

# SAME DC Post – Joint Base Andrews

Technical Workshop and Business Briefing



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# JBA MOLD REMEDICATION WORKSHOP

Mr. Michael Hamill, MSPH, CIH

**ECS MID-ATLANTIC, LLC**

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# Course Overview

- Background Information: Basics of Fungi and Health Effects.
- Knowledge of Building Construction and Systems.
- Mold Remediation: Industry Work Practices, Standards, and Equipment.



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# Introduction to Fungi

- Molds are the most common form of fungi and can be a variety of colors.
- Molds are simple, microscopic organisms that can break down dead materials, and produce mycotoxins and endotoxins.
- There are more than a thousand species of mold in the United States, and more than 100,000 species worldwide.



# Fungi (Mold)

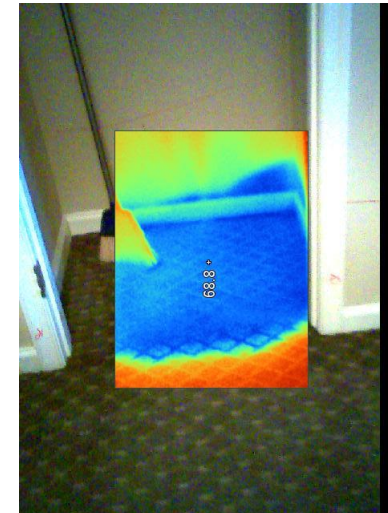
- Lives in soils, plants, and/or on dead or decaying matter.
- Decomposers.
- Produce tiny spores to reproduce.
- Produce mycotoxins – can cause allergic reactions.
- Viable and Non-Viable.

- *Ascospores* sp.
- *Basidiospores* sp.
- *Cladosporium*, sp.
- *Aspergillus/Penicillium*
- *Stachybotrys*, sp.
- *Alternaria*, sp.



# Fungi (Mold)

- Different molds and their subset species have varying moisture requirements (Water Activity) for growth/development.
- Can grow on various substrates, with various requirements for pH levels, and temperatures.
- Substrate – wood, drywall, paper, soil, mulch, etc.



# Moisture Requirements

## Relative Humidity (RH)

- Is the ratio of the partial pressure of water vapor to the equilibrium vapor pressure of water at the same temperature. Relative humidity depends on temperature and the pressure of the system of interest.
- EPA recommends maintaining RH between 30-50% for indoor environments.
- RH over 60% provides ideal conditions for mold growth to occur.

# Moisture Requirements

## Temperature Control

- Temperature guidelines for interior conditioned environments.
- ASHRAE 55- 2004
  - Summer Recommended Range = 73-79 °F
  - Winter Recommended Range = 68-74 °F
- Maintain to reduce condensation on surfaces.

# Health Effects

- Mold and associated hyphal elements and mycotoxins may cause adverse health effects for some individuals. The effects can vary among individuals and their immune responses.
- Mold can cause allergic reactions, inflammations, and irritations in the human body.





# UNDERSTANDING BUILDING CONSTRUCTION & MOISTURE

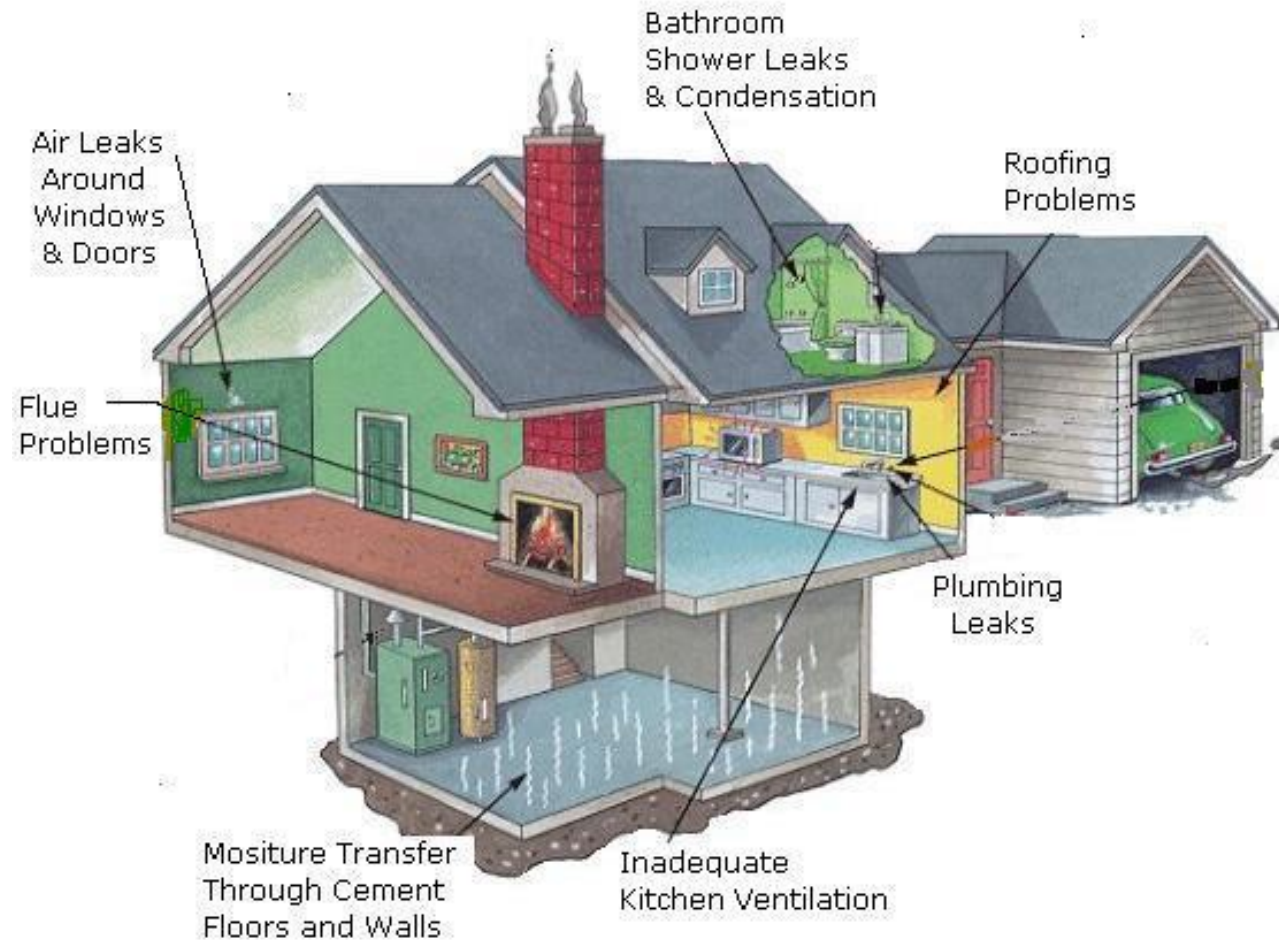
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# Moisture Pathways

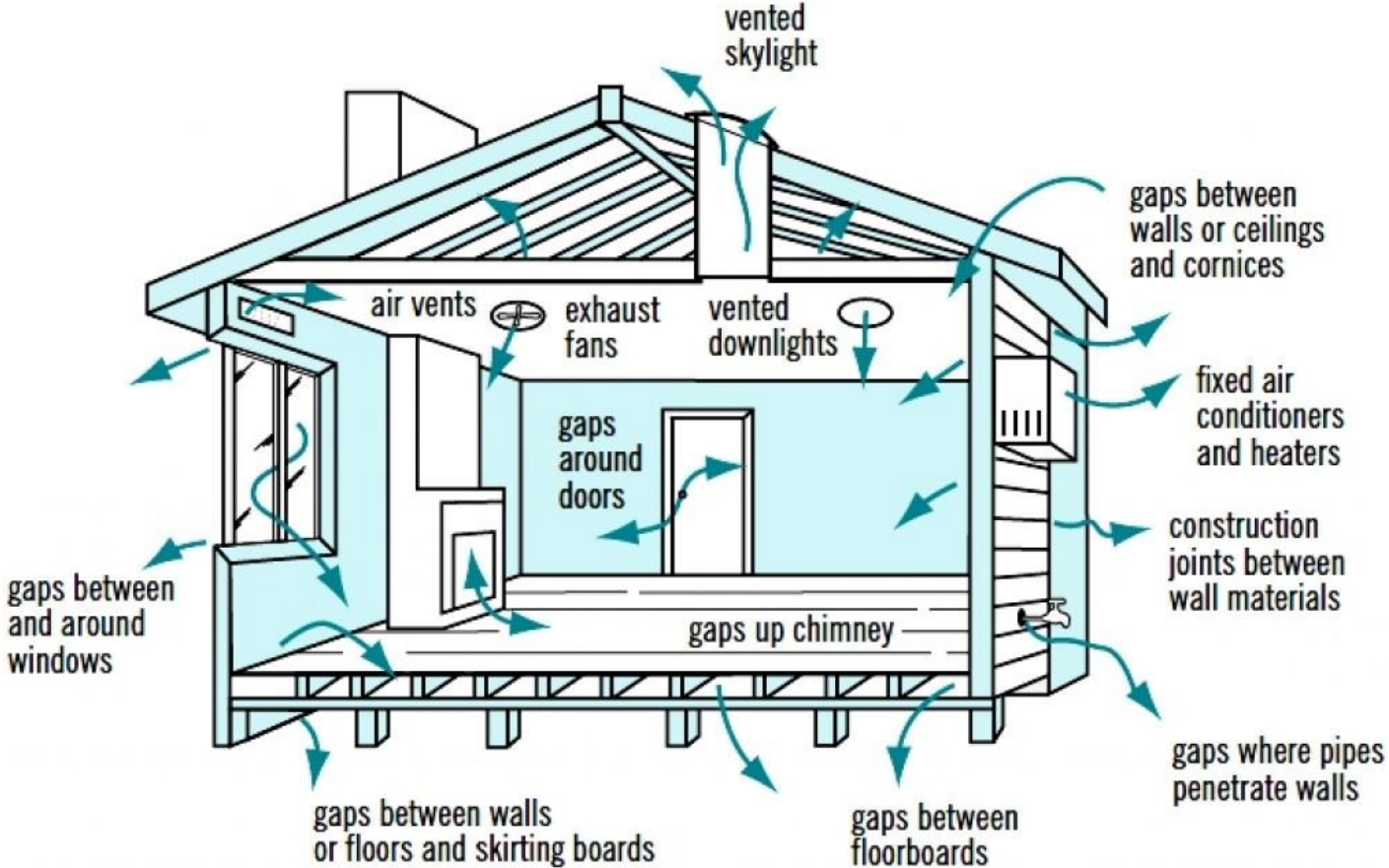


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# Mechanisms of Air Flow and Influences on Moisture



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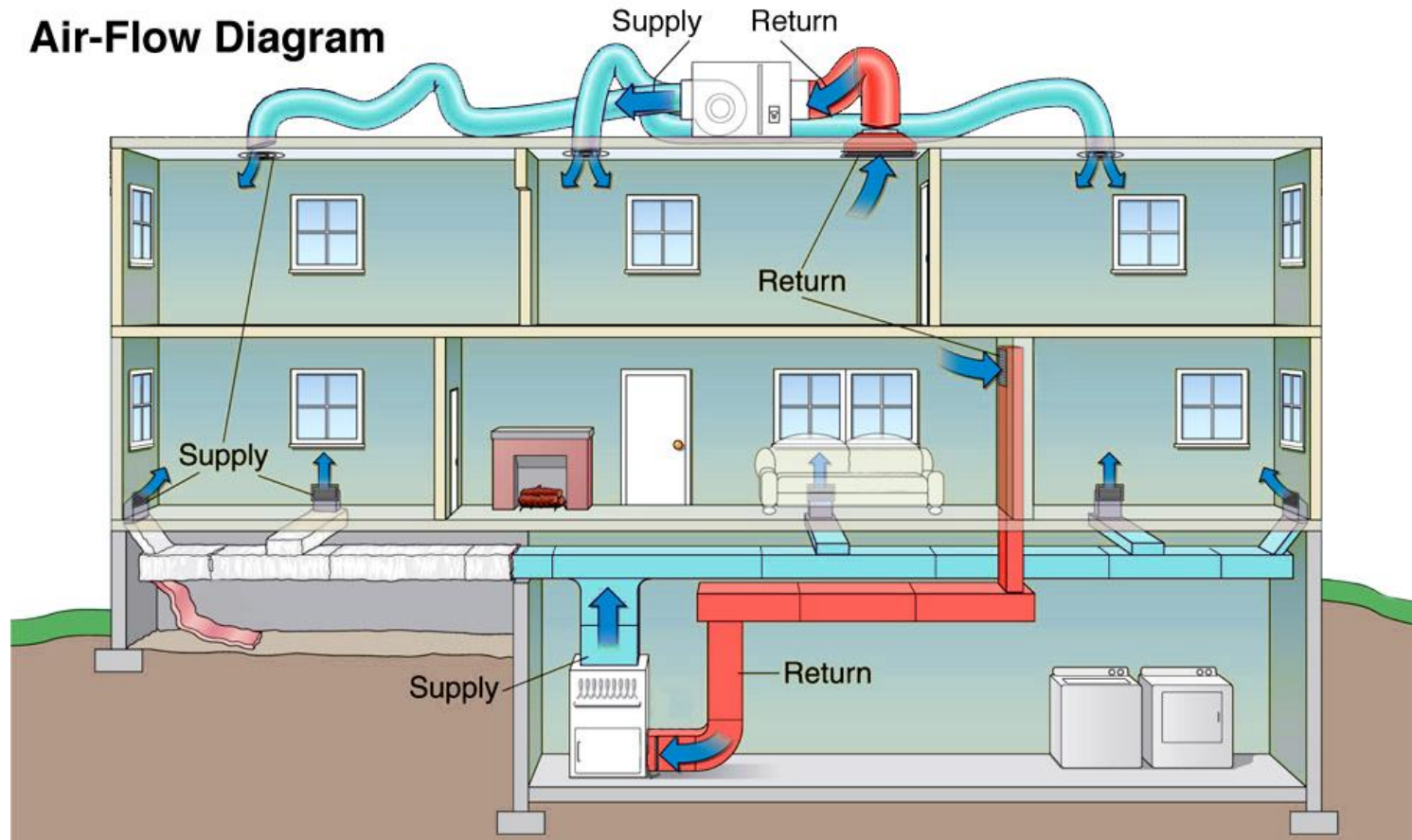


# HVAC Systems

## Heating Ventilation and Air Conditioning Systems (HVAC)

- Function is transport heated or cooled air through a building.
- Types -
  - Heat Pumps, Boiler Units, Chiller Systems;
  - Variable Air Volume, Return Air Units, Air Handling Units, Geothermal Systems, Ductless, Split Systems, Fan Coil Units;
  - Heater Units – Radiator, Heater Units:
  - Window/Wall Mounted A/C Units.

# HVAC Systems



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# HVAC Systems



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# Building Component Substrates

- Once a moisture intrusion event occurs, it is important to clean and dry the impacted materials within 24 to 48 hours of the event by means of Mitigation.

## Mitigation –

- Reasonable and prudent steps taken under the terms of an insurance policy to limit loss (preserve, protect and secure property) from further damage.
- Procedures to prevent mold development or growth.



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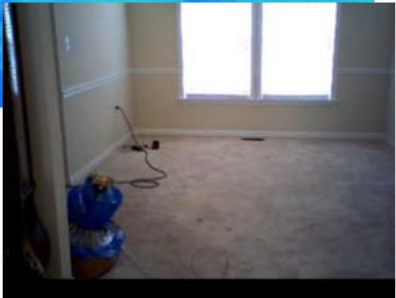
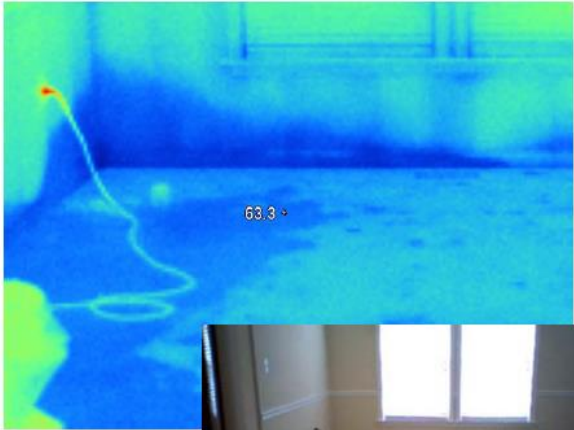


# Building Component Substrates

- Delayed Maintenance can compound problems.
- Tightly sealed buildings have no natural way of drying themselves (unconditioned spaces).
- Time length of saturation  
24-48 hours - Mitigation  
+48 hours - Remediation  
Type of Mold that Develops  
Depends on Duration of  
Saturated Conditions



# Moisture Equipment



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# MOLD REMEDICATION

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# Remediation Planning

**Mold Remediation** – Is the removal, cleaning, sanitizing, demolition, or other treatment, including preventive activities, or mold or mold contaminated matter.

