



LADWP

Critical Infrastructure Protection

Threat and Vulnerability Assessments

Water and Power Facilities

Industrial, Economic and Administrative (IEA) Survey

- Incomplete picture of Security efforts
- IEA Survey states last independent threat assessment was 2001 by R.S. Hahn and Associates
- Additional reviews and efforts not cited in narrative though listed in their report

LADWP's Response

- Assessments completed after 2001 Hahn Report:
 - Magallanes Associates International (MAI) 2006 - 2008
 - LAPD Archangel 2008
 - NERC's Critical Infrastructure Protection CIP-014 review near completion
 - NERC - North American Electric Reliability Corporation is bulk power regulatory authority and subject to oversight by the Federal Energy Regulatory Commission (FERC)
- The assessments document the evolving nature of threats
- Many recommendations implemented, others deemed redundant after review with operators and security personnel
- Improvements made at major facilities

Office Building

- Critical assets backed up by or relocated to remote facilities
- Metal Detectors
- Turnstiles
- Electronic access for gates
- Visitor Management System
- Kiosks at entrances
- Cameras
- Safe rooms

Control Center

- Electronic heavy duty gate with cameras/speaker
- Security Officers assigned 24/7
- Secure building entrance with “mantrap”
- Bulletproof glass in security booth
- Check in procedures
- Additional monitors to view area
- Electronic access
- Video surveillance
- Procedures for vendor, delivery and visitor check in
- Delivery process in review for possible additional security measures



Filtration Plant

- Continual review and upgrade of perimeter security
 - Hydraulic barriers
 - Bollards
 - Walls, barriers and K-rails
- Video Surveillance
- Key-card access
- Procedures for vendor, visitor and delivery check in



Generating Station

- Security cameras to monitor Critical Cyber Assets
- Security Officers 24/7
- Perimeter security fence topped with razor wire
- Key Card access to sensitive areas
- New security booth at entrance with enhanced lighting
- Procedures for vendor, visitor and delivery check in
- Vegetation cleared along fences



Switching Station

- Security cameras to monitor and protect Critical Cyber Assets
- Key Card access implemented
- Building security status monitored at Central Monitoring Station
- Cameras working

