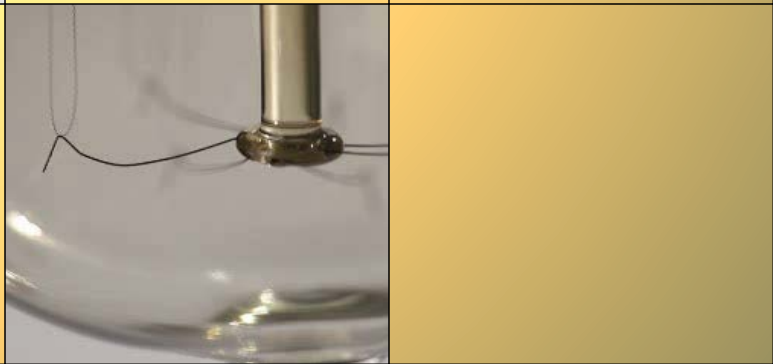
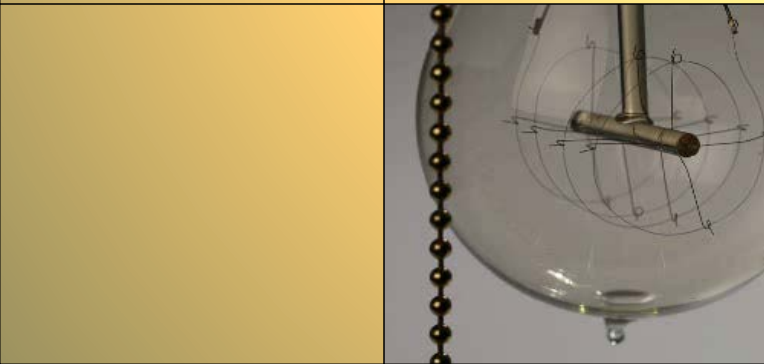


# Regulatory Evolution



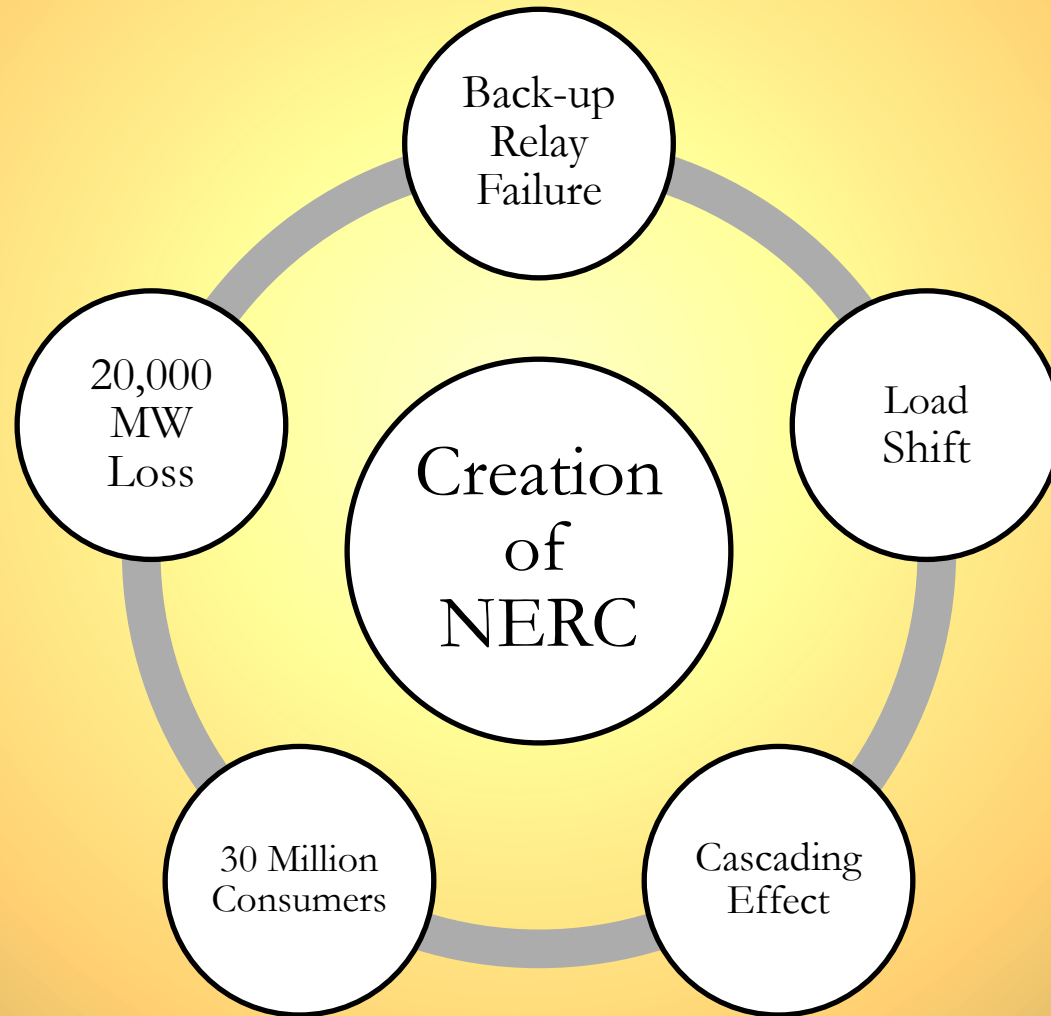
# Regulatory Evolution and Its Effect on System Operations and Security