- No. 1 – Repair the leak or source of moisture.
- Select Certified/Qualified Remediation/Abatement Contractor.
- Clear Understanding of Scope of Work/Work Areas.
- What is the size of the project, Order of Work Progress.
- Schedule, Coordination with Occupants/Owner/Tenants.
- Equipment Needs, Containment, HEPA Air Filtration Units, Tools, Poly Sheeting, Cleaning Products (SDSs).

# Protecting Occupants During Remediation

- Isolate the work area with polyethylene sheeting
- Cover all supply and return ducts in the area
- Turn off Air Handling Units or Seal Ventilation systems
- Set-up exhausts away from occupied areas
- Negative pressure (at least -0.02" wg)
- Mold Remediation Supervisor is to be present at all times remediation activities are being conducted.

# Remediation Methods

Follow Guidelines Established by Federal or State Agencies:

- EPA - Mold Remediation in Schools and Commercial Buildings, 2008
- OSHA - A Brief Guide to Mold in the Workplace, 2013
- DC – DOEE – Title 20 Chapter 32
  
- Established agencies/organizations:
  - ANSI/IICRC S520 Standard and Reference Guide for Professional Mold Remediation, 2015
  - Bioaerosols: Assessment and Controls, American Conference of Governmental Industrial Hygienists, 1999

# Containment Types

- Limited Containment: Use polyethylene-sheeting ceiling to floor around affected area with a slit entry and covering flap; maintain area under negative pressure with HEPA filtered fan unit. Block supply and return air vents within containment area.
- Full Containment: Use two layers of fire-retardant polyethylene sheeting with one airlock chamber. Maintain area under negative pressure with HEPA filtered fan exhausted outside of building. Block supply and return air vents within containment area.



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# Cleanup Method

- Method 1: Wet vacuums are vacuum cleaners designed to collect water. They can be used to remove water from floors, carpets, and hard surfaces where water has accumulated. They should be used only when materials are still wet—wet vacuums may spread spores if sufficient liquid is not present.
- Method 2: Mold can generally be removed from non-porous (hard) surfaces by wiping or scrubbing with water, or water and detergent. These surfaces should be dried quickly and thoroughly to discourage further mold growth.

# Cleanup Method

- Method 3: HEPA (High-Efficiency Particulate Air) vacuums are recommended for final cleanup of remediation areas after materials have been thoroughly dried and contaminated materials removed. HEPA vacuums are also recommended for cleanup of dust that may have settled on surfaces outside the remediation area.
- Method 4: Building materials and furnishings that are contaminated with mold and are not salvageable should be double-bagged using 6-mil polyethylene sheeting. Large items that have heavy mold should be covered with polyethylene sheeting and sealed with duct tape before they are removed from the containment area.



# Post Remediation



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# Post Remediation

- Fixed the moisture or water intrusion issue.
- Work areas should be clean, visibly free of obvious visible mold and/or water impacted materials.
- Materials should be returned to normal moisture conditions.
- Post Remediation Assessments should be performed prior to removal of containment system.
- Post Remediation/Verification Assessment
  - Observations, Moisture Testing, Air/Surface Sampling, Review of documented repairs, Recommend further work if necessary, Final Report Preparation.

# Preventative Measures

- Keep indoor relative humidity between 20-60%
- EPA – 30-50%
- Maintain all mechanical systems according to manufacturer guidelines, including regular routine maintenance.
- Replace air filters as recommended by the manufacturer.
- Fix all sources of moisture intrusion as soon as they are identified.
- Vent all combustion appliances outside of the building

# Cleaning HVAC System and Ducts

If high air spore counts levels are reported or if there is obvious mold associated with the HVAC system or its components, then the HVAC system and ducts should be professionally cleaned.

The National Air Duct Cleaners Association (NADCA) is the most commonly cited reference for cleaning.

Clear Understanding of Air Flow within a Building!!

- Where is the Air coming from and being exhausted or recycled.

# ANY QUESTIONS?

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# Contact Information

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**Thank you for your time!**

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# BUILDING SYSTEMS RESILIENCY RETRO COMMISSIONING FOR RELIABILITY

SAME DC POST - JOINT BASE ANDREWS WORKSHOP & BUSINESS BRIEFING

N|V|5

## JERRY BAUERS, PE, NEBB CP



**Principal-in-Charge**

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- Resiliency ...anticipate, prepare for, and adapt to utility disruptions and changing environmental conditions, and to withstand, respond to, and recover rapidly ....disruptions while continuing normal operations.

Figure 1-1: FY 2017 DoD Progress Toward Installation Energy and Water Goals

	<p><b>Reduce Facility Energy Intensity</b>                      (Total facility energy consumed/Total GSF of facility space)                      EO 13693: -2.5% annually to -25% by FY25 (Baseline Year FY15)</p>	<p>Army: -9.6%                      Navy: -5.0%                      USMC: -9.8%                      Air Force: -4.6%</p>	<p>DoD: -6.4%                      (Goal: -5.0%)</p>
	<p><b>Consume More Electric Energy From Renewable Sources</b>                      (Total RE consumed/Total facility electricity consumed)                      EO 13693: 10% (FY16-17), +2% per year (FY18-25), 30% by FY25</p>	<p>Army: 8.4%                      Navy: 2.7%                      USMC: 10.5%                      Air Force: 6.7%</p>	<p>DoD: 5.9%                      (Goal: 10%)</p>
	<p><b>Produce or Procure More Energy From Clean Sources</b>                      (Total RE + Alternative energy/Total facility energy consumed)                      EO 13693: 10% (FY16-17), +1.5% per year (FY18-25), 25% by FY25</p>	<p>Army: 7.2%                      Navy: 16.2%                      USMC: 10.8%                      Air Force: 5.9%</p>	<p>DoD: 15.8%                      (Goal: 10%)</p>
	<p><b>Reduce Potable Water Intensity</b>                      (Total potable water consumed/Total GSF of facility space)                      EO 13693: -2% per year (FY08-25), -36% by FY25 (Baseline year FY07)</p>	<p>Army: -32.0%                      Navy: -18.1%                      USMC: -39.6%                      Air Force: -24.1%</p>	<p>DoD: -26.9%                      (Goal: -20%)</p>

# Results from Retrocommissioning in the Federal Facilities

Restoring existing building systems to  
reliable & energy efficient facilities



- 22 Operating Air National Guard Bases
- 4 Operating Air Force Bases
- 10 Operating VA Hospital Campuses



+



**The Challenge**



- Mandated Energy/Water Savings
- Maintenance Backlog
- Operations Team
- Demonstrated Performance



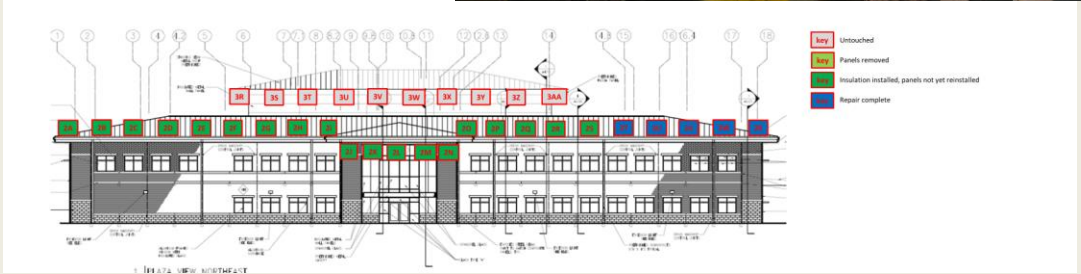
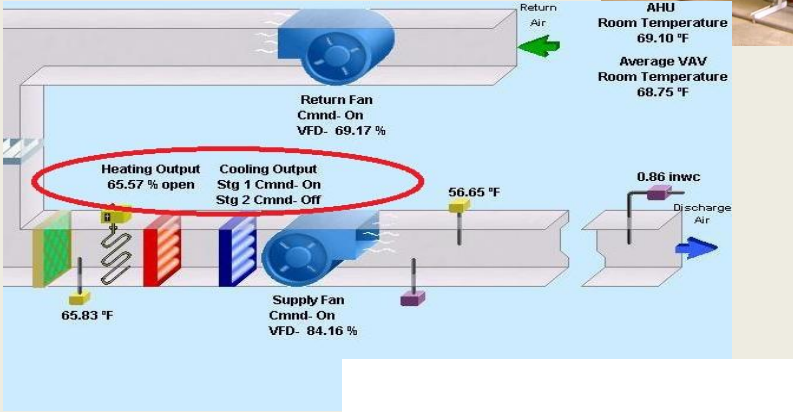
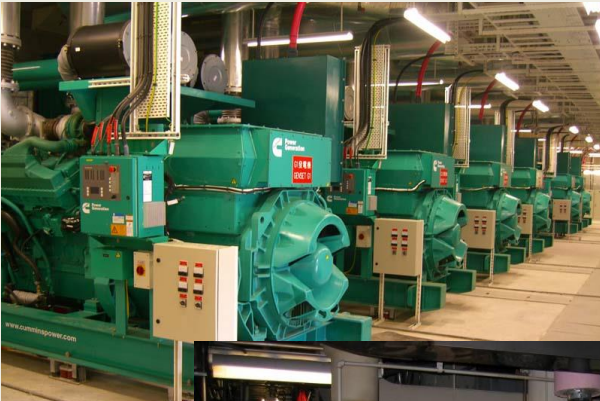
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## The Challenge



1. Mechanical System Failures
2. Emergency Power System Capacity Issues
3. Emergency Power System Failures
4. Envelope Failures



# Existing Conditions

# Critical Systems

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1. Emergency Power
2. Renewables: Solar/Wind/Battery Back Up
3. Air Handling Units:
  - a. Air Filtration (CBR)
  - b. Equipment Cooling
  - c. Personnel Comfort
4. Central/Distributed Heating/Cooling

## Investigation



1. Execute Repairs/Upgrades
2. Commission Results
3. Quantify Impacts (Energy & Operations)
4. Training: Sustainable Ops Practices
  - a. Preventive Maintenance
  - b. Periodic Validation – Critical Systems Failure Response

**Implementation**



- 121 recommendations in 4 buildings
  - 94 implemented, 27 deferred
  - 20 have direct energy impacts
    - Cost for Implementation: \$3,675
    - Immediate Annual Savings: \$15,514
    - Annually avoiding: 46,046 kWh, 12,127 therms
- *Reliability Improvements/Energy Savings/Comfort Improvements*

Results from Fargo, Hector Field



**Total RetroCx Savings**

Site	Implementation Cost \$	Annual Energy and Water	Water (1000's Gallon)	MMBTU	GHG Reduced (MT CO <sub>2</sub> e)	Simple Payback
Decatur	\$301,686	\$225,488	-1,992	16,439	3,225	1.3
Augusta Downtown	\$583,764	\$226,051	0	14,722	1,887	2.6
Augusta Uptown	\$671,313	\$325,002	5,162	15,911	2,283	2.1
Birmingham	\$738,700	\$822,579	14,157	24,492	5,537	1
Charleston	\$730,495	\$281,103	44	18,903	1,995	2.6
Columbia	\$1,546,442	\$376,722	5,119	11,598	1,322	4.1
Dublin	\$450,855	\$164,456	657	9,979	911	2.7
Montgomery	\$741,080	\$160,170	-17	9,960	1,956	4.6
Tuskegee	\$1,290,173	\$497,071	3,191	29,513	3,124	2.6
Tuscaloosa	\$543,500	\$408,750	4,916	17,207	5,768	1.3
<b>VISN Summary</b>	<b>\$7,598,008</b>	<b>\$3,487,392</b>	<b>31,237</b>	<b>168,724</b>	<b>28,008</b>	<b>2.18</b>
<b>RCx Program Fee</b>	<b>\$3,505,669</b>			<b>Overall Program Simple Payback</b>		
<b>Total Program Cost and Savings</b>	<b>\$11,103,677</b>	<b>\$3,487,392</b>		<b>3.18</b>		

## Results Southeast Region, VA Hospitals

# DISCUSSION

N|V|5





# ELECTRICAL RESILIENCE IN VERTICAL CONSTRUCTION

KYLE S. URDA, PE, LC - ASSOCIATE / SENIOR ELECTRICAL & FIRE PROTECTION ENGINEER  
SUMMER CONSULTANTS, INC., MCLEAN, VA





# A TIMELY TOPIC



“Whitfield and senior engineer Alan Dalton briefed the Council on the impact of the sudden storm that, despite its brevity, has been classified as a ‘100-year storm’ for infrastructure evaluation and insurance purposes.

Whitfield said that it is **becoming the norm for the region to experience one or two above 100-year storms every year** as global climate change takes its toll. According to the EPA, a 100-year storm is one that is expected to occur once every 100 years.”

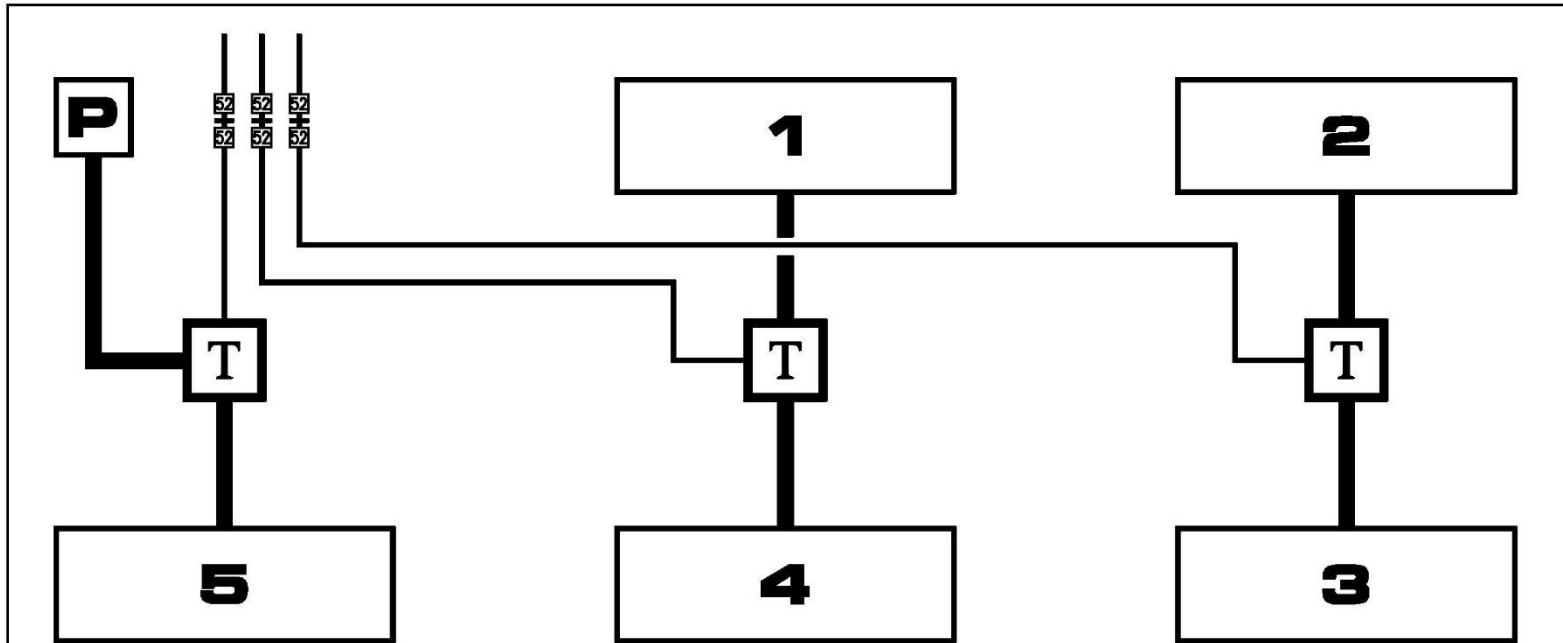
*Falls Church News-Press, 17 July 2019,  
Nicholas F. Benton*

