

# National Property Management Association



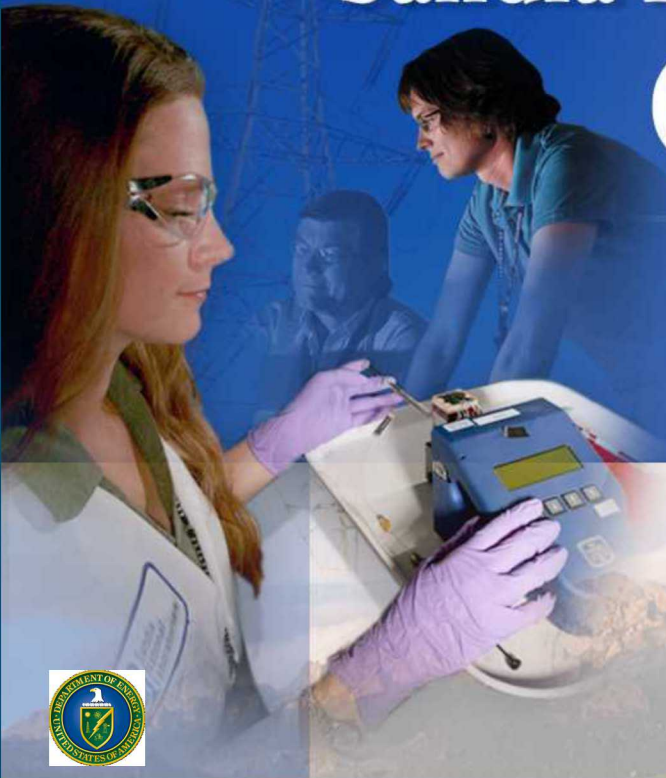
*Division 4000, Infrastructure Services*  
October 24, 2018

Lynnwood Dukes





# Sandia National Laboratories Overview



# Sandia's Administration

- X Division: 1945-1949
- AT&T: 1949-1993
- Martin Marietta: 1993-1995
- Lockheed Martin: 1995-2017
- National Technology and Engineering Solutions of Sandia - 2017-Present



Government-Owned  
Contractor-Operated



Funded  
Research &  
Development  
Center

# Sandia's People and Budget

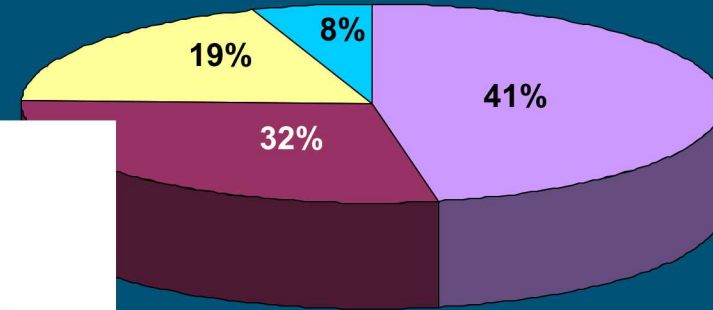
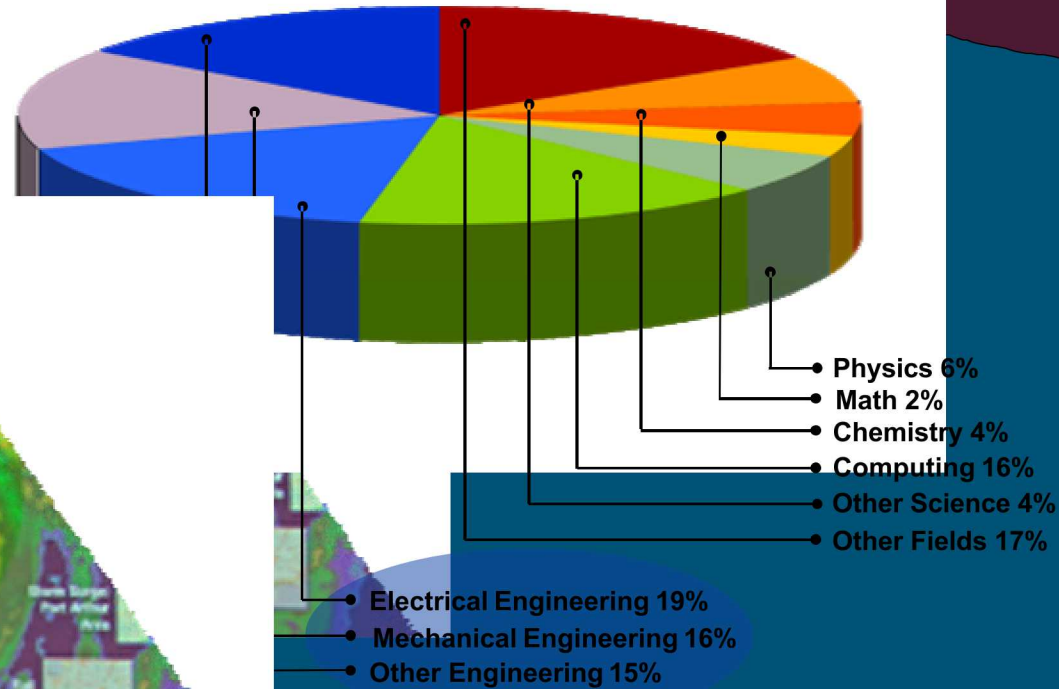
FY18 Operating Revenue - \$3.3 billion

- On-site workforce: 12,824
- Regular employees: 11,522

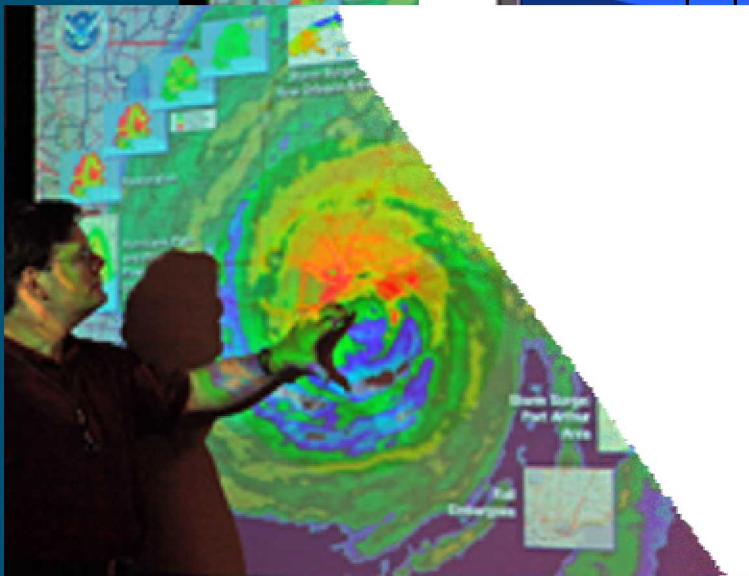
FY09 Operating Revenue - \$2.2 billion

- On-site workforce: 11,415
- Regular employees: 8225

Technical staff by discipline:

