



**ILLINOIS STATE
UNIVERSITY**
Illinois' first public university.



Campus Power Outage

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2020 ILAPPA CONFERENCE

March 11 & 12, 2020
Illinois State University



Illinois State University Facts



20,635

Student
Enrollment
(Fall 2018)



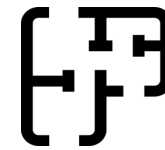
3,318

Faculty/Staff



187

Buildings
Owned
by the
University



6.9M

Gross Square
Feet



1,180

Acres

General Power Structure



All General
Campus Power
is from Ameren



Lines Owned by
Ameren
(Except for a Couple)



Ameren
Partnership



2 Redundant Lines
& 2 Different
Voltages to Each
Building



Medium-Voltage
Switches
(11 locations)



High Voltage &
ArcFlash Training
Completed by
ISU Electricians

Collaboration Required

Internal

- Administrative Technologies (Data)
- Campus Administrators
- Customers (Occupants)
- Emergency Management
- Campus Partners
- Health and Safety
- Human Resources
- Media Relations
- Provosts' Office
- Registrar's Office

Facilities Management

- Administrators
- Building Automation Technicians
- Carpenters
- Electricians
- Grounds
- Maintenance
- Refrigeration Mechanics
- Stationary Fireman and Engineers
- Work Management

External

- Ameren
 - PAR (Contractor)
- Fuel Contractor
 - FS
- Generator Company
 - Cummins
- Switch Company
 - S & C

Year of Power Outages



July 24th
Outage caused by
squirrel

Sept 19th
Outage caused by
Ameren yard
maintenance (T-340)

Sept 27th
Warehouse power
outage caused by
Ameren switch yard

June 2019

June 5th
Outage caused by
crow

June 18th
Outage caused by
Ameren yard
sensor

July 2019



Aug 2019

Aug 7th
Maintenance
repairs required
(insulator) a
planned outage

Aug 26th
Outage caused by
lightening

Sept 2019

Oct 2019

Oct 26th
Multi-building
outage initially
caused by storm
(JH, SLB, SSB, MLB)

The Event – Homecoming!

- **EOC Call:** 4 Buildings (JH, SLB, SSB, MLB) on Campus Without Power
- Football Game During Outage
- **No Cause Found:** Move Buildings to Secondary Line
- **All Work Except Julian Hall:** Switch Remains Non-Functional
- Tried Vista Switch Multiple Times.....

What
Next?



Considerations



- Repair Switch?
- Borrow Switch?
- Purchase New Switch?
- Bypass, No Switch?

Julian Hall – Emergency Power Only

Occupants

- Administrative Technologies
- Biology
- Chemistry

Impacts

- Departmental Offices Relocated
- Academic Advising Appointments
- Classrooms/ Classes Relocated
- Majority of Employees Displaced

Challenges

- Limited Power
- Limited Heat
- Limited Phones
- Limited Computers
- Limited Copiers

Preparation is Important:

- Identified & Set-Up Emergency Power Needs
- Data Center Automatically Backed-up by EM Power
- Emergency Cooling Backed-up Recently (1-2 Hours to Complete)
- Manual Transfer Added Last Year

Campus Planning



Utilize EOC for Campus Planning

- **JH and SLB Down, Keep EM Power**
 - SLB - Research
 - JH - Campus Data Center
- **BSC and MLB May be Impacted**
 - BSC Concert, Late Hours
 - MLB Late Hours
- **Move Classes and Advising** from JH



Human Resources

- **Employees Impacted During Work Hours**
 - Work from Alternate Locations
 - Leave/Arrive Alternate Times
- **Access to Employee Lists by Building**
- **Understanding Shifts/Timing Impacts**

Final Decision

Up to 10-hour outage to occur overnight
10pm-7am on a Friday to minimize impact

What Else Could Go Wrong?



Building Automation System Alarm
No alert if generator stopped working



Electrician On-Site 24/7
Only 20 Minutes to Switch to Back-Up Generator



Data Center
Need 3 Advanced Hrs. to Flip
(Never Been Done Before)



Portable Heaters on Temporary Power

Remodel Construction Began That Day!

- Contractors using our temporary power
- Generator radiator started filling with dust/debris
- Still Ran for 5 Days!!!
- Luckily, Set Up Portable Generator Already

Experts At Work



Coordinated Plan with Ameren & PAR

- Prep-Work Required
- All Worked Straight Through Beginning at 9pm
- Notified BSC and MLB Kept Power
- Continued Work
- Power On at 7:30am!!!

**HALLOWEEN
NIGHT**



Lessons Learned



Communication

- If Unsure, Speak Up
- Centralized Communication for Team Imperative – Veoci
- Chain of Command Important
- Ensure Off-Site Data Center Back-Up



Partnership

- Value in Collaborative Meetings Before Needed
- Have a Network (Facilities & Beyond!)
- Trust.... But VERIFY!



Broad Understanding

- Understand Ownership and Responsibilities
- Know What Functions are Critical
- Understand Your Limitations
 - Know what data is available and Where it is
 - No phones – do you have mobile numbers?



Preparedness

- Testing Generators
- Creating Infrastructure
- Fuel Refiling

Have a Plan B!And a Plan C!

Future Planning

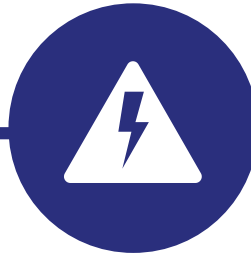
**GIS Maps
(Electrical Vaults,
Switches & Yards)**

Identifying Ownership



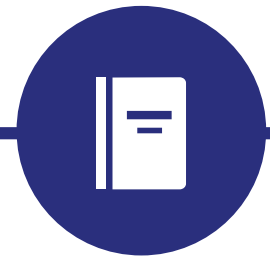
Install Repaired Switch

Requires Another 10 Hour
Outage for SLB & JH (Keeping
EM power)



**Update Design
Guidelines**

Type and Size



**Additional Planning
with Ameren**

- Prevention & Infrastructure Review/Planning
- Spinners
- Adding Redundant Line to Sub Station
- Ownership & Responsibilities

**Purchase New Back-Up
Switch**

Will Work at All 11 Locations

Questions?

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