# DISTINCT TYPES OF POWER DISTRIBUTION

- Simple Radial
- Modern Simple Radial
- Modified Modern Simple Radial
- Loop Primary
- Banked Secondary\*
- Primary Selective
- Secondary Selective
- Modified Secondary Selective
- Simple Network\*
- Spot Network



# SIMPLE RADIAL



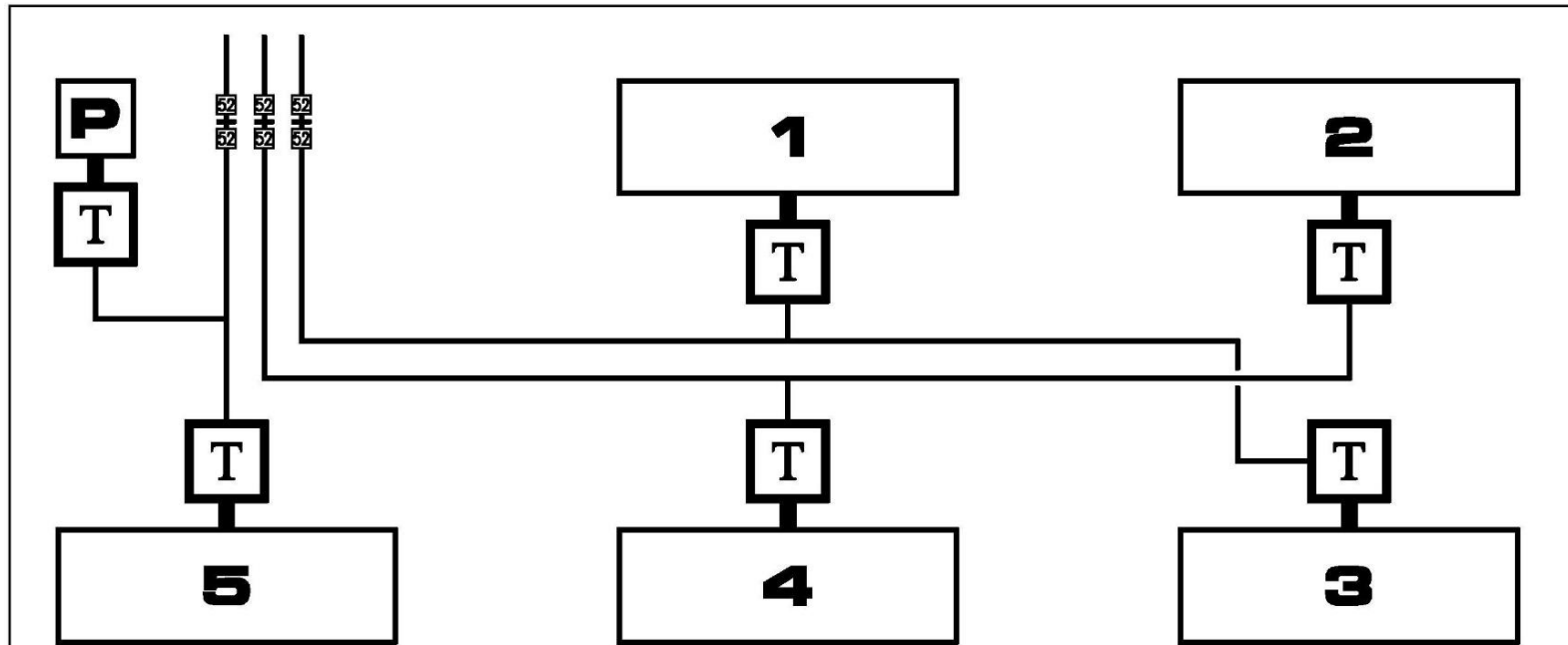
- Large transformers
- Long secondary runs
- Landscape architects don't appreciate it

## SCORECARD: SIMPLE RADIAL

SERVICE CONTINUITY	X	TRANSFORMER FAULT	X	FUTURE LOAD SWITCHING	X
PRIMARY BUS FAULT	X	FULL LOAD BALANCE	X	COST	A
FEEDER FAULT	X	EMERGENCY BALANCE	X	MAINTAINABILITY	X



# MODERN SIMPLE RADIAL

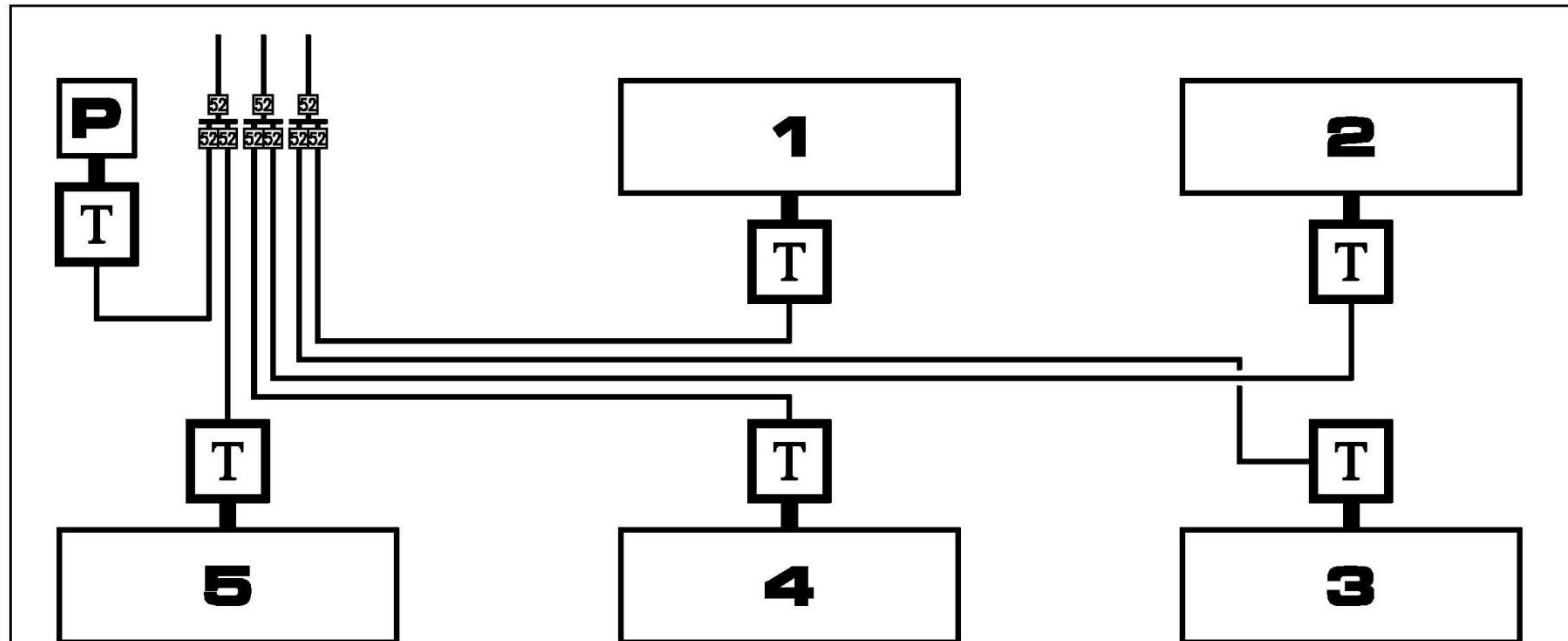


- Assigns one transformer per building

## SCORECARD: MODERN SIMPLE RADIAL

SERVICE CONTINUITY	<b>X</b>	TRANSFORMER FAULT	<b>X</b>	FUTURE LOAD SWITCHING	<b>X</b>
PRIMARY BUS FAULT	<b>X</b>	FULL LOAD BALANCE	<b>O</b>	COST	<b>A</b>
FEEDER FAULT	<b>X</b>	EMERGENCY BALANCE	<b>X</b>	MAINTAINABILITY	<b>X</b>

# MODIFIED MODERN SIMPLE RADIAL



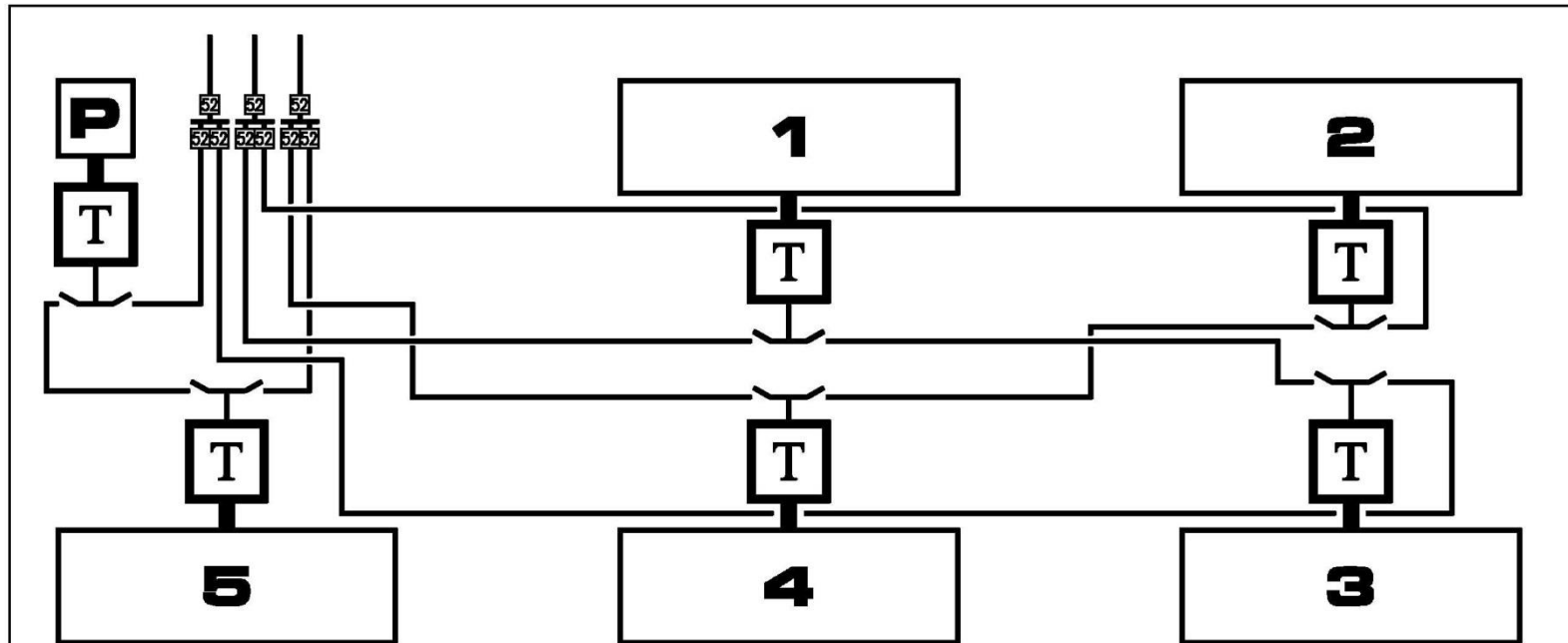
- Adds additional output breakers and feeders

## SCORECARD: MODIFIED MODERN SIMPLE RADIAL

SERVICE CONTINUITY	<b>X</b>	TRANSFORMER FAULT	<b>D</b>	FUTURE LOAD SWITCHING	<b>X</b>
PRIMARY BUS FAULT	<b>X</b>	FULL LOAD BALANCE	<b>O</b>	COST	<b>A-</b>
FEEDER FAULT	<b>D</b>	EMERGENCY BALANCE	<b>X</b>	MAINTAINABILITY	<b>X</b>



# LOOPED PRIMARY

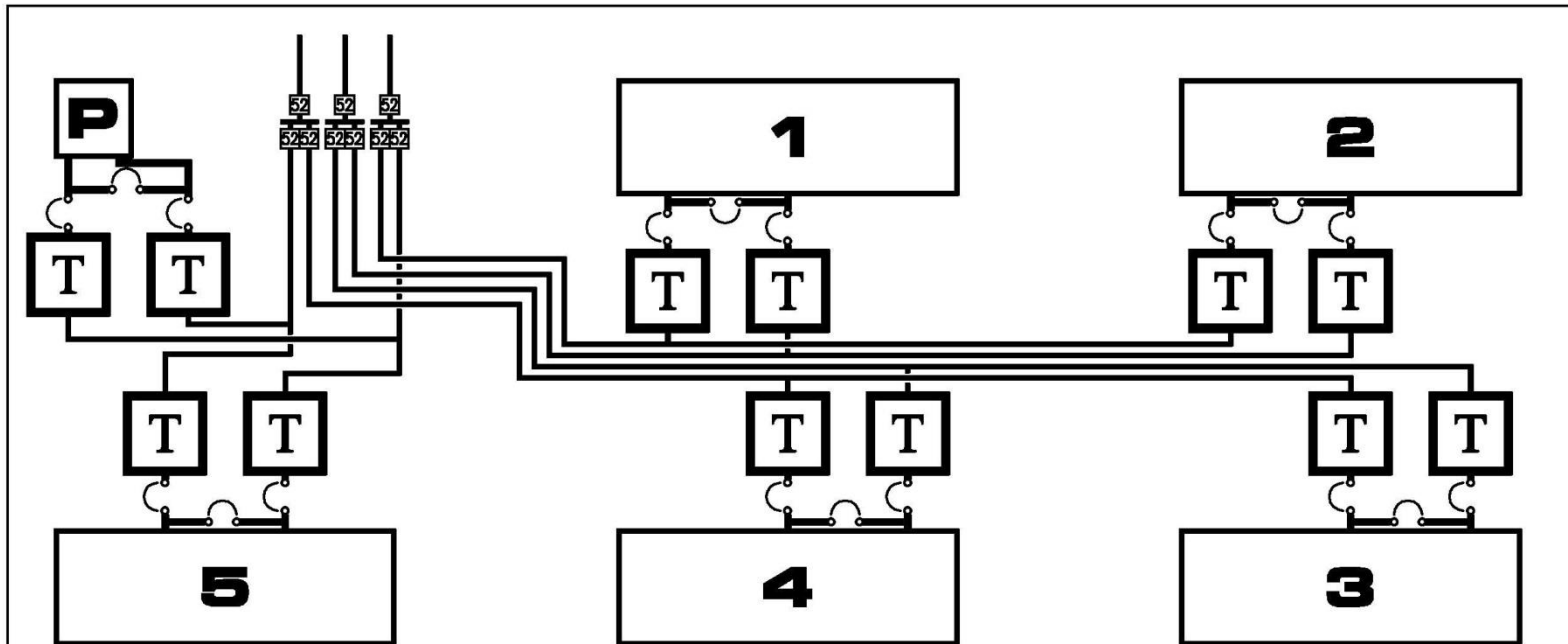


- Could use breakers to automate restoration of power
- Small loops result in greater reliability

## SCORECARD: LOOPED PRIMARY

SERVICE CONTINUITY	<b>0</b>	TRANSFORMER FAULT	<b>X</b>	FUTURE LOAD SWITCHING	<b>D</b>
PRIMARY BUS FAULT	<b>0</b>	FULL LOAD BALANCE	<b>0</b>	COST	<b>B</b>
FEEDER FAULT	<b>0</b>	EMERGENCY BALANCE	<b>D</b>	MAINTAINABILITY	<b>D</b>