**Mike Swearingen**

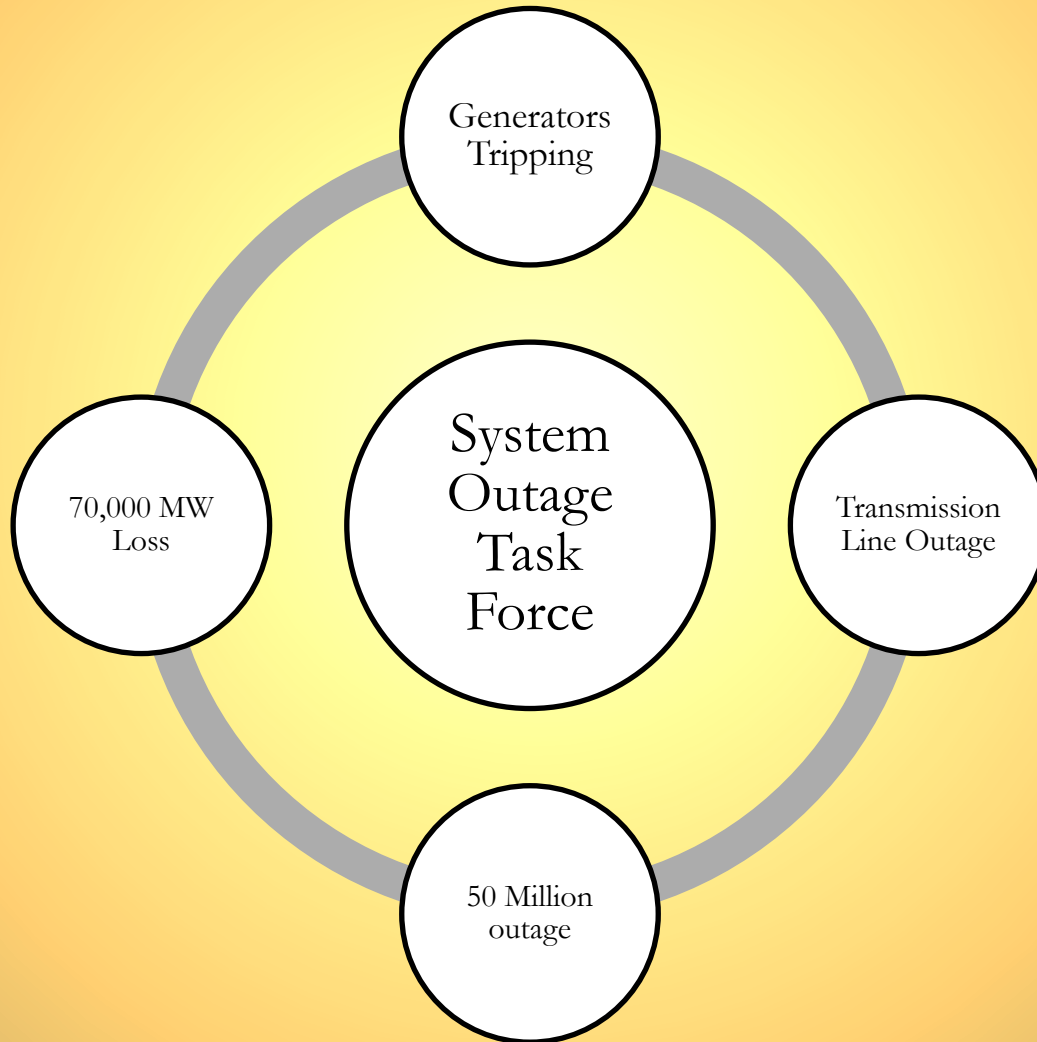
Manager of Engineering and NERC Compliance