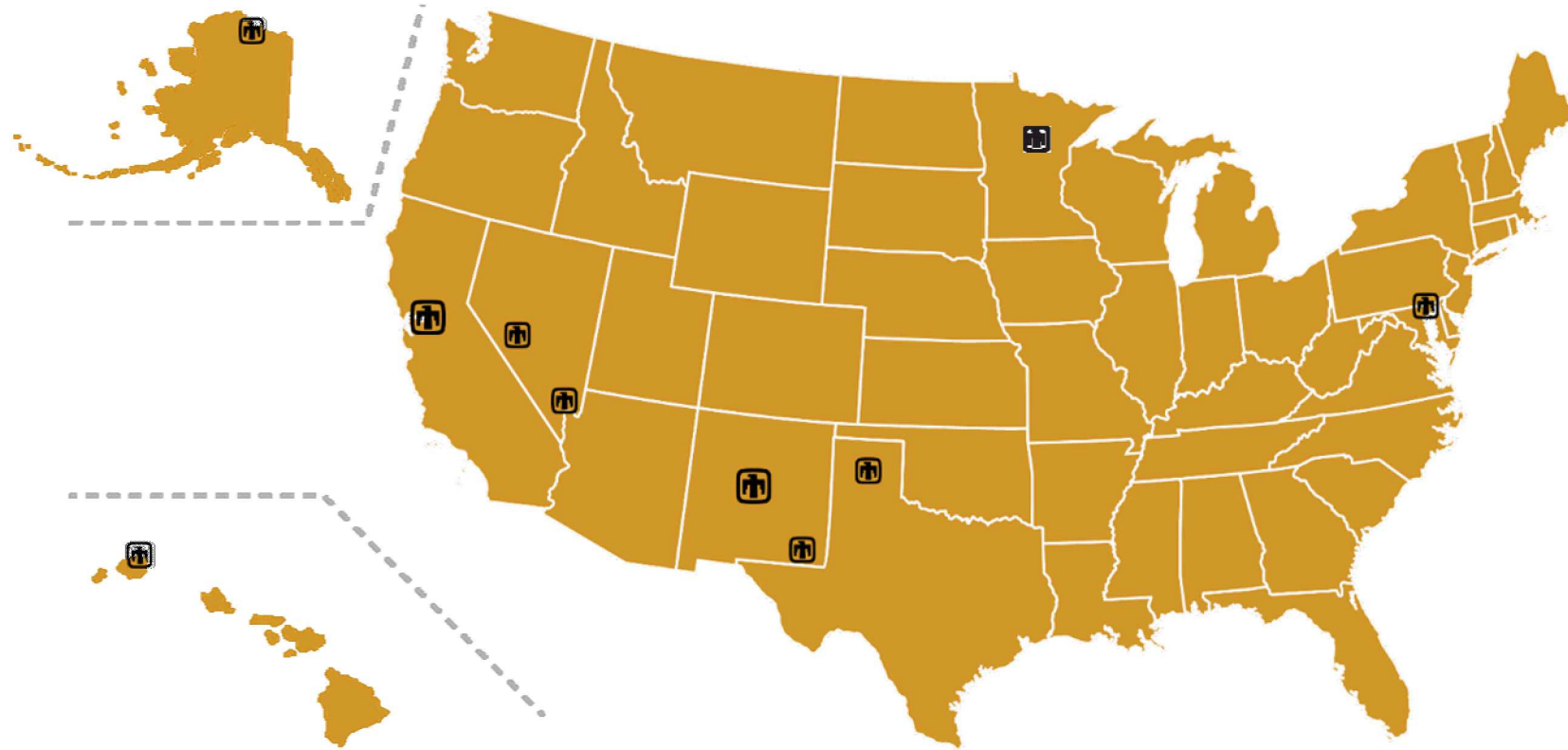


- Nuclear Weapons
- Defense Systems and Assessments
- Energy, Resources and Non-proliferation
- Homeland Security and Defense



# Sandia Infrastructure at a Glance

*Sandia has a presence in seven states and the District of Columbia*



**38YRS**   
AVERAGE AGE  
OF FACILITIES

**194k**   
TOTAL ACRES

**M**   
BUILDINGS  
RAILERS

**1.3M**   
GSF IN OFFICE  
SPACE

**1.8M**   
GSF IN LAB  
SPACE SQ FT

**\$798M**   
TOTAL REPAIR  
NEEDS

**\$407M**   
DEFERRED  
MAINTENANCE

*GSF = Gross square feet*

# Sandia's Sites

Albuquerque,  
New Mexico



Livermore,  
California



Kauai,  
Hawaii



Yucca Mountain,  
Nevada



WIPP,  
New Mexico



Tonopah, Nevada



Sandia's Facility Management is focused on our two principal sites.



- Located on Kirtland Air Force Base in Albuquerque, NM
- ~12,000 Members of the Workforce
- 2,937 acres of DOE-owned land, 5,633 acres of permitted land
- 938 buildings >6.6M GSF
- 230 acres of paved roads and walkways; 58 miles of unpaved roads



- Located in Livermore, CA (Adjacent to LLNL)
- ~800 Members of the Workforce
- ~400 acres of DOE-owned land
- 74 buildings totaling ~900K GSF
- 11 miles of paved roads and walkways

# Facilities Management System Model

*To provide a stable and secure platform for Sandia to accomplish its national security mission*

- Facilities Management System (FMS) is **the convergence of the key support organizations** necessary to operate, maintain, and improve facilities in an agile manner that supports the delivery of Sandia's mission.
  - Optimize facility management across the Labs applying commercial best practices
  - Provide one place for addressing multiple issues
  - Allocate space appropriately
- **FOR SANDIANS**
  - Make it easier to get work done