# SECONDARY SELECTIVE

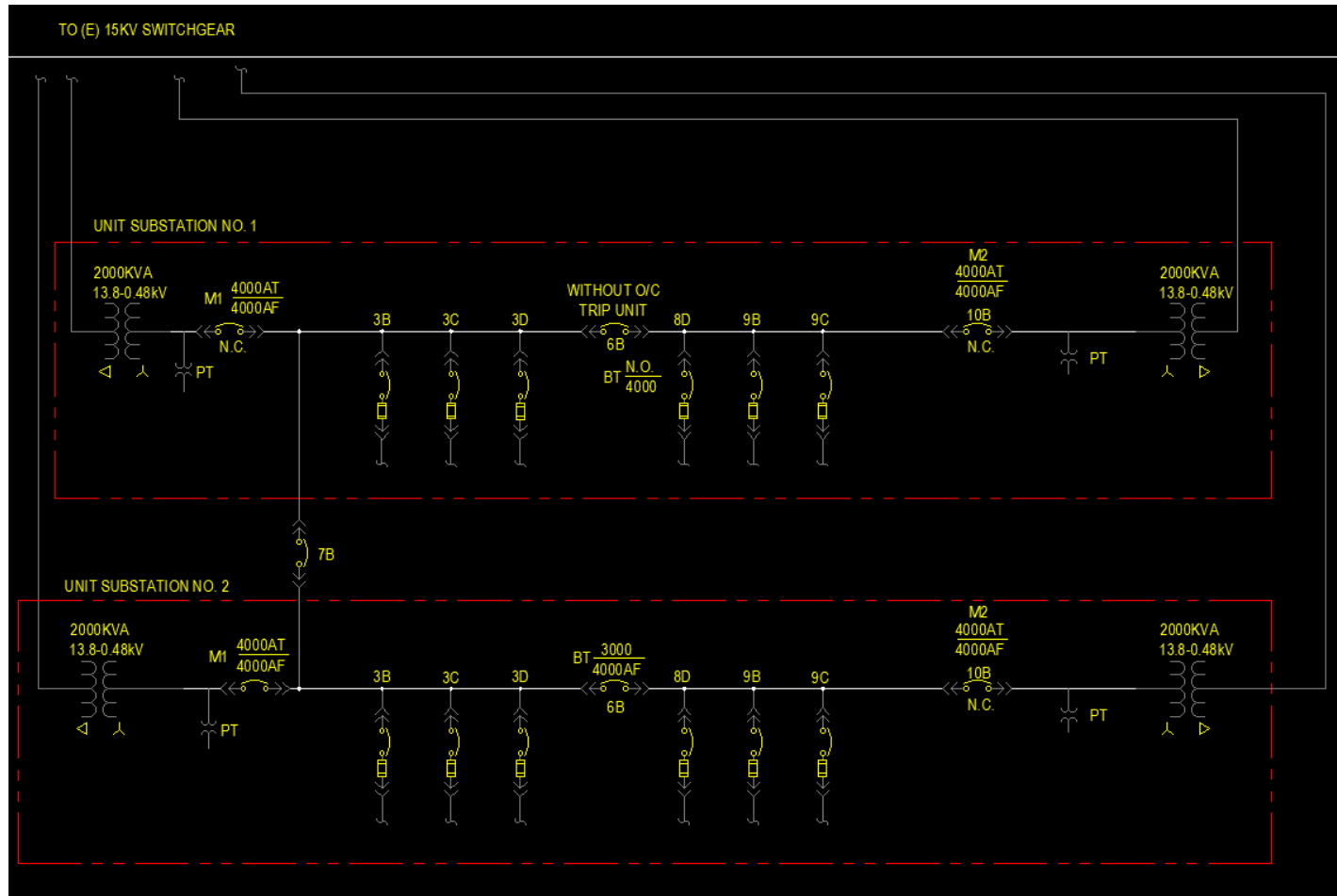


- Classic main-tie-main
- Will see blip on loss of power and return

## SCORECARD: SECONDARY SELECTIVE

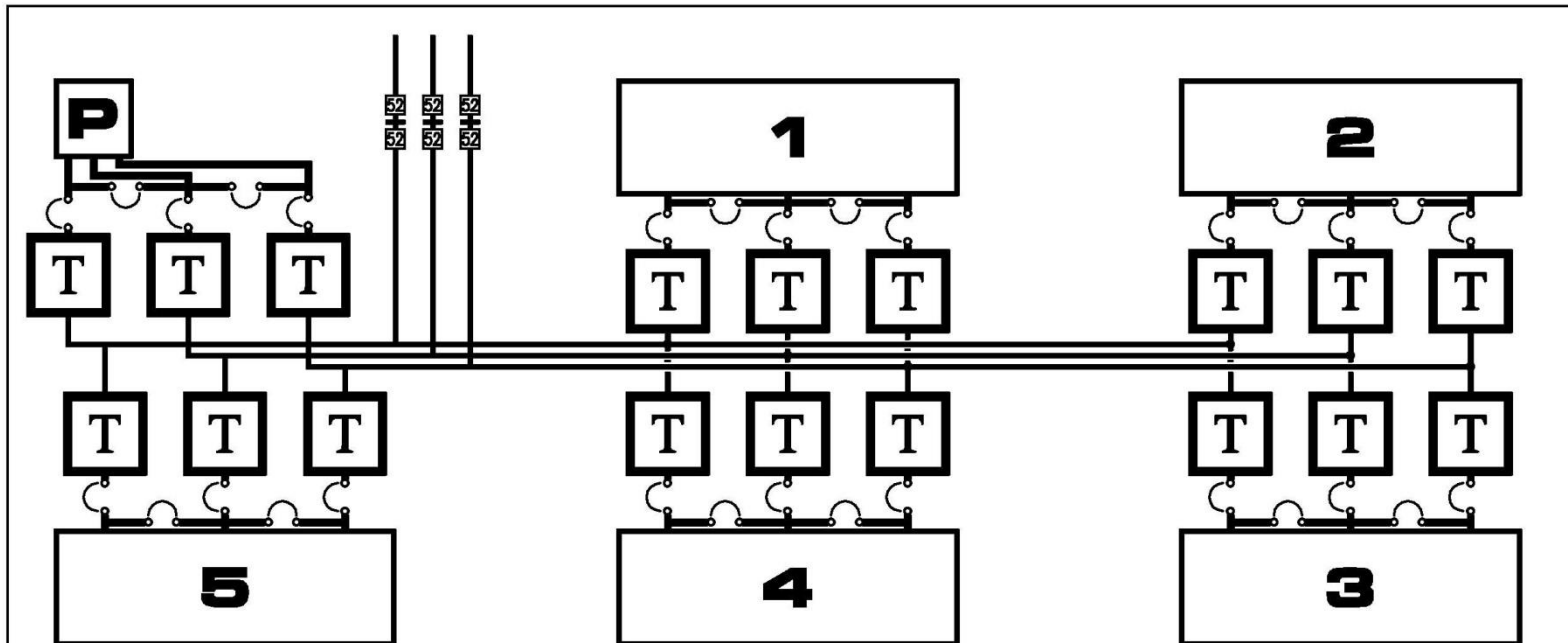
SERVICE CONTINUITY	<b>D</b>	TRANSFORMER FAULT	<b>D</b>	FUTURE LOAD SWITCHING	<b>C</b>
PRIMARY BUS FAULT	<b>D</b>	FULL LOAD BALANCE	<b>D</b>	COST	<b>D</b>
FEEDER FAULT	<b>D</b>	EMERGENCY BALANCE	<b>D</b>	MAINTAINABILITY	<b>D</b>

# MODERN SECONDARY SELECTIVE



- Builds on secondary selective by cross connection of secondary

# SPOT NETWORK

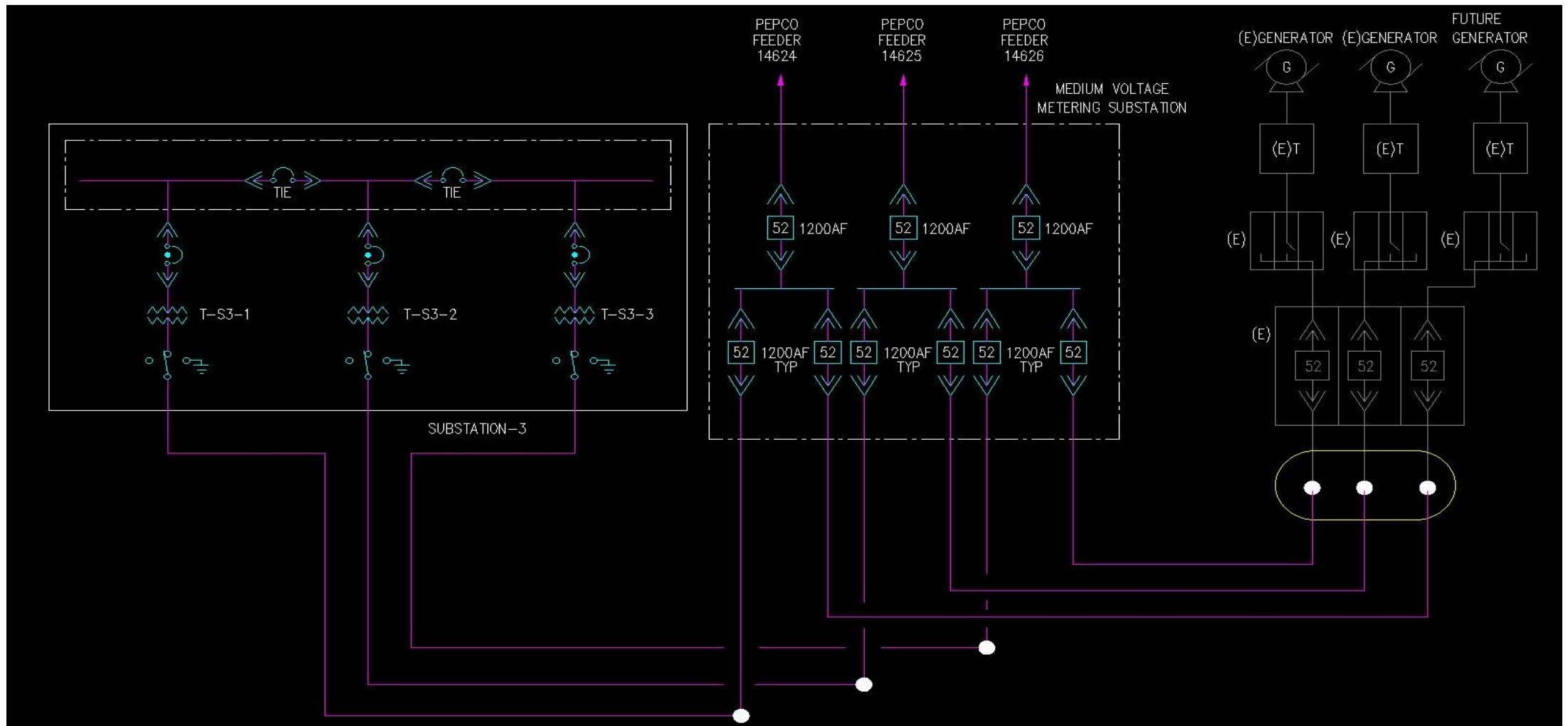


- Ties are typically closed
- Each building connected to all feeders
- Transformers sized for N+1
- Requires sophisticated owner/operator

## SCORECARD: SPOT NETWORK

SERVICE CONTINUITY	<b>A</b>	TRANSFORMER FAULT	<b>A</b>	FUTURE LOAD SWITCHING	<b>A</b>
PRIMARY BUS FAULT	<b>A</b>	FULL LOAD BALANCE	<b>A</b>	COST	<b>B</b>
FEEDER FAULT	<b>A</b>	EMERGENCY BALANCE	<b>A</b>	MAINTAINABILITY	<b>A</b>

# WITH GREAT POWER COMES... OPPORTUNITY



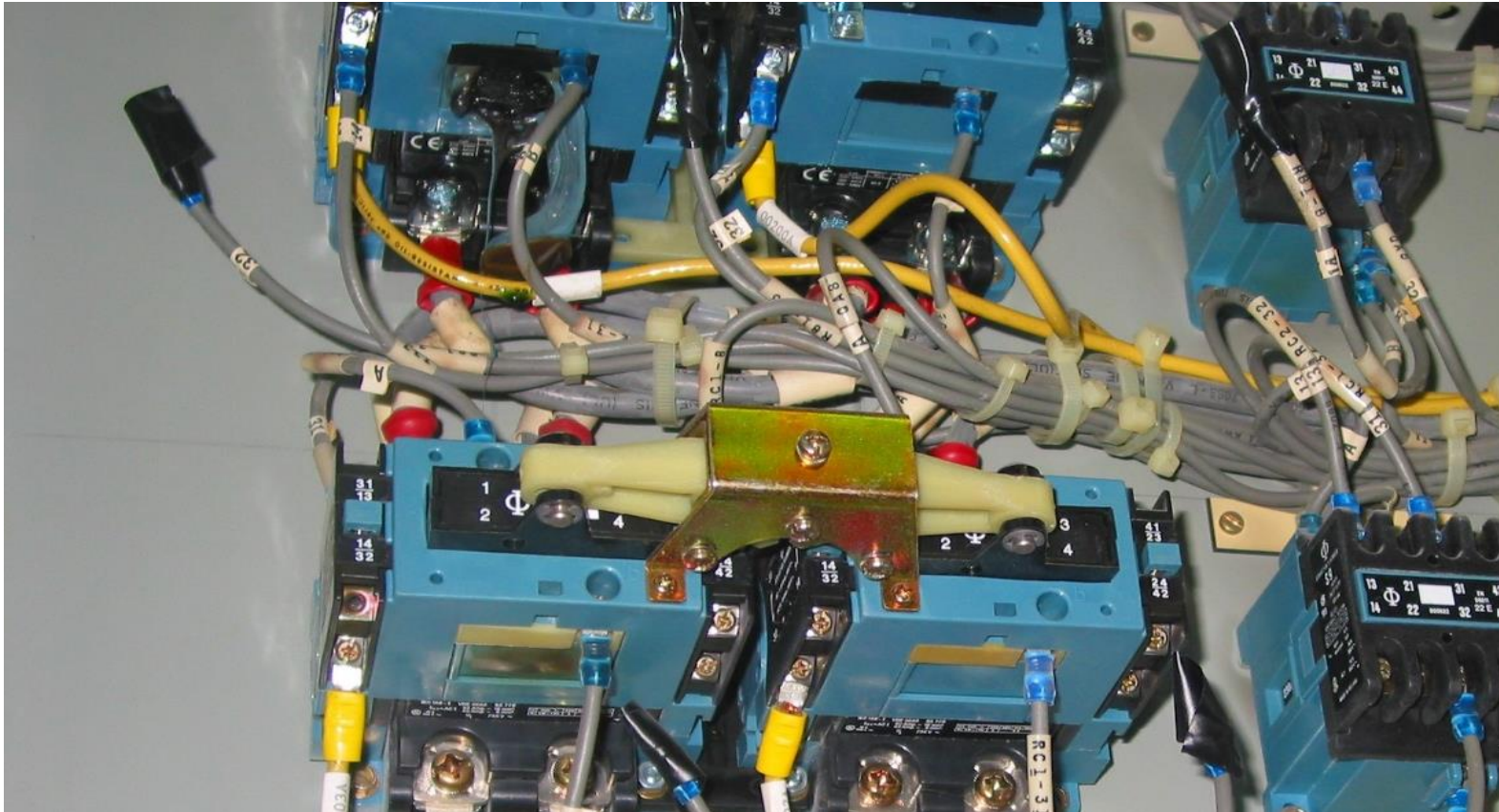
# LESSON LEARNED WATER LEAKS



- Waterproofing eventually leaks
- Think about what is above the slab or outside the building
  - Irrigation pipes
  - Planters
  - Snow melt