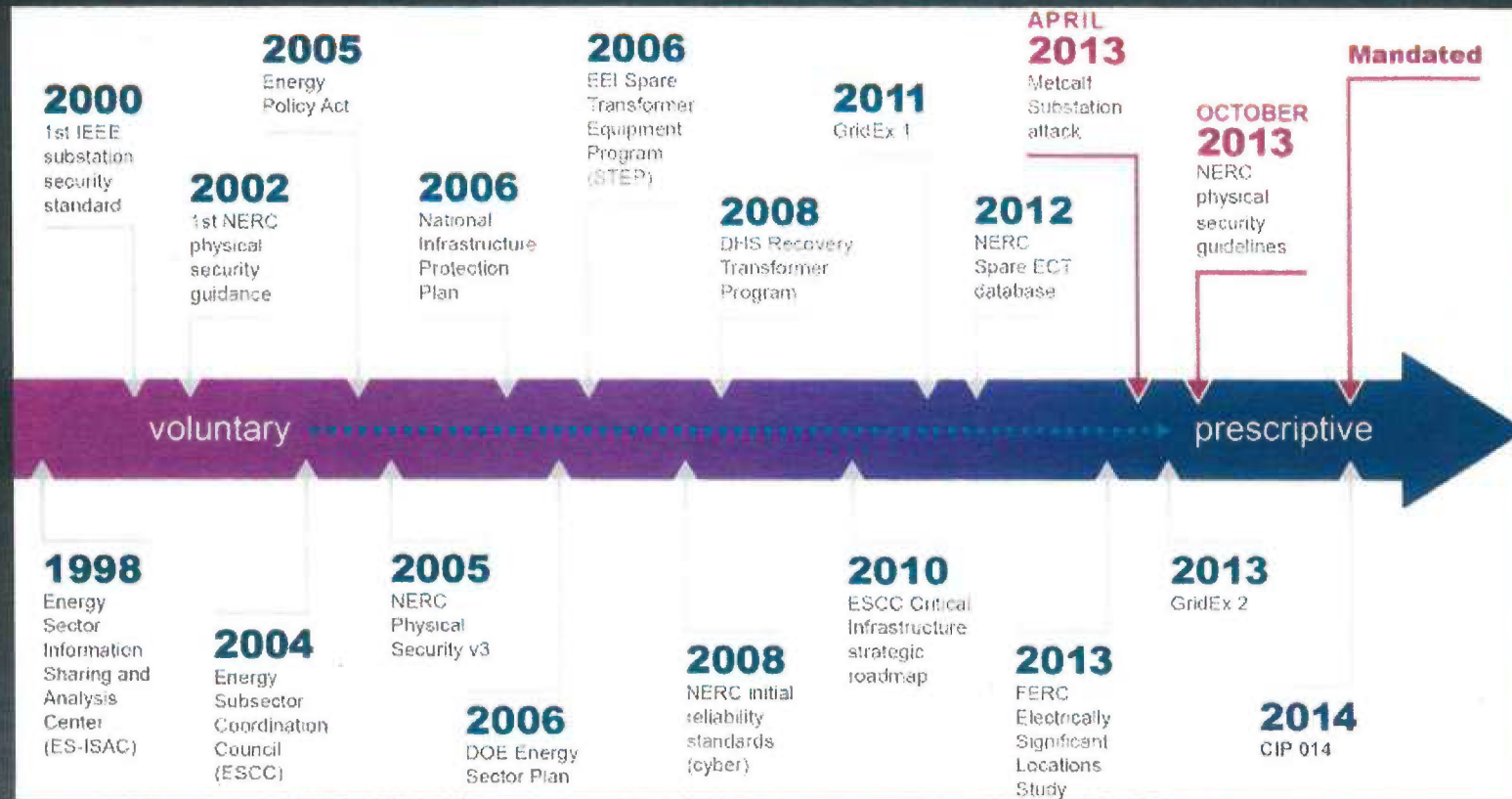


Ongoing Visual Monitoring

- LADWP currently has over 1,000 cameras monitored 24/7
- Outages average 6%, down from 40% in 2014
- Planned expansion to 2,500+ cameras
- Reviewing software to assist with camera motion monitoring



North American Electric Reliability Corporation – Evolution of Security



NERC/FERC Physical Security CIP-014 Requirements

- Requires utilities to conduct Threat and Vulnerability Assessments and risks of attack that would result in:
 - Widespread instability
 - Uncontrolled separation or
 - Cascading within an Interconnection
- Recognizes financial constraints for all desired physical security protection of assets
- LADWP has identified facilities that meet the criteria

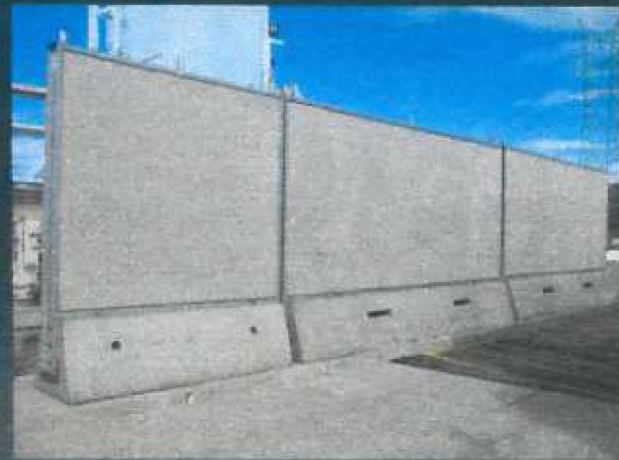
Independent Analysis

CIP-014 requires an independent Consultant who meets NERC/FERC requirements to:

- Review our assessment
- Suggest improvements, if needed
- Validate our findings
- Assist with the development of a Security Plan

CIP-014 Assessments and Security Plans are to be completed by June 23, 2016

- As of January 1, 2016, the Threat and Vulnerability Assessments substantially complete
- Assessments in draft form being reviewed by the independent Consultant
- Recommendations will be reviewed and approved by LADWP management



Cyber Security Program

- Dedicated cyber security staff - professional cyber security certifications
- Cyber security policy vetted and reviewed by multiple agencies
- Multiple security vulnerability assessments
- Regular scans of outward facing servers and applications
- Independent security assessment every two years
- Multiple levels and types of technology to address cyber threats and enhance system resiliency
- Also, Automatic updating, Network Access Control services, Web Access Control, and Identity Management systems
- Worked with USC and JPL on testing and implementing experimental systems
- LADWP shares information with state and federal security agencies and industry organizations

Conclusion

- LADWP had performed ongoing security review and implemented increased physical and cyber security since 2001
- On schedule with Physical Security Threat and Vulnerability Assessments
- Compliant with all Physical Security NERC/FERC requirements
- Physical and Cyber Security under continual review
- Improved process being developed to better test and validate security efforts