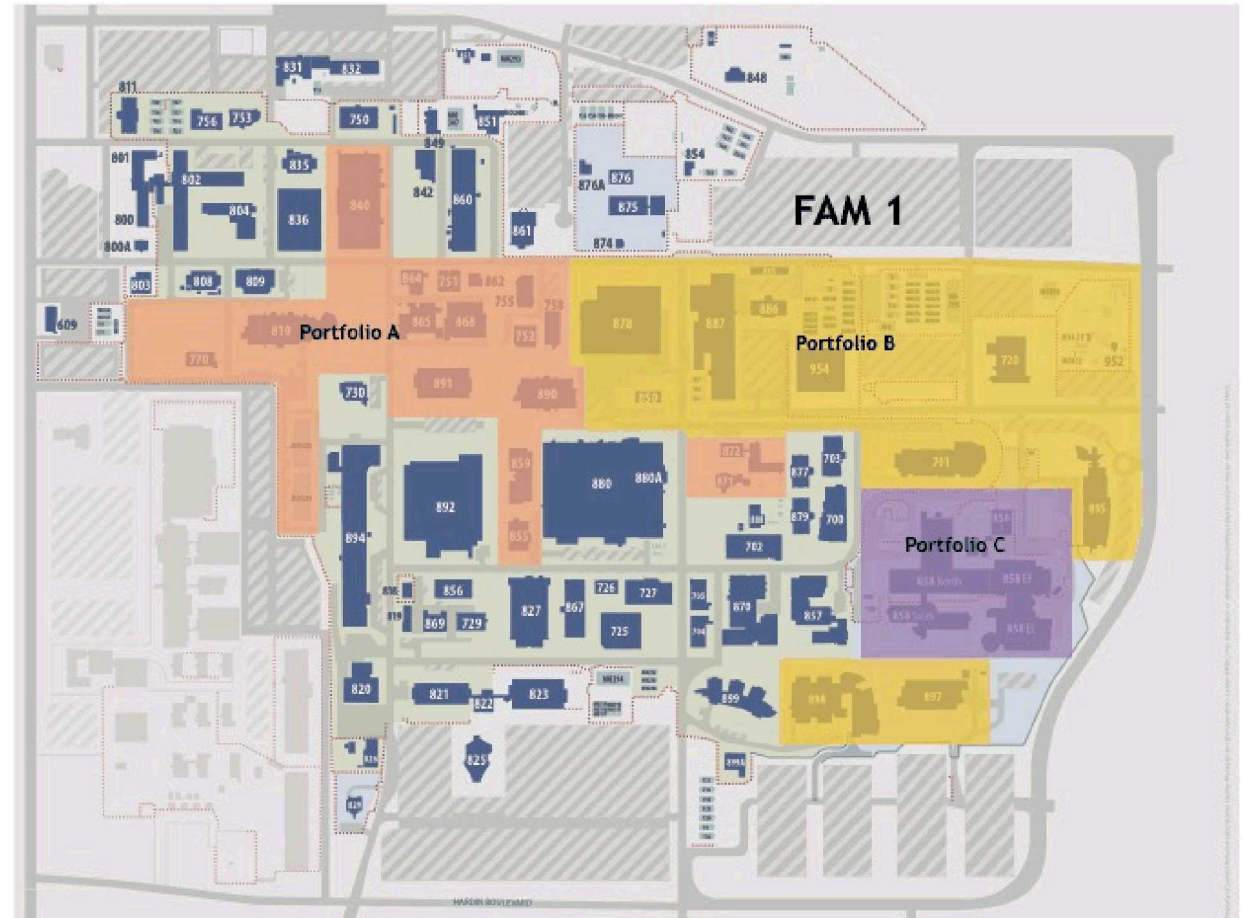
## **The Facilities Management System**

- 4800 Facilities and Emergency Management
- 4700 Infrastructure Services

# Facilities and Emergency Management - Creating Portfolios to Better Manage Facilities

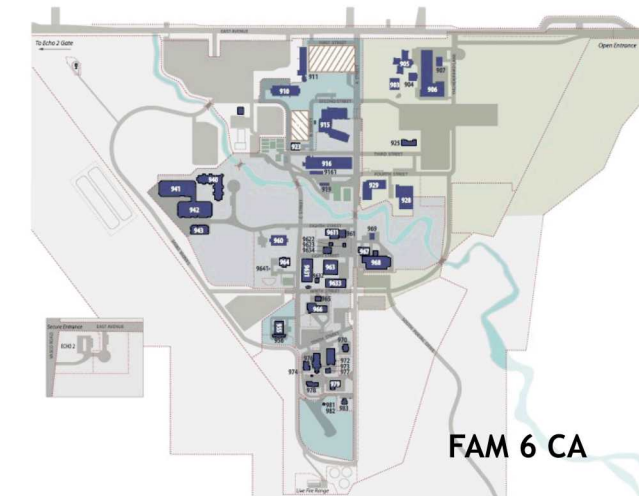
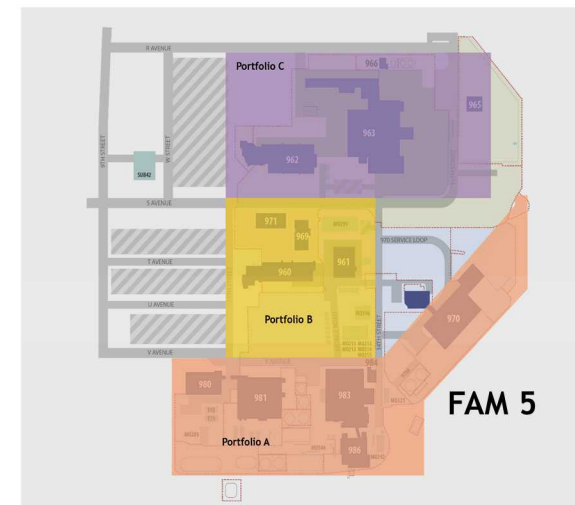
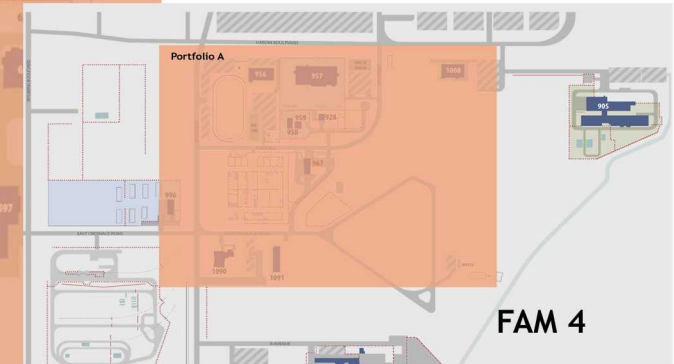
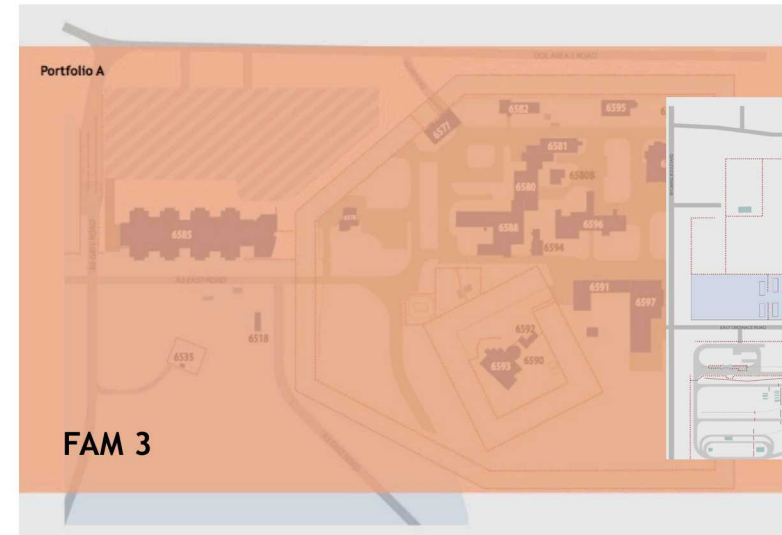
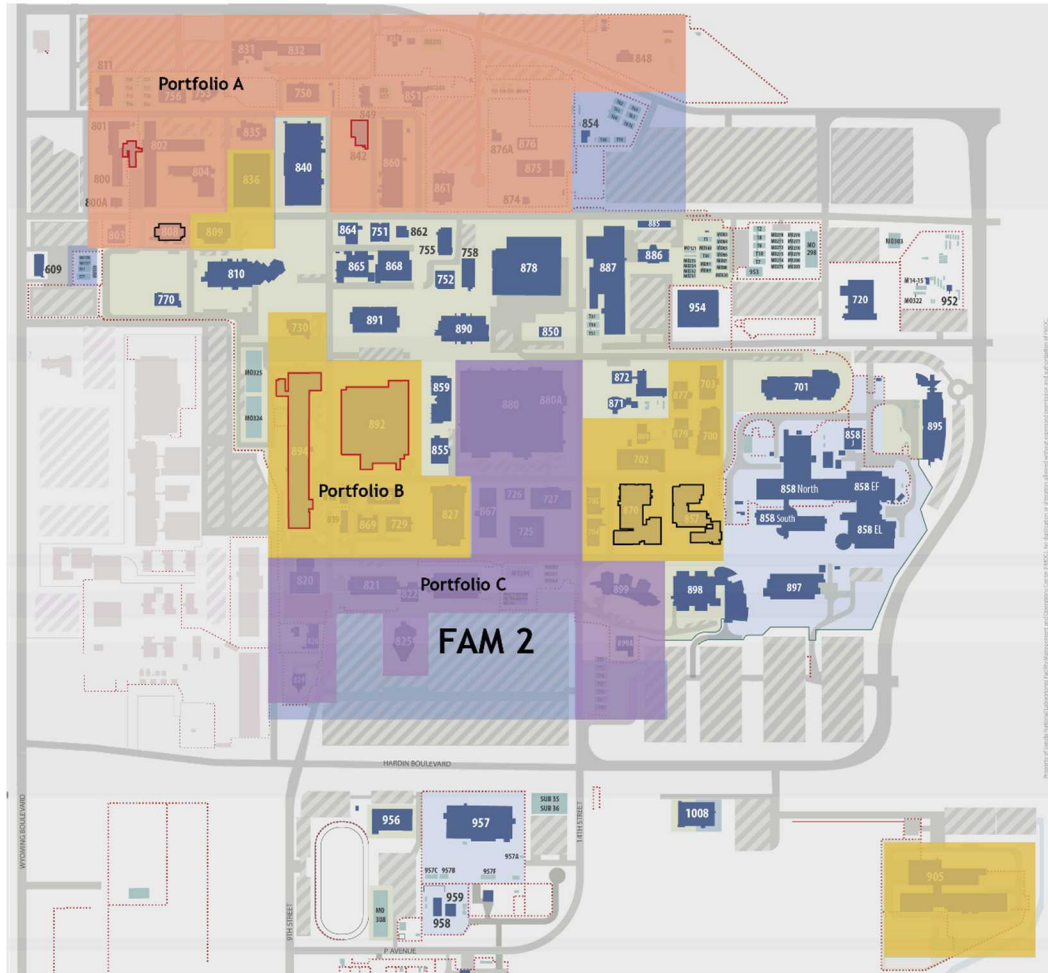
*The criteria used in creating the portfolios balance the needs of our unique facilities*