# LESSON LEARNED KEEP IT SIMPLE

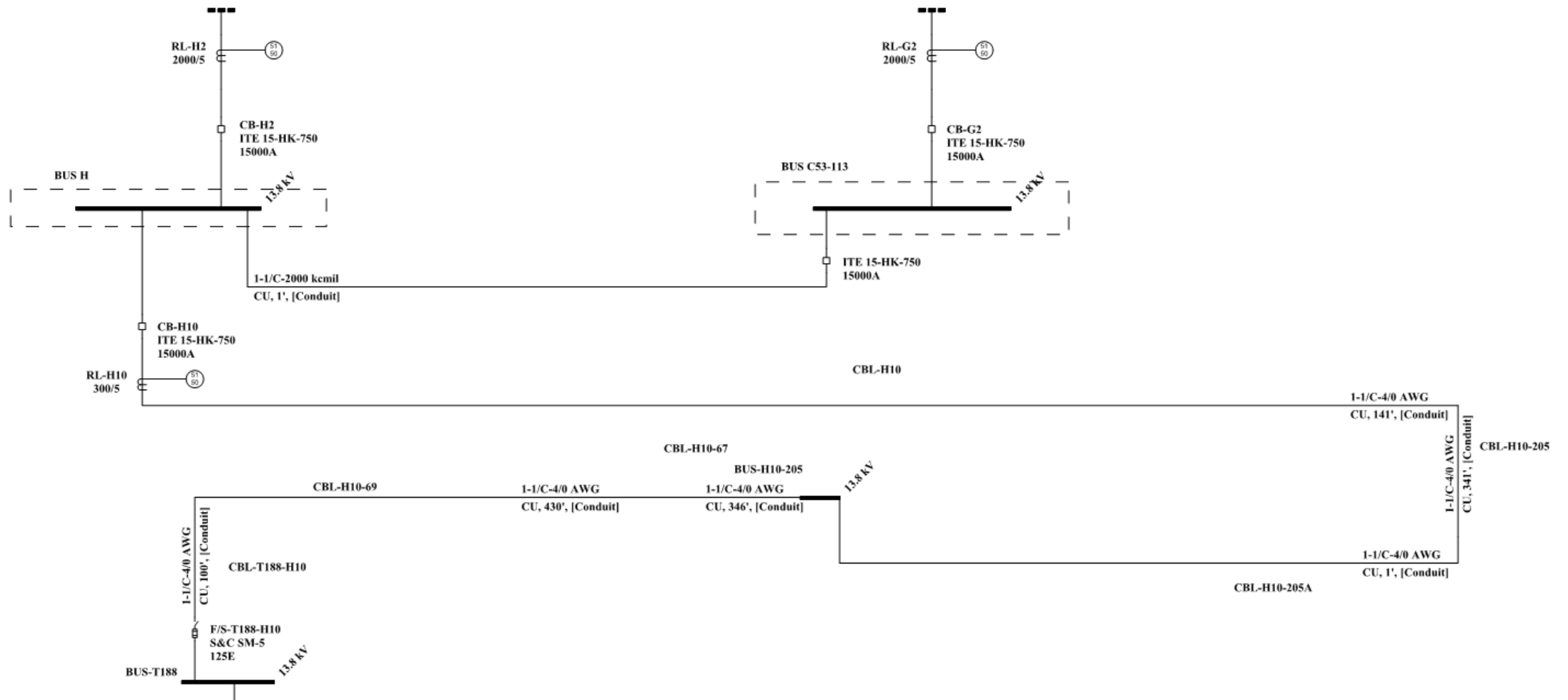


- Don't make it more complicated than it needs to be
- Programming gets lost
- Operators move on
- Just because a PLC **can** do it doesn't mean that it **should**
- Sometimes smarter = less resilient



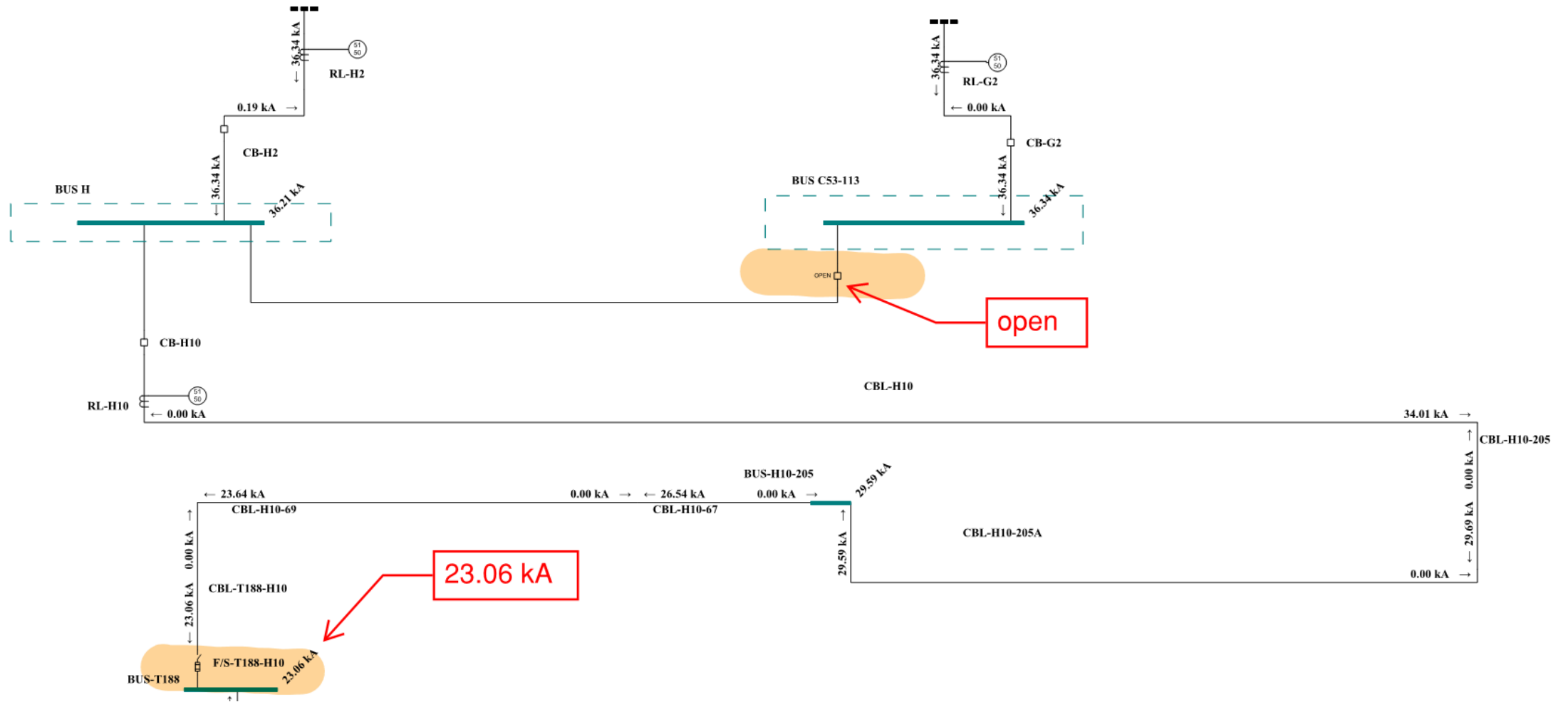
# LESSON LEARNED

## DISTRIBUTION SYSTEM RIPPLE EFFECT



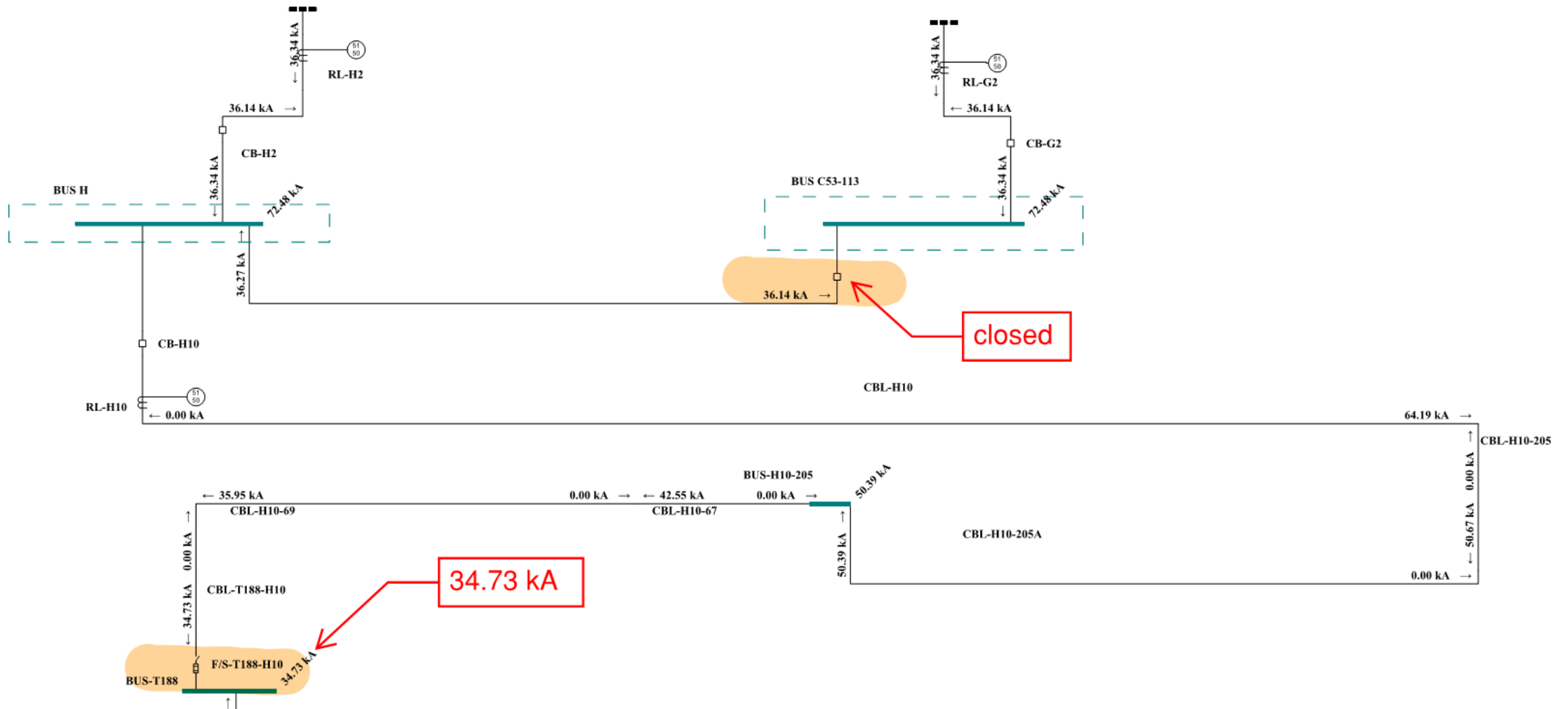
# LESSON LEARNED

## DISTRIBUTION SYSTEM RIPPLE EFFECT – TIE OPEN



# LESSON LEARNED

## DISTRIBUTION SYSTEM RIPPLE EFFECT – TIE CLOSED



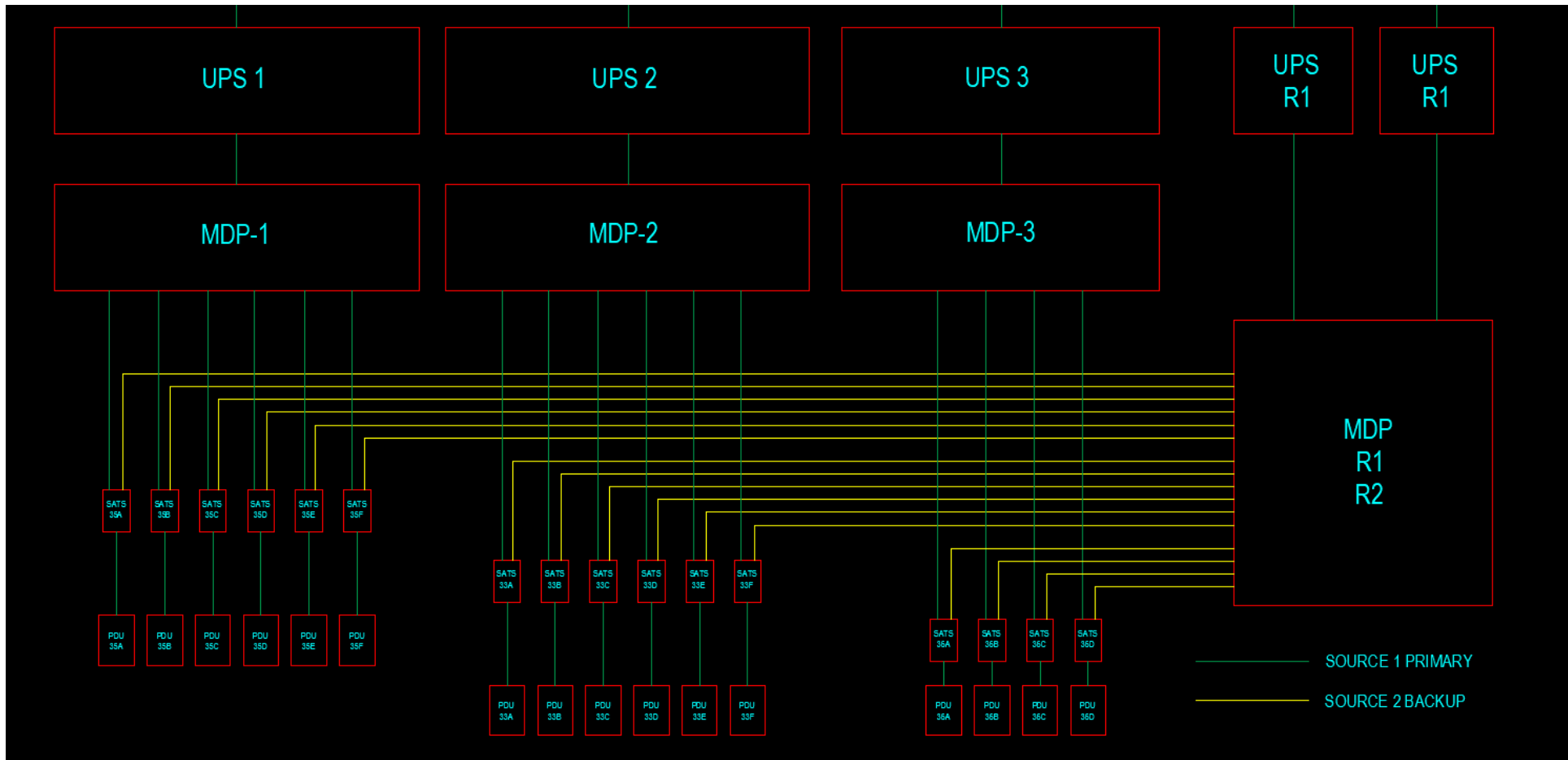
## LESSON LEARNED

# UPS NUANCES

- Ensure walk-in of charging current is specified and is programmed
  - Stall generators
  - Cause issues with breakers
- Lithium-ion batteries
  - 25% of the weight
  - Tolerate temperatures better
  - Better life span and energy density
- Understand modular N+1 configurations vs. true N+1 capabilities



# UPS CONFIGURATIONS N+1 (N+2)



# Airfield Resiliency

-Key Elements for JB Andrews and Military Airfields

Professional Development Training Session for:

SAME DC Post, Joint Base Andrews Technical Workshop

2 August 2019

# Agenda

- Airfield Resiliency
- Airfield Infrastructure and Airfield Operational Surfaces (AOS)
- Performance Requirements
- Mission Requirements of JBA and Other Bases
- Essentials for Airfield Planning, Design, & Construction
- Take Aways



# Safety Moment

Don't Touch This!



*Don't touch anything metal on an airfield.  
There is no electrical protection from shock or electrocution.*

# Airfield Resiliency

Resiliency: Webster's: "An ability to recover from or adjust easily to adversity or change" ..... and prosecute the mission!