Tri-County Electric Cooperative

# Major Outage: November 9, 1965



# Major Outage: August 15, 2003



# Before the NERC Reliability Standards

IEEE Standards

ANSI Standards

Manufacturers Recommendations

A combination of the above

# Protection and Control Standards Effect on Protection

Manufacturers Recommendations

Protection Philosophy or Conduct  
Sectionalizing Studies

Database of Sectionalizing  
Equipment

Maintenance Program

# Protection and Control Standards Effect on Protection

Recognition of misoperation vs. Proper  
Operation of Protection Scheme

Proper Adjustment of Protection  
Equipment to Avoid misoperation

Covered by NERC Reliability Standard  
PRC-004

# Protection and Control Standards Effect on Protection

Relay Testing

Relay Test Equipment

Relay testing conducted by technicians or consultants

Relay testing criteria and parameters based on relay protection scheme and manufacturers recommendations

Covered by NRECA Reliability Standard PRC-005



# Facilities Design Connection and Maintenance Effect on System Operations

## FAC Standards Cover Coordination Plans for Generation

Facilities  
Ratings

System  
Operating  
Limits

Transmission  
Vegetation  
Maintenance  
Programs

End User  
Facilities,  
Communication  
of Facility  
Ratings

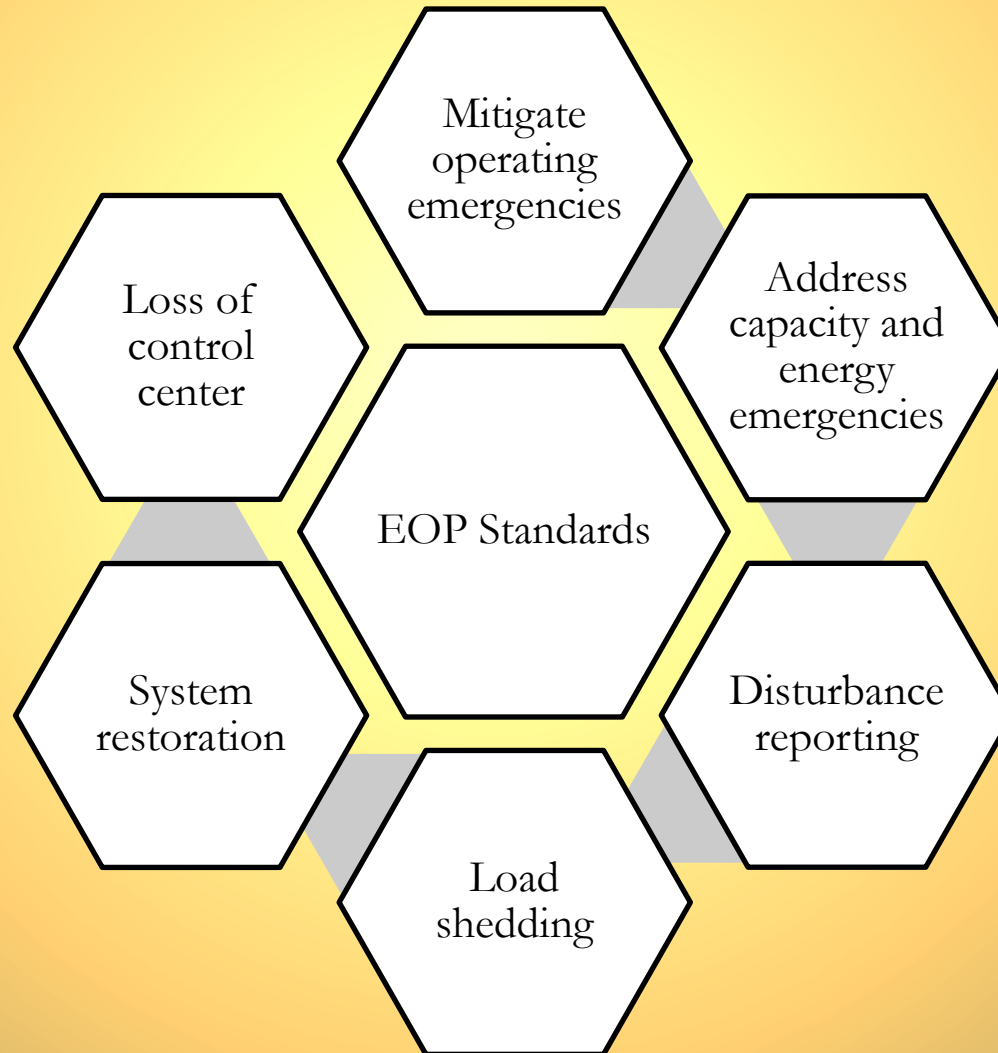
Transfer  
Capability

# Facilities Design Connection and Maintenance Effect on System Operations

Cooperatives Existing Right of Way  