- Square footage per building
  - Office
  - Office support
  - Lab
  - Storage
- # buildings per portfolio
- # occupants per portfolio
- # service requests per building
  - Data from last 9 years
- Building types and/or customer base
- Infrastructure/systems considerations
- Mission critical facilities
  - Inadequate or substandard state



# Facilities Area Management (FAM) Teams

*Groups of portfolios are managed by FAMs*

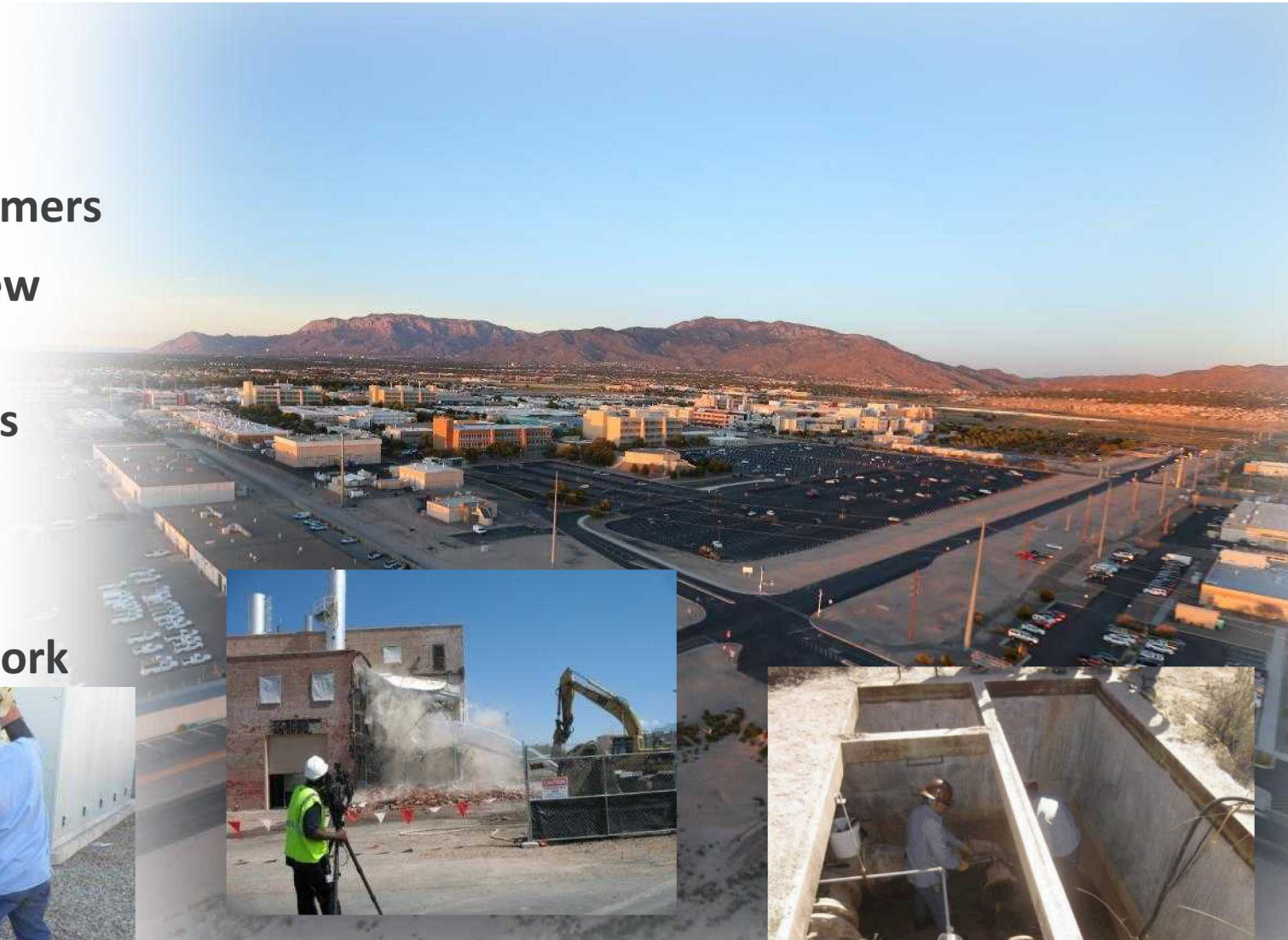


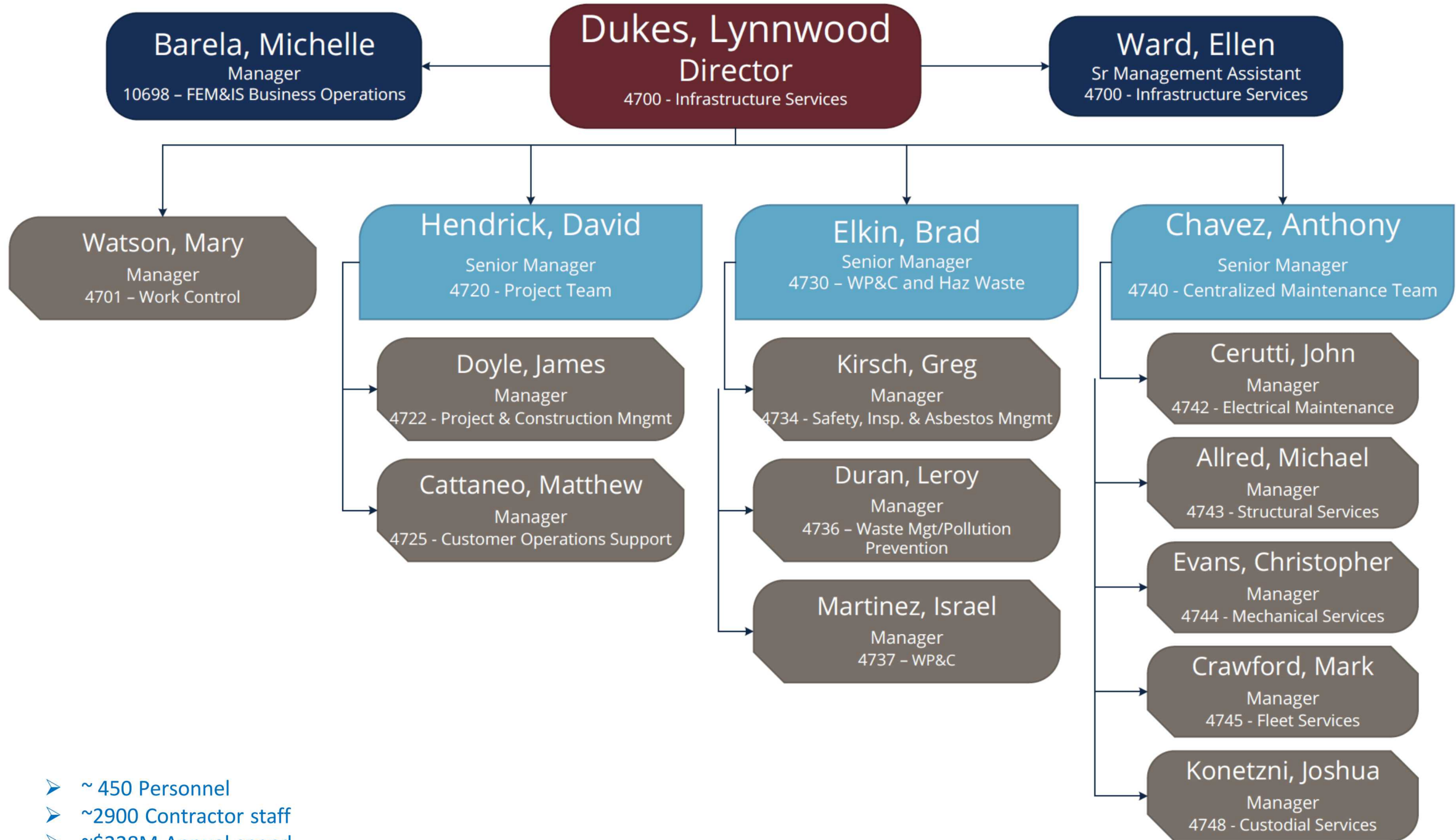
6 Facility Area Managers  
11 Facilities Portfolio Managers  
13 Building Managers

1 Space Management Manager  
12 Tactical Planners  
1 Leased Space Planner

# Infrastructure Services – Mission partner and provider of choice

- Manage and maintain existing buildings and utilities
- Provide waste services for customers
- Design, modify and construct new buildings
- Demolish substandard structures
- Manage Fleet Services
- Provide Custodial Services
- Coordinate, Control and Track work





- ~ 450 Personnel
- ~2900 Contractor staff
- ~\$228M Annual spend




# Maintenance Group

- **Mechanical - 63**
  - 1 Manager + support + FCS
  - 3 Team Leads
  - 48 craft
- **Electrical - 60**
  - 1 Manager + support
  - 4 Team Leads
  - 50 craft
