by improving IPF efficiency and/or reducing cost.
- Improve the customer experience by strengthening key systems.
- Strengthen IPF employee development by creating a comprehensive pipeline of T-shaped individuals.
- Expand innovation and external collaboration by leveraging IPF experience.

IPF's key values

- **Service excellence:** IPF exceeds customer expectations for enhanced teaching, learning and research.
- **Innovation:** IPF is willing to take risks, which creates value for our customers.
- **Stewardship:** IPF is fiscally responsible and accountable for the resources entrusted to us.

In service to our customers

- **Honest and transparent communication:** We will provide customers with timely, accurate and complete information, and will interact with each other in the same manner.
- **Value:** We will be fiscally responsible with university and customer resources.
- **Reliability and responsiveness:** We will be there for our customers, 24/7/365, solving problems without fail.
- **Innovation and strategic planning:** We will curiously explore new technology, systems and approaches to creatively and proactively solve problems, always devoted to what's best for MSU.
- **Stewardship:** We will be stewards of our campus and the physical infrastructure that comprises it, and make environmentally minded decisions that support a cleaner, greener MSU and world.

In development of our people

- **Expertise:** We are committed to a high-performing, skilled workforce. We will invest in training and development to build and maintain experts in fields and master craftspeople.
- **Accountability:** Our team members are accountable for their actions and embrace their responsibility as both IPF and MSU ambassadors.
- **Dedication:** We will commit ourselves to customers and to problems, striving tirelessly to achieve optimal results and solutions.
- **Collaboration:** We will develop our team members to be clear and consistent communicators and collaborators.

Sources:

<http://ipf.msu.edu/>