# JBA Airfield Infrastructure Airfield Operational Surfaces (AOS)



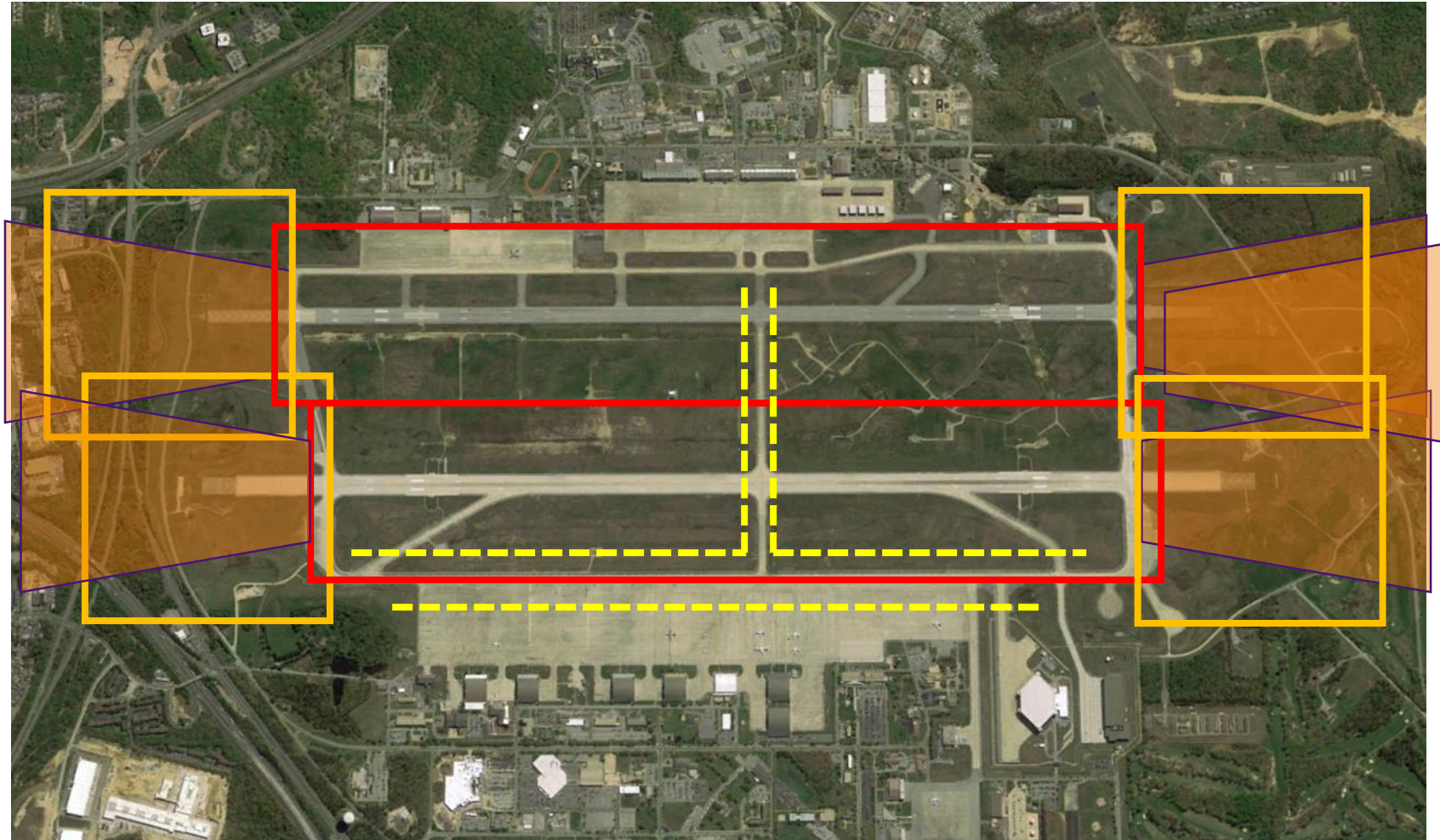


# AOS Guidance: Marking and Signage





# JBA: Airfield Infrastructure: Airfield Operational Surfaces (AOS)





# Imaginary Surfaces Provide Lateral Clearance Areas - Required for Safety. Mishaps Happen

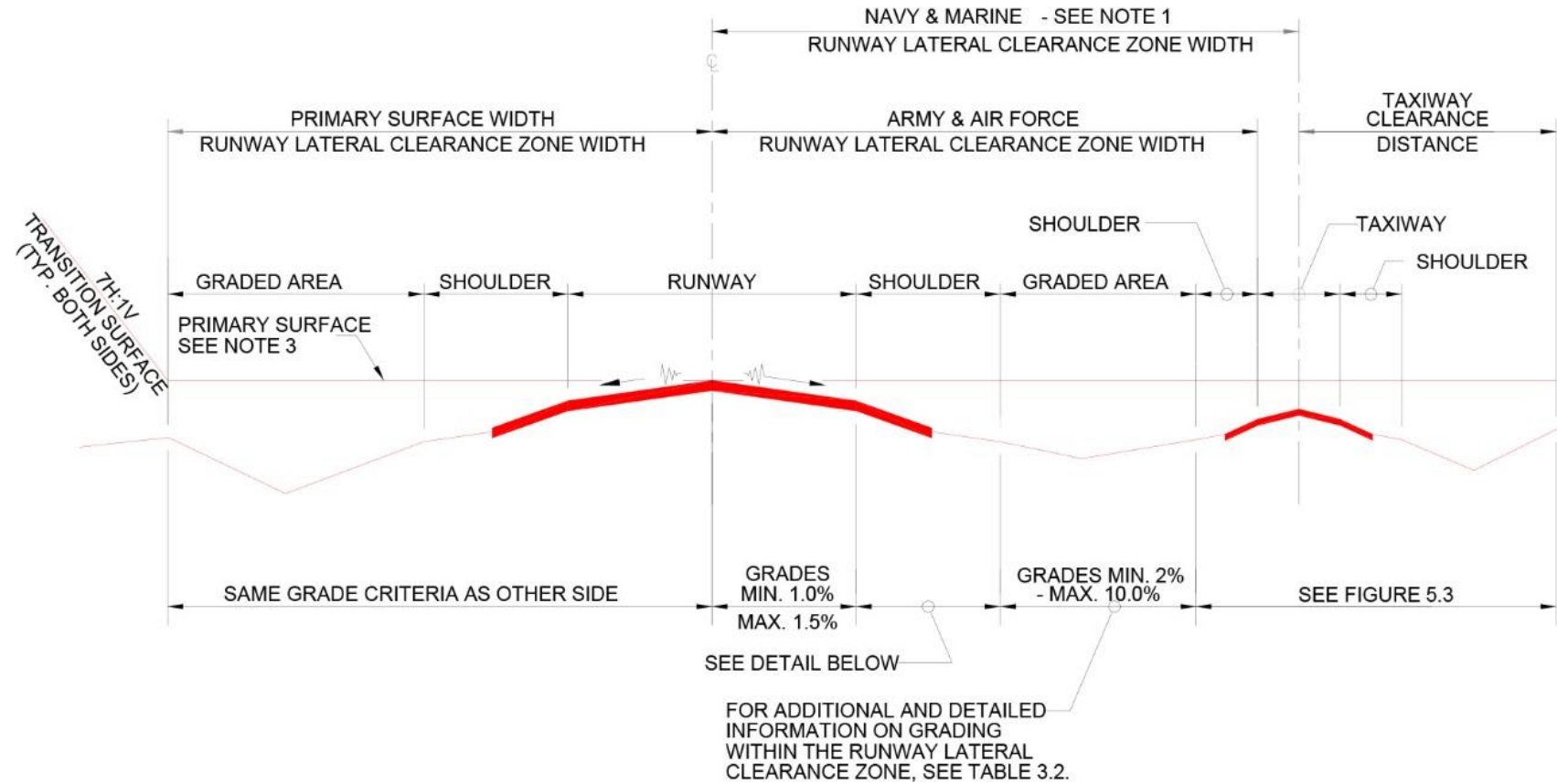
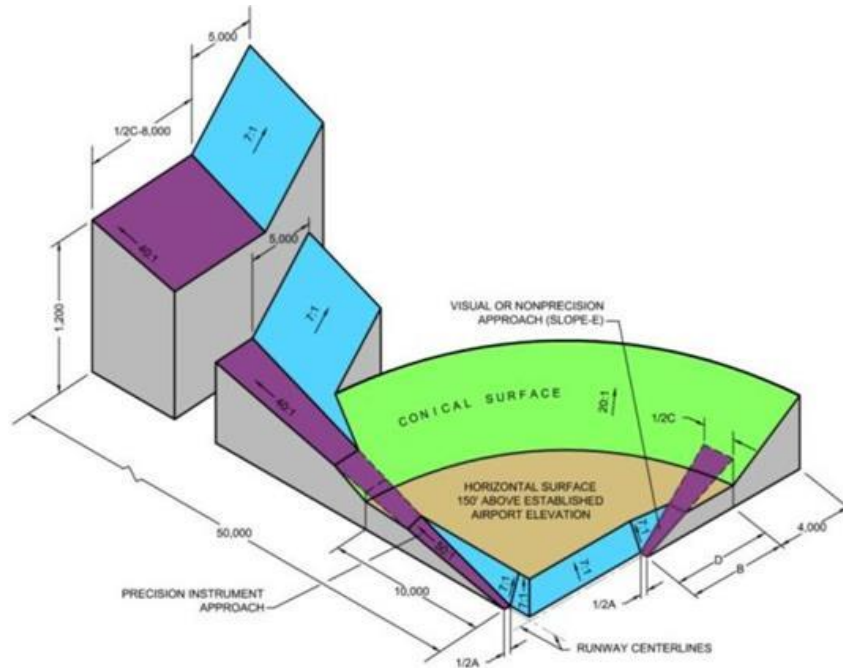


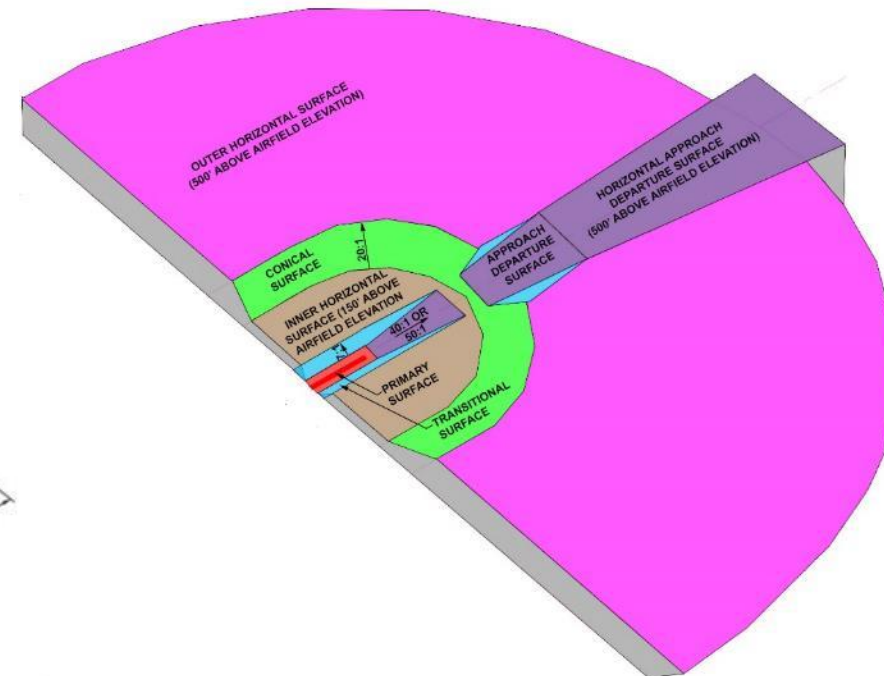
Image Credit: UFC 3-260-01

# AOS: Imaginary Surfaces - Airspace

- Imaginary surfaces surround the airfield not just at the runway end

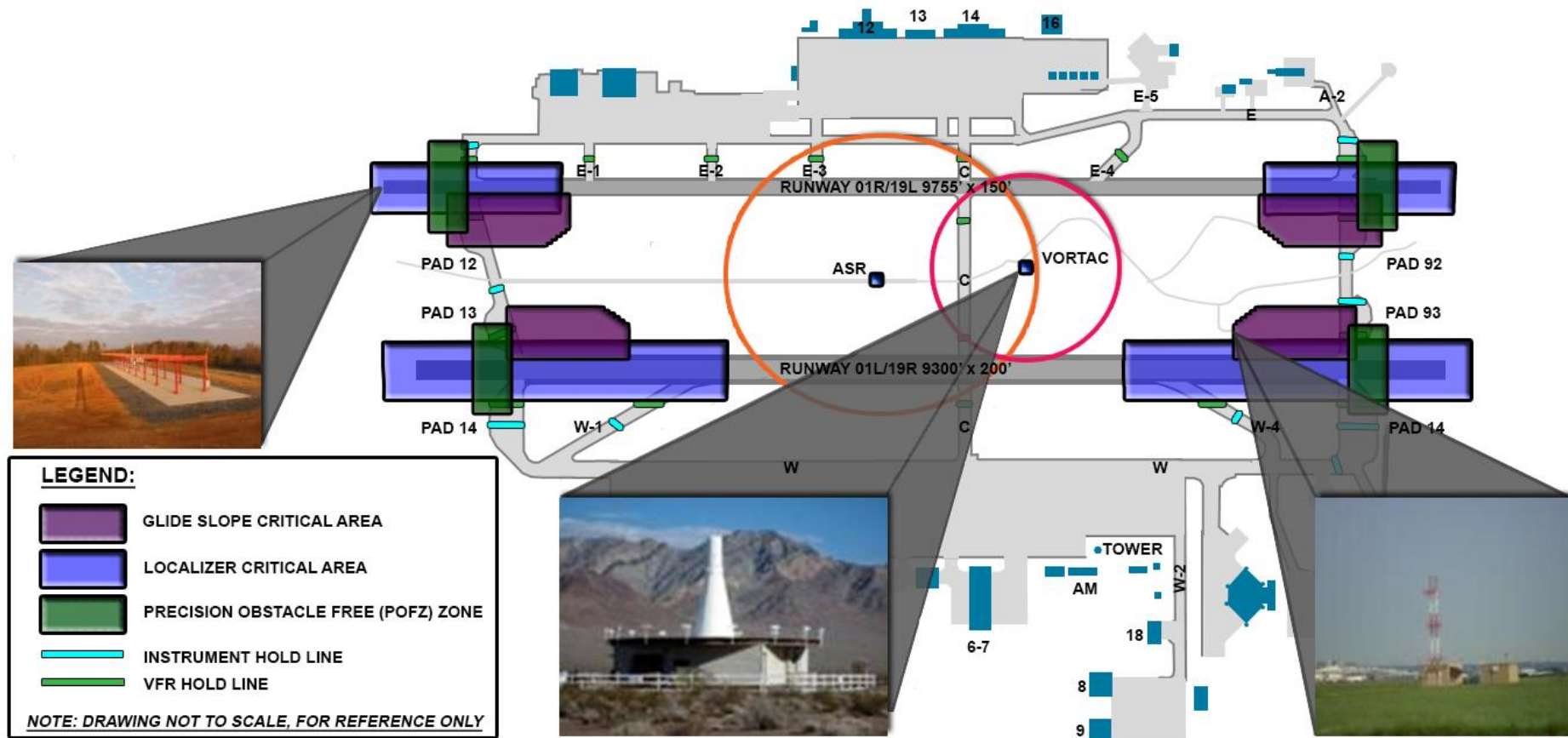


**FAA Airspace: 14 CFR 77**



**Military Airspace: UFC 3-260-01**

# NAVAID and Communications Require Clear Line of Site to Function: Critical areas are part of the AOS





# JBA Airfield Operational Surfaces (AOS) Extends for Miles from the Airfield



# Airfield Infrastructure Must be Resilient and Provide a High Level of Performance

- Pavements: Heavy weights, High Speeds, FOD Potential
  - Consequence of failure can be catastrophic
- Visual NAVAIDs-Lighting: Response must be immediate
- Instrument NAVAIDs and Comm: Require uninterrupted links
  - Google: “Category III Instrument Approach Video”. YouTube video to see how quickly critical flight decisions must be made.



# Airfield Infrastructure Conditions - Pavements



- **Current Andrews Airfield Remarks:**

- RSTD: RY 01L/19R SOUTH END UNDERRUN/OVERRUN UNUSABLE DUE TO PAVEMENT DEGRADATION.
- RSTD: ALL JET ACFT ARE ADVS TO TAXI S OF TWY SIERRA CNTRLN DUE TO PAVEMENT DEGRADATION.