- **Structural – 76**
  - 1 Manager + support
  - 4 Team Leads
  - 67 craft



# Work Planning and Control Department

- **Maintenance Planning**
  - **Team Lead**
  - **20 Planners (PM & CM)**
- **Warehouse**
  - **Team Lead**
  - **9 staff**
  - **Single Integrated Supplier (7)**



**Watson, Mary**  
Manager  
4701 – Work Control

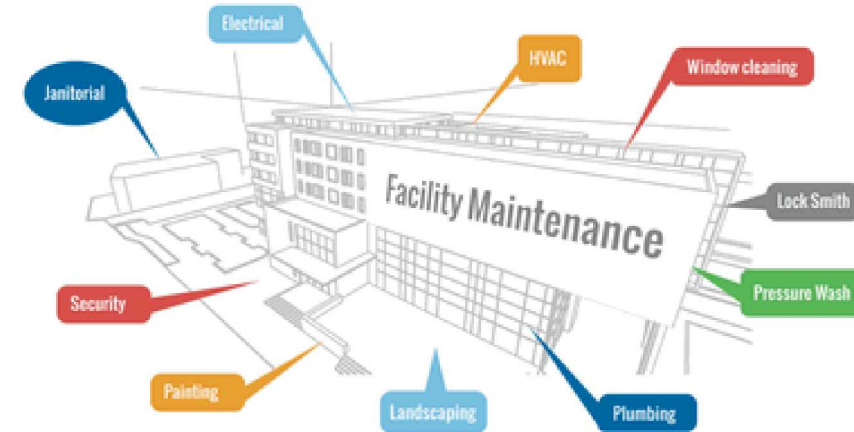
## Work Coordination and Control Department

- **Manager**
  - **13 Staff**
- **Accountabilities**
  - **Work Request Desk**
  - **Scheduling**
  - **Warrantees**
  - **Work Tracking, Prioritization, Assignment, Reporting, Measurement**
  - **Reliability Centered Maintenance**

# FY18 Infrastructure Services Workload

## ■ Maintenance

- Facility Maintenance (11 Crews) - 41,028 WOs
- Service Contracts - \$9.2M and 4,145 WOs



## ■ Projects

- Customer Projects - \$68.2M
- Facilities Express - \$21.9M and 3,500 WOs
- Large Projects - \$73.2M
- ~ 6000 Active projects

# Operations and Maintenance

- Work order planning, materials acquisition, and assignments performed by assigned Planner and Team Lead
- Work Order Scheduling, by FacPM team, performed by WCC Schedulers
- Maintain over 6.6m square feet of space and 45,000/\$2.5b of assets
- 24/7/365 dedication to response