Maintenance Programs

Most Cooperatives are Not Subjects  
to the FAC Reliability Standards

# Emergency Preparedness and Operations



# Emergency Preparedness and Operations

Emergency  
Alert  
Levels

- Direct effect on Cooperatives

Power  
Suppliers

- Communicated to Cooperatives
- Warnings and directives

# Emergency Preparedness and Operations

## Alert Level 1

- All available resources are committed

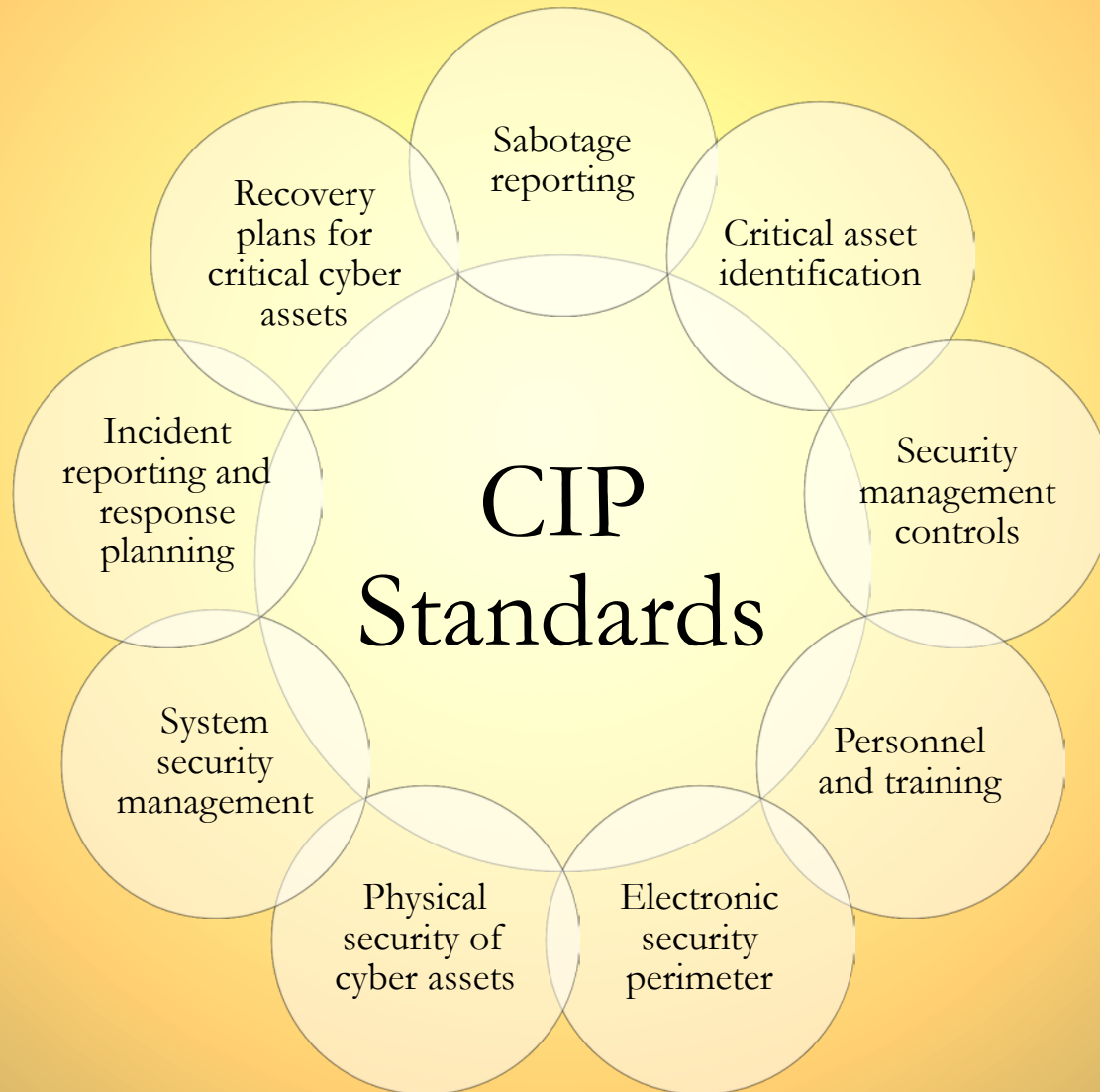
## Alert Level 2

- Load management procedures are in effect
- Directives for load curtailment may be issued to utilities

## Alert Level 3

- Continuation of Level 2
- Operating limits of transmission line are reevaluated
- Avoid cascading of the transmission network

# Critical Infrastructure Effects on Cybersecurity and Classification of Equipment



# Critical Infrastructure Effects on Cybersecurity and Classification of Equipment

## CIP-001 Sabotage Recognition & Reporting

- Define sabotage
- Provide Infrastructure for Sabotage Reporting
- Educate and Update Employees on Sabotage Recognition and Reporting Procedures

# Critical Infrastructure Effects on Cybersecurity and Classification of Equipment

Risk Based Analysis  
Methodology

Current Discussion of  
Critical Infrastructure

Protect Critical Infrastructure  
and Key Resources (CIKAR)



# Questions?



# Contact information

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