# Airfield Infrastructure Conditions - NAVAIDs





# Airfield Infrastructure Conditions-Comm



# Joint Base Andrews: Same Resiliency Requirement. Unique missions require even higher performance

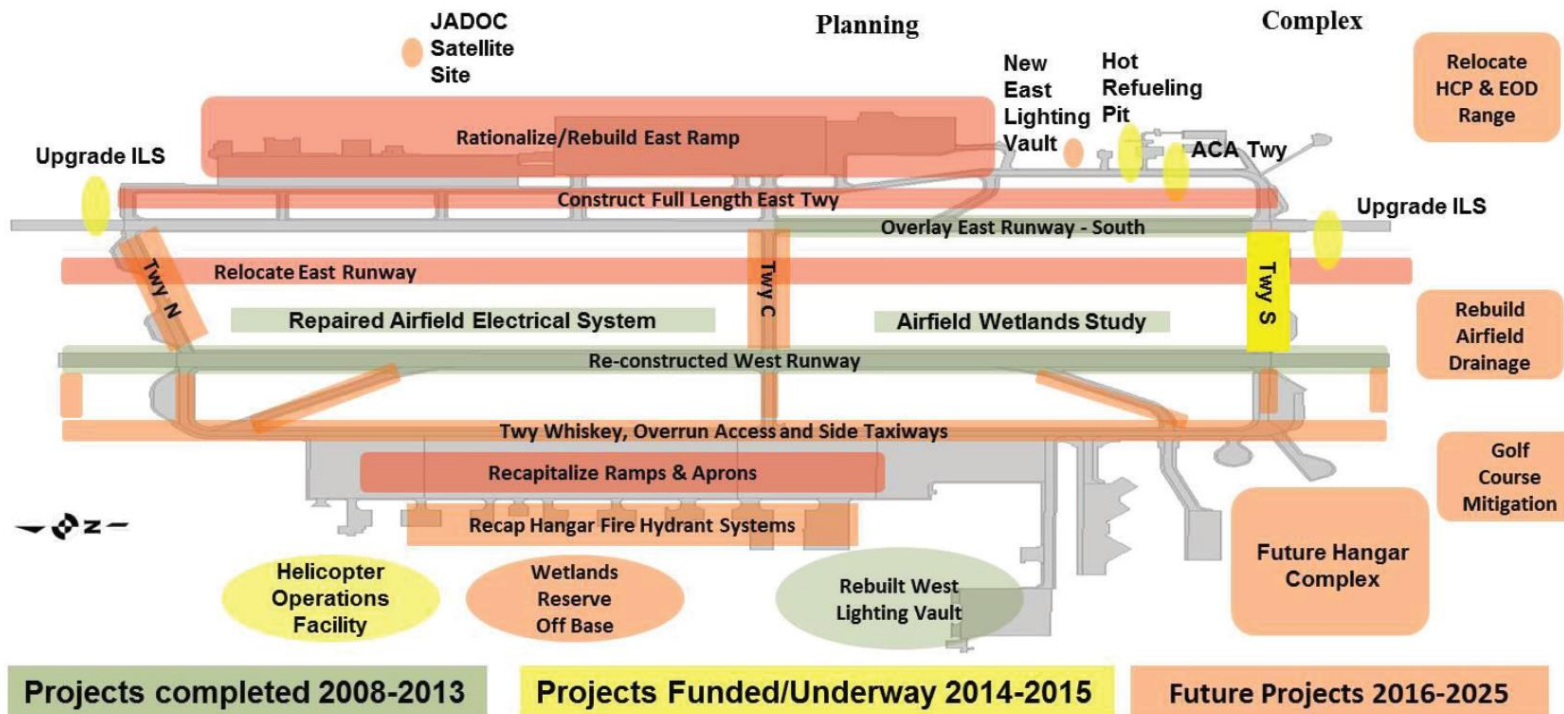
- All based flying squadrons have contingency missions
- No weather minimums for mission execution
- Airfield infrastructure to provide the highest level of performance to provide best capability to execute the mission
  - Pavement: Highest Strength, Durability, and Quality
  - NAVAIDS: Category IIIc Capability: “Zero-Zero” weather
  - Communications: Reliable, Secure
- Primary, Backup, Backup to Backup, and What Ifs



# Joint Base Andrews: Airfield Resiliency Elements Incorporated into the Airfield Re-Build Plan



## Rebuild America's Airfield



# Other Bases Require Similar Levels of Resiliency and Critical System Performance: No Fail Missions

- Whiteman AFB
  - The only B-2 base to reach out and touch someone
- Offutt AFB:
  - USSTRATCOM and Airborne National Command Post (ABNCP)
  - NAS Patuxent River, Travis AFB
- Overseas Bases in the AOR
  - “Troops in Contact” almost everyday



# Airfield Resiliency: Planning, Design, and Construction Essentials

- Planning is Key

- Runway(s) is the starting point for all facility planning.
- Operations coordination and advocacy is essential. Define mission requirements. Current standards often behind.
- Identify shortfalls and single points of failure for the mission

- Design

- Don't assume repair by replacement. For SRM: M = Modernize. Does not cost more.
- Sustainability = Reliability, Supportability, and Maintainability. Don't experiment.

- Construction

- Focus on sustaining the mission during the work. Operational phasing is typical for airfield construction. Mission relocation can be avoided.



## Airfield Resiliency Case: Langley AFB



Planning for Recapitalization of Runway 08-26



# Airfield Resiliency Take Aways

- Everything is based on the runway(s)
- Airfield critical infrastructure includes many elements that comprise the Airfield Operations Surfaces (AOS)
  - Most DOD airfield infrastructure is in a state of distress
- AOS elements must be resilient and perform at the highest level to meet mission requirements
- For all airfields, resiliency is a requirement
  - The mission of JBA requires a higher level of performance
- Look at not just the component for single points of failure but at the airfield system to provide infrastructure resiliency

# Thank You

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# Logistics in Large Organizations

Dr. Get Moy, Project Director  
AECOM Recovery

# Theoretical Treatment

- Level of sophistication/complexity
- Size
- Cost
- Command and Control
- Collateral Duties
- Relationship to Environment

# Academic Treatment?

- Service Levels
- Alternatives
- “Infrastructure” – Corporate Strategy
- “Managing” the Business
- Impact of Technologies

# Focus on a Hot Topic These Days

- Emergency Management
- Disaster Management
- Disaster Recovery
- Hazard Mitigation



# Characteristics

- Prepare
- Respond
- Recover
- Execute
- Sustain
- QA/QC
- Mitigate
- “Recalibrate”

# Measuring Deliverables System Engineering

- Outcomes – acceptable, unacceptable
- Priorities – Competing, what and why
- Follow the money
- How is risk determined
- Consistent metrics and decision support
- Collaboration/Communications

# Preparedness

- What **natural disasters** are the client likely to experience at their facilities/properties/operations? Make the most effective and efficient use of the resources in anticipation of the various kinds of threats.
- **Threats** – What are the types of disasters that are likely, and impacts on their business/operations?
- **Critical Infrastructure** – Impacts of failure, ranging from simple outages to major collapse.
- **Priorities** – Triage the importance of facilities/properties/operations, to quickly formulate plans that have max impact for recovery.
- **Portfolio Management** – If client has a disciplined portfolio management plan, integrate resiliency from disaster preparedness, response, and recovery efforts for better investment decisions.
- **Partners** – Disasters shock everyone...identifying partners ahead of time help focus the recovery effort, simulations help facilitate communications and identify bottlenecks, and areas that need attention.

# Response

- What happens immediately **after a disaster**? Support for sheltering, feeding, emergency repairs. Helping give the client and community that there is hope in recovery. First things first...
- **Access** – Is there road access, is the population connected, is help on its way?
- **Power** – Vital to communications and equipment....What's the state and how quickly can it be repaired/replaced.
- **Water** – Equally vital to the health and well-being of the population...are plants and supply lines operating? Or distribution available?
- **Sheltering** – Communities think of rebuilding in place first....Is that option available?

# Recovery

- What is the menu?
- Damage Assessment
- Project Formulation
- Cost Estimating
- Quality Assurance/Quality Control
- Hazard Mitigation
- Project/Program Management
- Rebuild

# Continuity of Operations

- Options
- Restoration
- Hazard Mitigation
- Resiliency/Sustainment
- Partners
- Preparation

# Logistics in Large Organizations

- Outcome:
  - What are you delivering?
  - What outcome are you supporting?
- People needed to deliver
  - Key Personnel
  - Where are the people?
- Project Management Plan
  - Safety
  - Quality



# Logistics in Large Organizations

- Command and Control
  - Who does client go to?
  - Best Practices
- Follow the Money – Cost and Funding
- IT/Data
  - Support
  - Dashboard
- Integrated Portfolio Management

**Think of logistics as a business  
within a business**

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# 11th Wing

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## Joint Base Andrews

**Lt Col Daniel Werner**

**Base Civil Engineer**

**11th Civil Engineer Squadron**



# Overview



- What we are responsible for
- JBA's Construction Project Portfolio
- Facilities Long Range Planning
- Prioritization Model Overview
- Potential Future Projects
- Major Initiatives
- Other Opportunities
- Q/A



# What we are responsible for...



- **Over 16,000 personnel live or work on Joint Base Andrews**
- **Five Wings (3 AD Air Force, 1 AFR, 1 ANG, 1 Navy), 3 Air Force Headquarters, 2 Army Units and a host of other federal government units**
- **7,000 acres and 600+ buildings (6.3M SF)**
- **2 Runways (370,000 SY)**
- **TWY/Aprons (1.4M SY)**
- **\$5.7B Plant Replacement Value**
- **Approximately 100 aircraft assigned with many more transiting the airfield daily**
- **Support over 200 POTUS and world leader movements yearly**
- **Handle 3,500 Wounded Warrior redeployments, 44 million pounds of aircraft refueling**
- **Over \$1.6B in total economic impact**

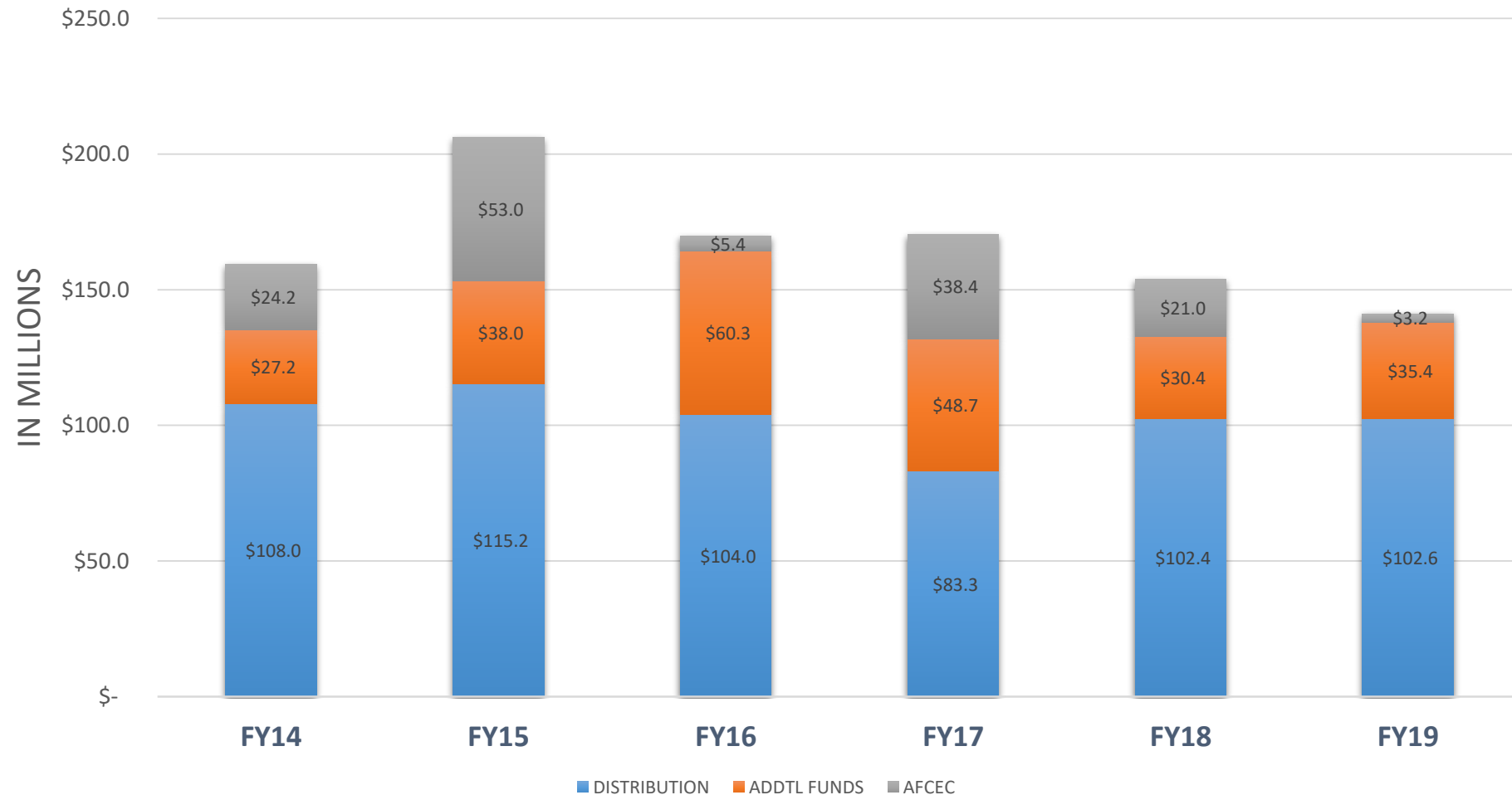


# 11 WG FUNDING TREND

## O&M – DISTRIBUTION TO END-OF-YEAR



O&M DISTRIBUTION





# JBA's Construction Project Portfolio



## ■ MILCON

- Design: 7 projects valued at \$136.0M
- Construction: 6 projects valued at \$758.5M

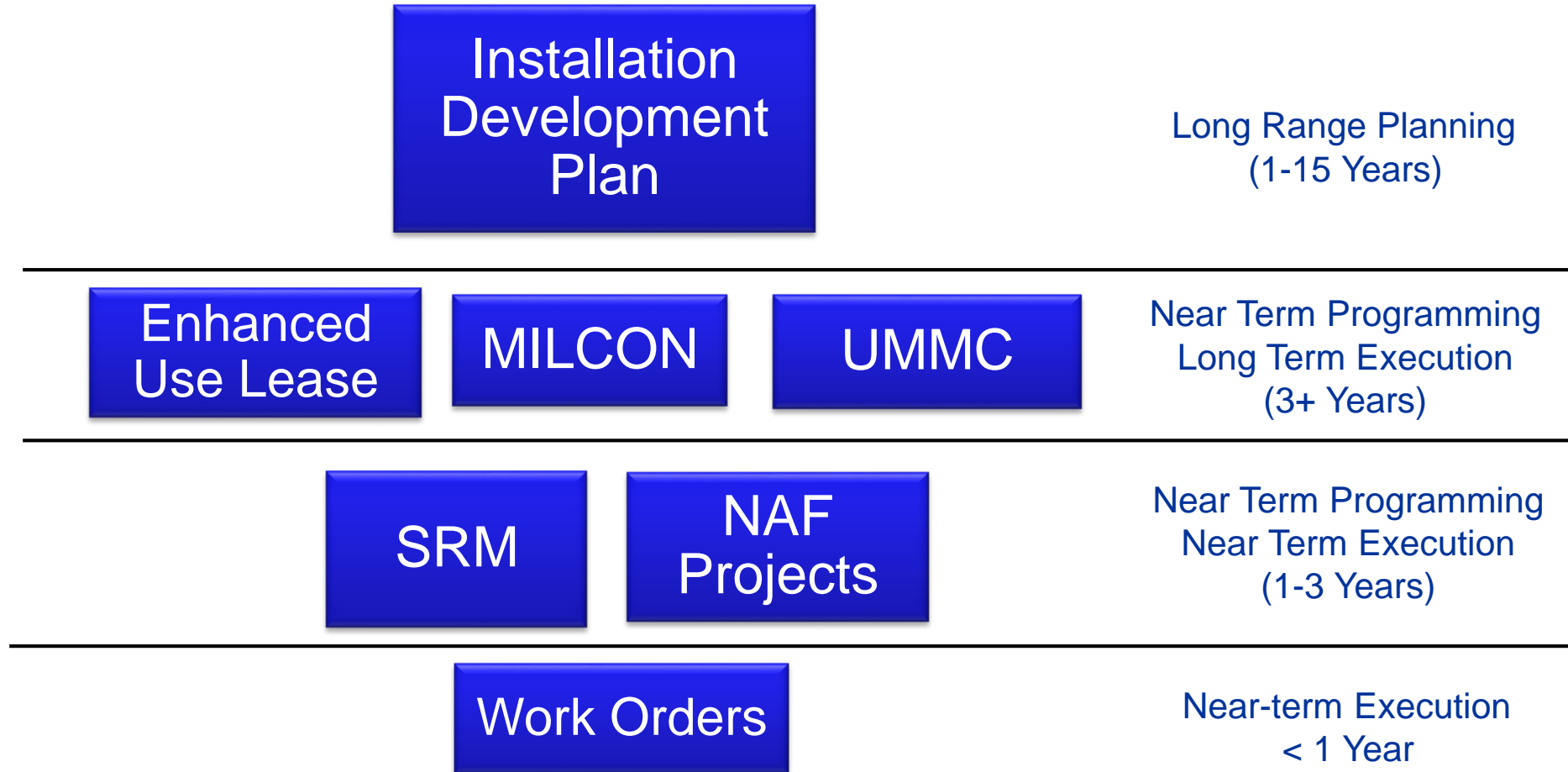
## ■ O&M

- Design: 9 projects valued at \$59.7M
- Construction: 47 projects valued at \$75.5M