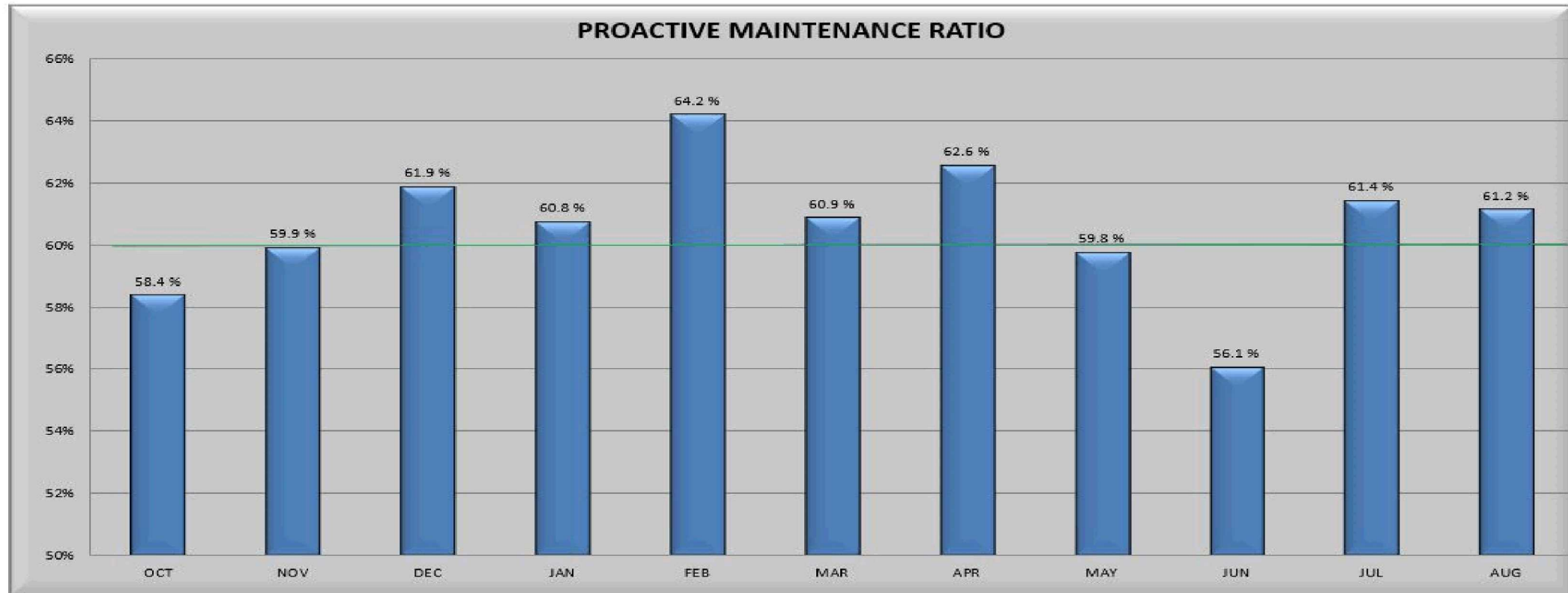
# Proactive Maintenance Ratio-October-August FY18 Trend

FISCAL\_YEAR1

Acct Period and Month

01 - OCT 02 - NOV 03 - DEC 04 - JAN 05 - FEB 06 - MAR 07 - APR 08 - MAY 09 - JUN 10 - JUL 11 - AUG

Fiscal Year to Date: 60.6 %



Reactive includes: Corrective Maintenance (CM), Troubleshoot (TS) and Emergency Maintenance (EM)

Proactive includes: Preventive Maintenance (PM), Operations checks/rounds (OP), Preventive Maintenance Repair (PMR) and Predictive Maintenance (PDM)

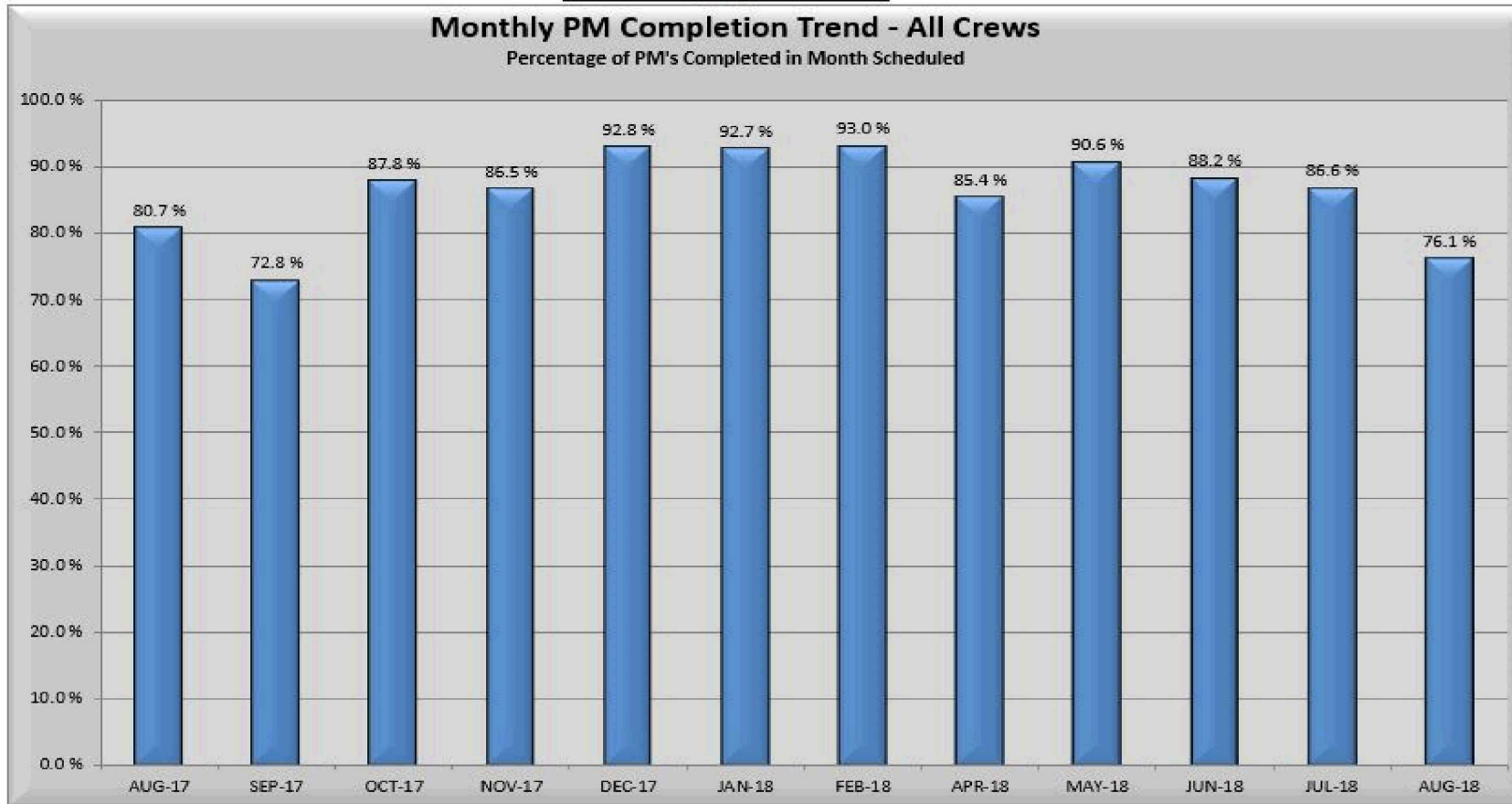
Proactive Maintenance Ratio Goal: **Current Goal=60%**

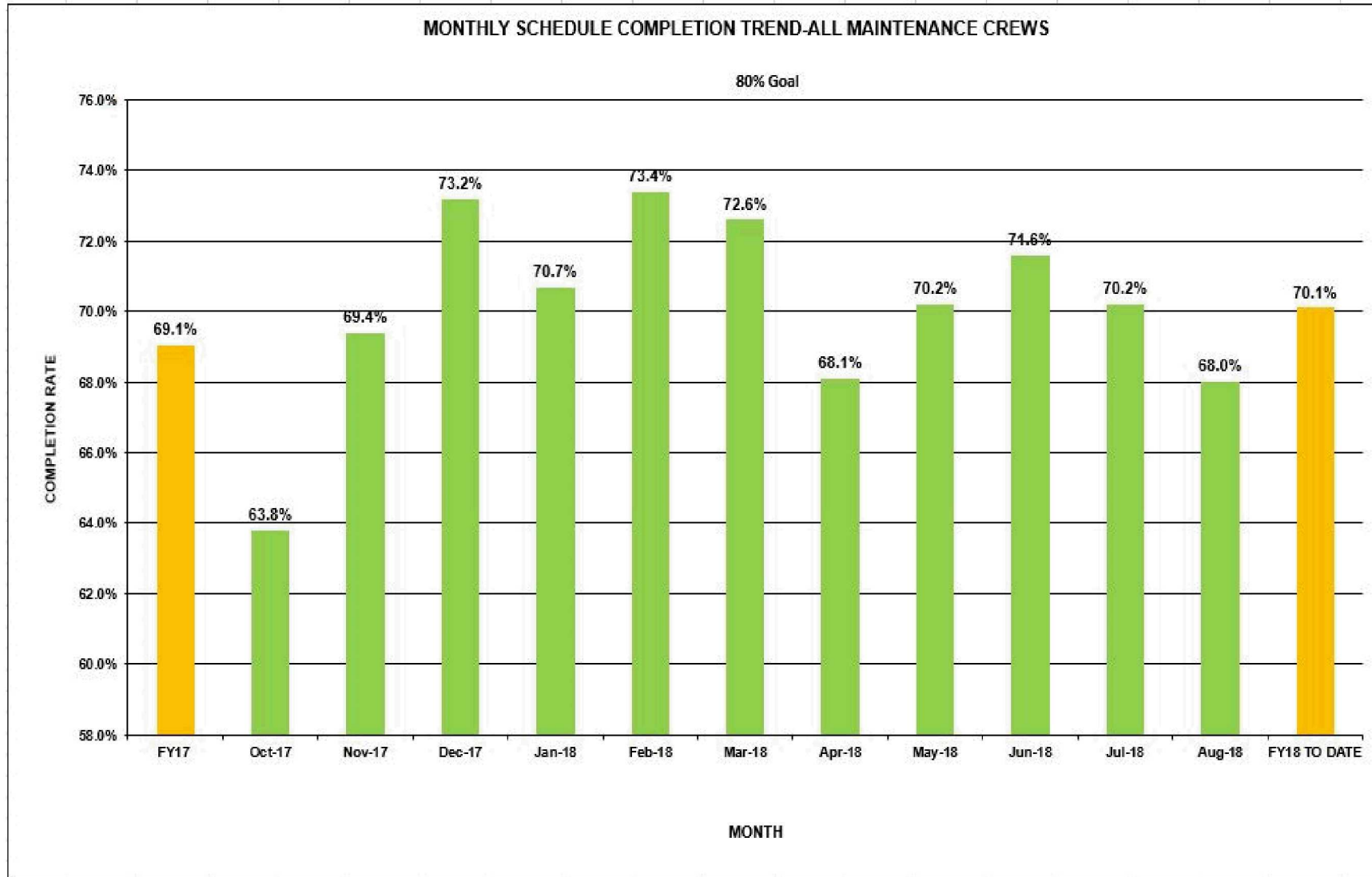
# PM/PDM Monthly Completion Trend

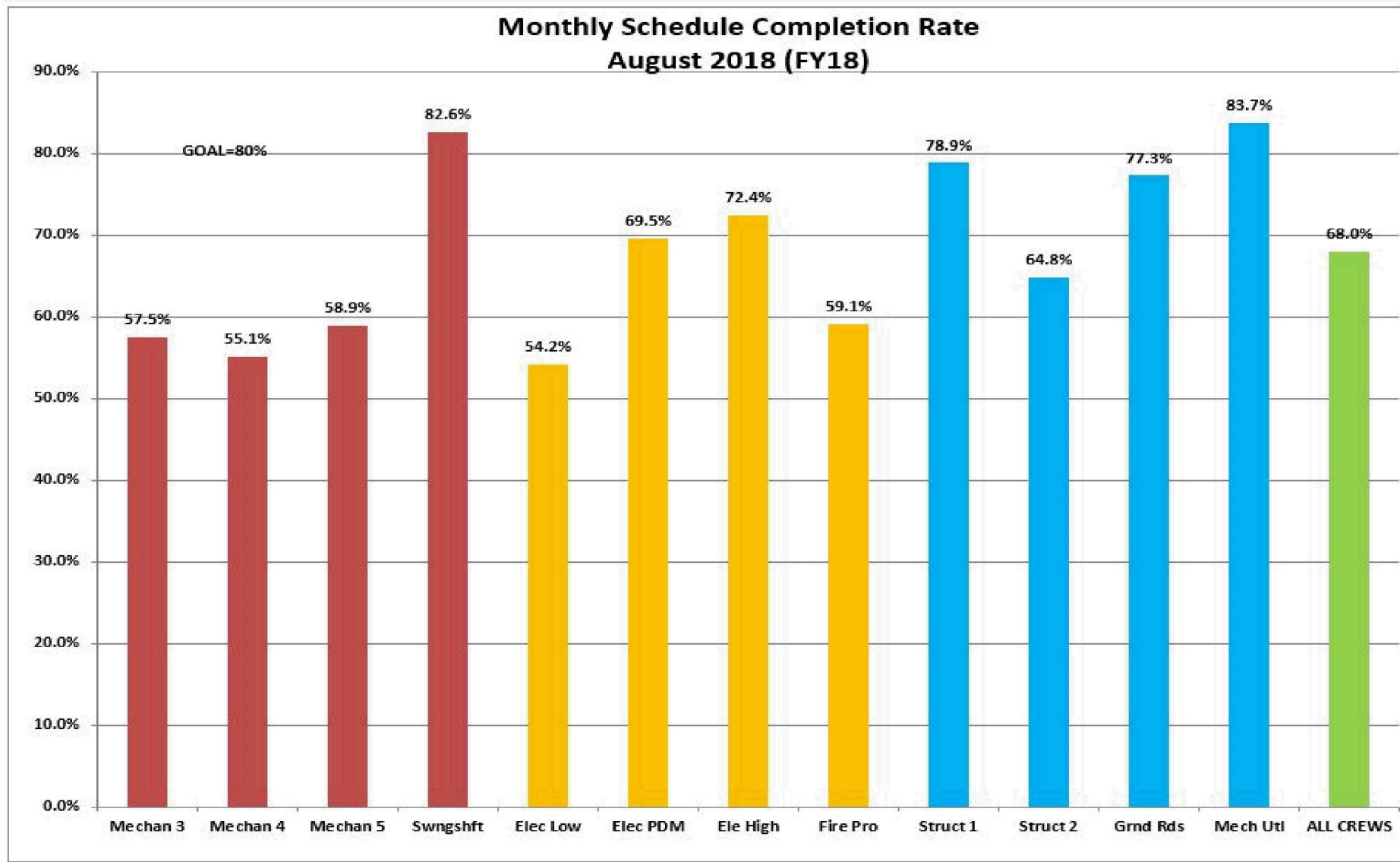
**MONYEAR**

MAR-16	APR-16	MAY-16	JUN-16	JUL-16	AUG-16	SEP-16	OCT-16	NOV-16	DEC-16	JAN-17	FEB-17
MAR-17	APR-17	MAY-17	JUN-17	JUL-17	AUG-17	SEP-17	OCT-17	NOV-17	DEC-17	JAN-18	FEB-18
MAR-18	APR-18	MAY-18	JUN-18	JUL-18	AUG-18						

**Rolling 12 Month Completion Rate**  
86.7%







Weekly Schedule based on Schedule Start Date.

If Actual Finish Date occurs in week of Schedule Start Date, the WO is captured as completed on time.

Schedule Completion Goal is 80% or greater.