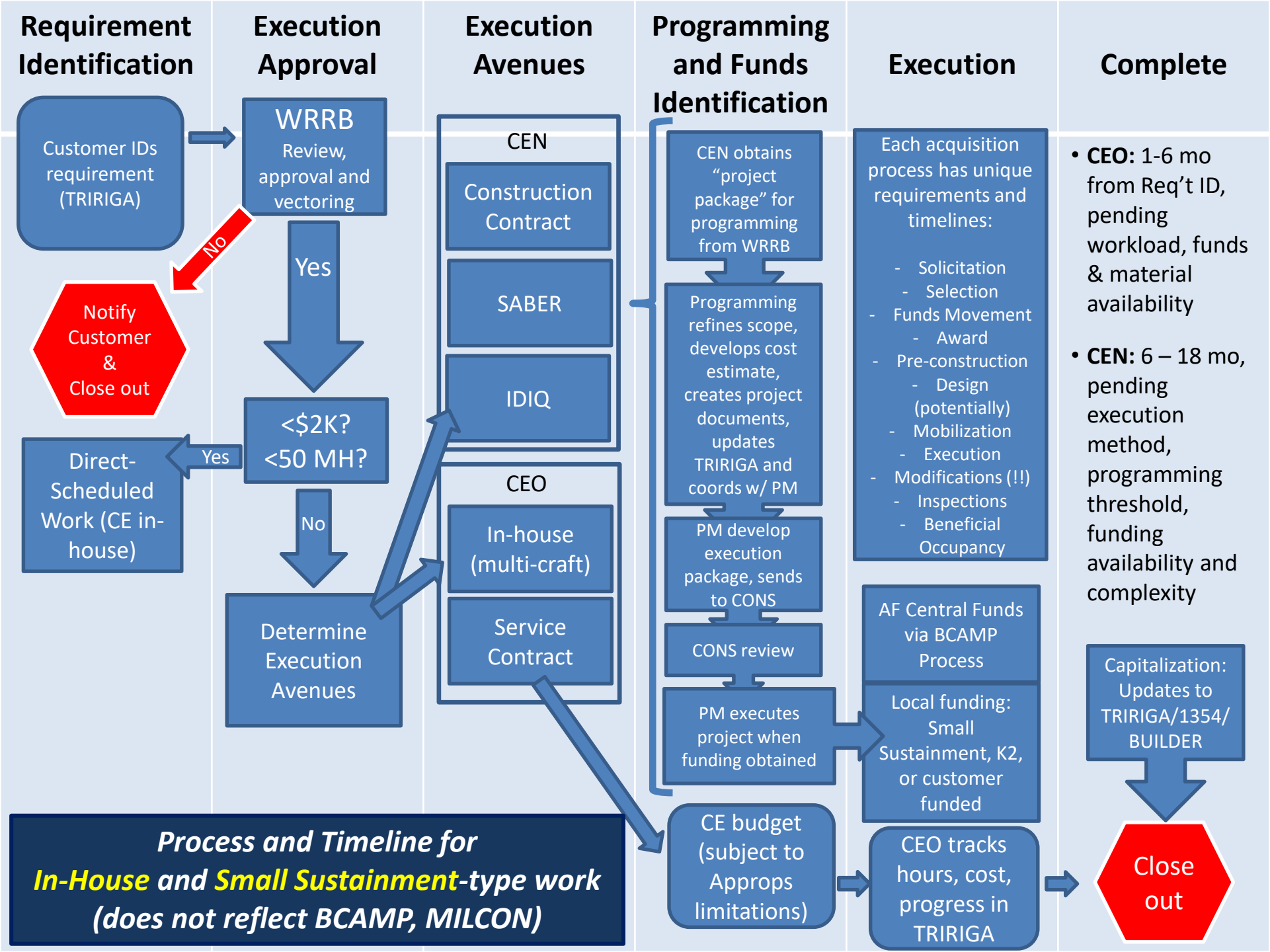
**CEN currently managing ~69 projects valued at \$1.029B**



# Facilities Long Range Planning, Programming and Execution Integration









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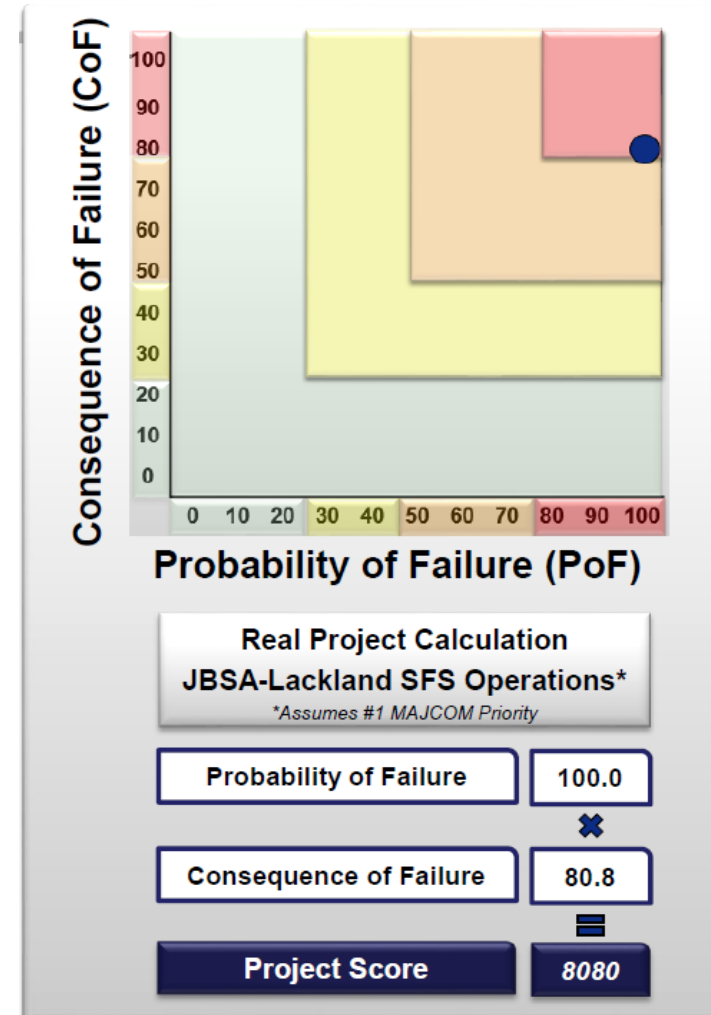
# Sustainment, Restoration & Modernization (SRM)



# Prioritization Model



- Model implemented in FY15
  - Prioritizes all infrastructure requirements based on risk to mission and Airmen
- Probability of Failure
  - Existing asset condition, compliance, and functionality
  - For new mission or capability, based on mission impact and availability of work arounds
- Consequence of Failure
  - Captures asset impact to mission, readiness, and effectiveness
  - Mission Dependency Index (60%)
  - MAJCOM Prioritization (40%)
    - ◆ Commanders asked to look beyond score, exercise professional military judgement
    - ◆ Communicate importance of requirement to mission, readiness, and lethality





# FY20 BCAMP Projects

## Centralized Funding



- **11 Projects totaling \$20-25M**
  - **REPAIR/MODERNIZE 89 MXG BLDG 1791 (\$5-10M)**
    - ◆ Full facility renovation to include utility and HVAC upgrades; install new aircraft paint booth
  - **ADD/ALTER ATFP VIRGINIA GATE (\$2-5M)**
    - ◆ Upgrade Virginia Gate to comply with UFCs, to include traffic calming and other security features
  - **REPAIR FEEDERS 3, 6, 7N & 13 (\$2-5M)**
    - ◆ Replace electrical distribution feeders; repair existing ducts/conduits that may have collapsed
  - **DEMOLISH EAST SHOPPETTE, BLDG. 3487 (<\$2M)**
    - ◆ Remove excess Real Property; restore site to natural conditions
  - **DSN – REGRADE AIRFIELD FAC 90003 (<\$2M)**
    - ◆ Design to create positive drainage within infield; Future construction to reduce ponding and BASH concerns



# FY20 Small Sustainment Projects Decentralized Funding



- **40 projects totaling \$5-10M**
  - **REPLACE FEEDERS 10, 24, 25, 26 (\$1-2M)**
    - ◆ Replace electrical distribution feeders; repair existing ducts/conduits that may have collapsed
  - **REPAIR DORMITORY ROOMS, BLDG 1631 (\$<1M)**
    - ◆ Renovate dormitory rooms; remediate mold as required
  - **REPAIR FIRE SUPPRESSION & HVAC, BLDG 1708 (\$<1M)**
    - ◆ Systems currently in-operable; short-term fix until sustainment vs demolition determination is approved
  - **REPLACE TRANSFORMER, BLDG. 3056 (\$<1M)**
    - ◆ Life-cycle replacement of transformer
  - **REPAIR ELECTRICAL PANEL, BLDG 1228 (\$<1M)**
    - ◆ Life-cycle replacement of electrical panel



# Potential FY21+ Projects

## All Funding



- **More than \$900M worth of requirements programmed in Centralized and Decentralized programs to date**
  - **CONVERT HOME TRADITIONS, BLDG 1683 (BCAMP: \$5-10M)**
    - ◆ Design required prior to construction award; converts AAFES facility into Installation Deployment Readiness Cell (IDRC)
  - **REPAIR/RECOMMISSION FIRE SUPPRESSION SYSTEM, BLDG 1714 (BCAMP: \$2-5M)**
    - ◆ West Deluge system has been in-operational for 5+ years; work includes testing and bringing system into code and operational
    - ◆ All West Flight Line Hangars have similar requirement/projects
  - **REPAIR STORM WATER BEST MANAGEMENT PRACTICE AT 21-POINT RANGE (BCAMP: \$2-5M)**
    - ◆ Design required; MDE coordination/permitting; provides storm water retention for 21-Point Range expansion





# Potential FY21+ Projects



- **REPAIR WEST APRON, TRANSIENT ALERT (BCAMP: \$5-10M)**
  - ♦ West Apron is reaching life-cycle and beginning to crack/spall; work would replace sections of apron
- **REPAIR NORTH PERIMETER ROAD (SS: \$1-2M)**
  - ♦ Mill and overlay North Perimeter Road as part of life-cycle repair
- **REPAIR DAYROOM, BLDG 1624 (SS: <\$1M)**
  - ♦ Modernize Dormitory Dayroom for young Airmen
- **ADMINISTRATIVE AREA DEVELOPMENT PLAN (SS: <\$1M)**
  - ♦ Short- to medium-range planning for the administrative area west of the flight line; supports/addresses multiple beddown requests
- **COMPREHENSIVE TRAFFIC PLAN (SS: <\$1M)**
  - ♦ National Capital Planning Committee (NCPC) requesting holistic installation Traffic Plan



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# Major Initiatives



# Program Review: MILCON Priorities



Wing Priority	FY	Project Title	PA (\$M)
1	FY21	CONSTRUCT REPLACEMENT FIRE CRASH RESCUE STATION #1 Current status Approved by MILCON WG, awaiting Design Instruction	>\$20M
Wing Priority	Proposed FY	Project Title	PA (\$M)
2	FY22	CONSTRUCT NEW CONSOLIDATED SECURITY FORCES GROUP COMPLEX	>\$50M
3	FY22+	CONSTRUCT REPLACEMENT FITNESS CENTER	>\$30M
4	FY22+	CONSTRUCT NEW CONSOLIDATED BASE CIVIL ENGINEERING COMPLEX	>\$30M



# Program Review: DLA MILCON



Advocate	Project	Milestones
DLA	Install Hydrant Lateral Control Pits to Facility 5023	Competing for FY22 priority
DLA	Base Fuels Laboratory	Competing for FY22 priority
DLA	Install Jet Fuel Off-Loading Receipt System at Fuels Bulk Storage	Competing for FY22 priority



# Program Review: UMMC



- **FY20 Submission: Both projects below were approved as briefed to the Installation Integration Group (I2G) on 11 April 2019**

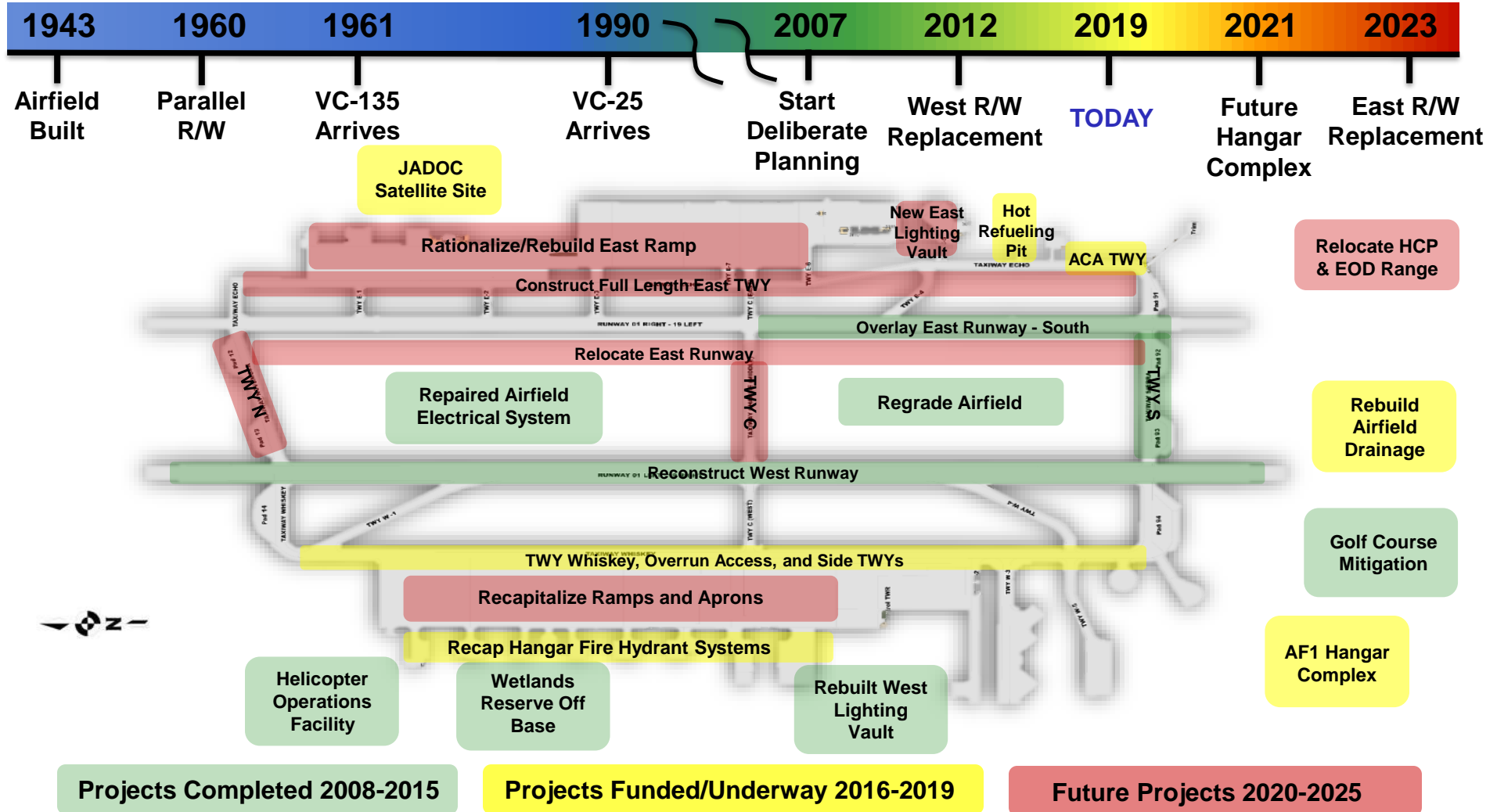
Advocate	Project	PA	Milestones
11 CES	ADD CRASH RESCUE STATION 2 BLDG 3464	< \$5M	AF #15 Economic analysis (EA) underway. Planning Charrette Report should be complete in FY20 **O&M Companion project ~\$3 M
1 HS/89 AW	CONSTRUCT RAMP ADDITION NEAR BLDG 1900	< \$5M	AF #13 Economic analysis (EA) Underway. Awaiting Design Instruction (DI)

- **Developing UMMC**

Advocate	Project	CWE	Milestones
11 CES	Construct addition to current Fitness Center for ~25k sqft	< \$5M	Recommend PCR to validate space requirements; Facility Board approval needed for addition
AMC 89 AW	Power Check Pad w/ Sound Suppressor	< \$5M	Siting TBD
AMC 89 AW	Construct Overhang and Security Check ECP 18	< \$5M	Validation required per PAR Construction timeline



# Rebuild America's Airfield



America's Airmen





# Other Opportunities



- **Air Force Civil Engineer Center (AFCEC)**
  - ◆ <http://www.afcec.af.mil/Home/Facility-Engineering/>
- **Naval Facilities Engineering Command (NAVFAC)**
- **USACE, Baltimore District**

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# Questions