# Future Investments in Site and Facility Capabilities

*Investments in today's infrastructure will enable mission success*

## MAJOR CONSTRUCTION PROJECTS PLANNED

- Microsystems & Engineering Sciences Applications Complex (MESA)
- Weapons Engineering Facility
- Mission Support Science & Technology Laboratory (NGE)
- Research Reactor Facility
- Z-Next
- EOC
- TA-IV Z Support Facility
- Agile Facility
- Q Space Office Facility
- New Employee Integration Center

Currently, 30% of facilities most important to mission work are in **poor** condition.

	Mission Importance <sup>2</sup>			
Building Condition <sup>1</sup>	High	Medium	Low	Total
Good	20%	20%	15%	55%
Reasonable	8%	4%	1%	13%
<b>Poor</b>	<b>18%</b>	<b>12%</b>	2%	32%
<b>Total</b>	<b>46%</b>	<b>36%</b>	18%	100%

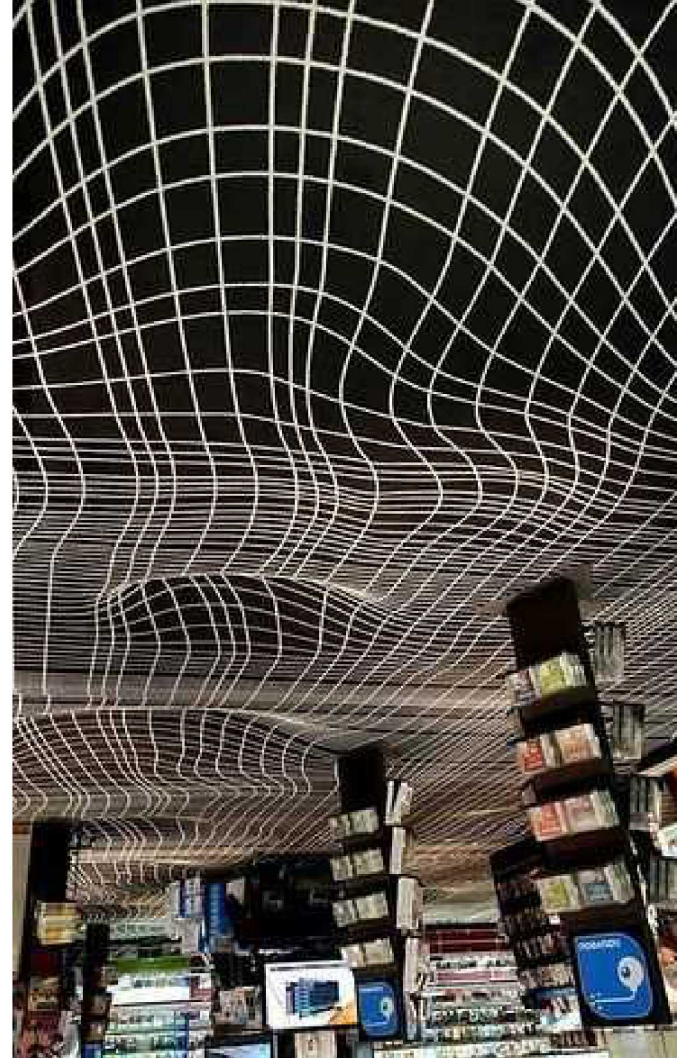
1. Based on Laboratory Operating Board (LOB) assessments

2. Based on Mission Dependency Index scores: >60% = high; 10%–60% = medium; <10% = low

>\$1B in investments planned in next 3 years

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# Questions



# The Deep Freeze Feb. 2011



Sandia National Laboratories is a multimission laboratory managed and operated by National Technology and Engineering Solutions of Sandia LLC, a wholly owned subsidiary of Honeywell International Inc. for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA0003525.

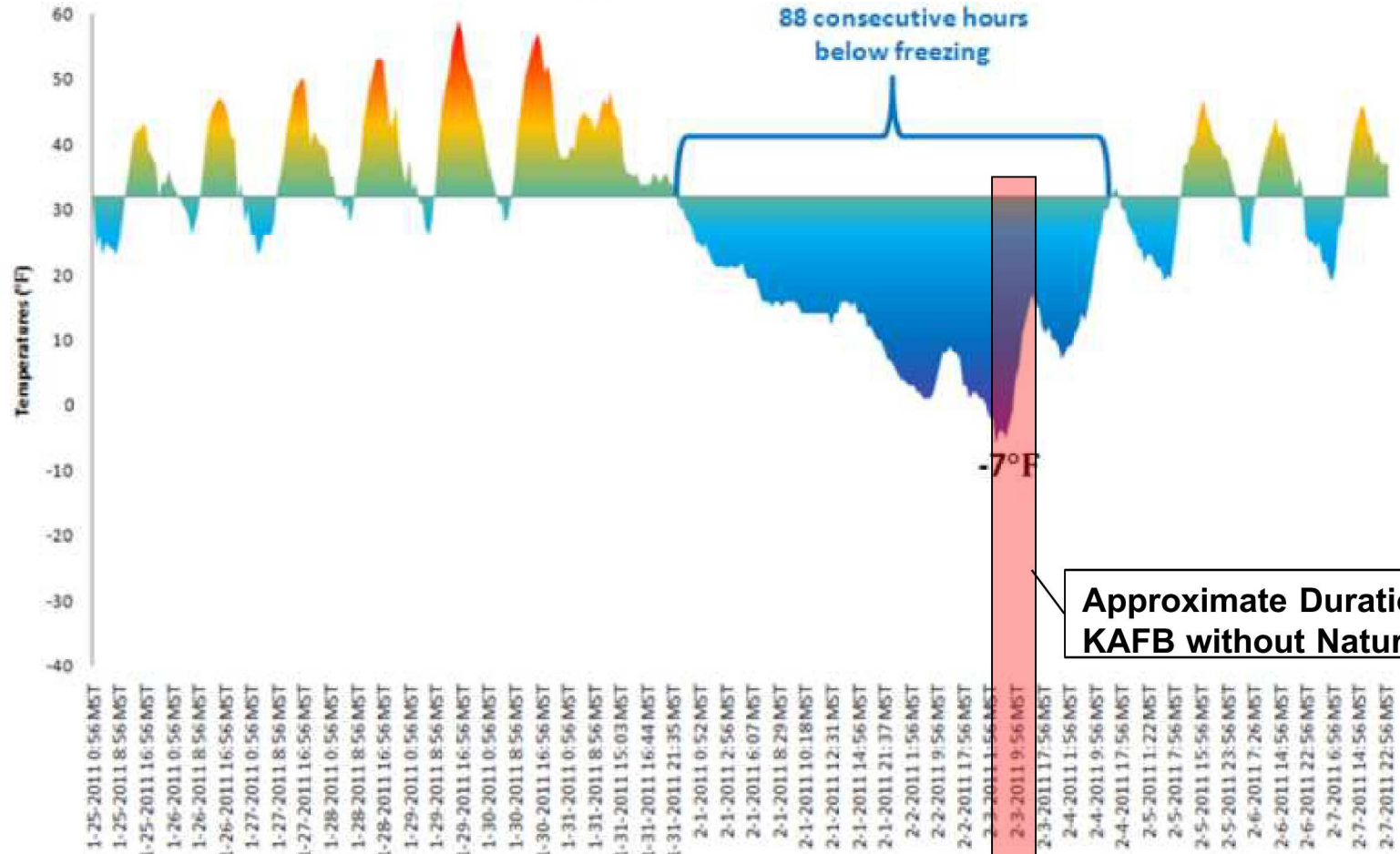


# Weather Summary

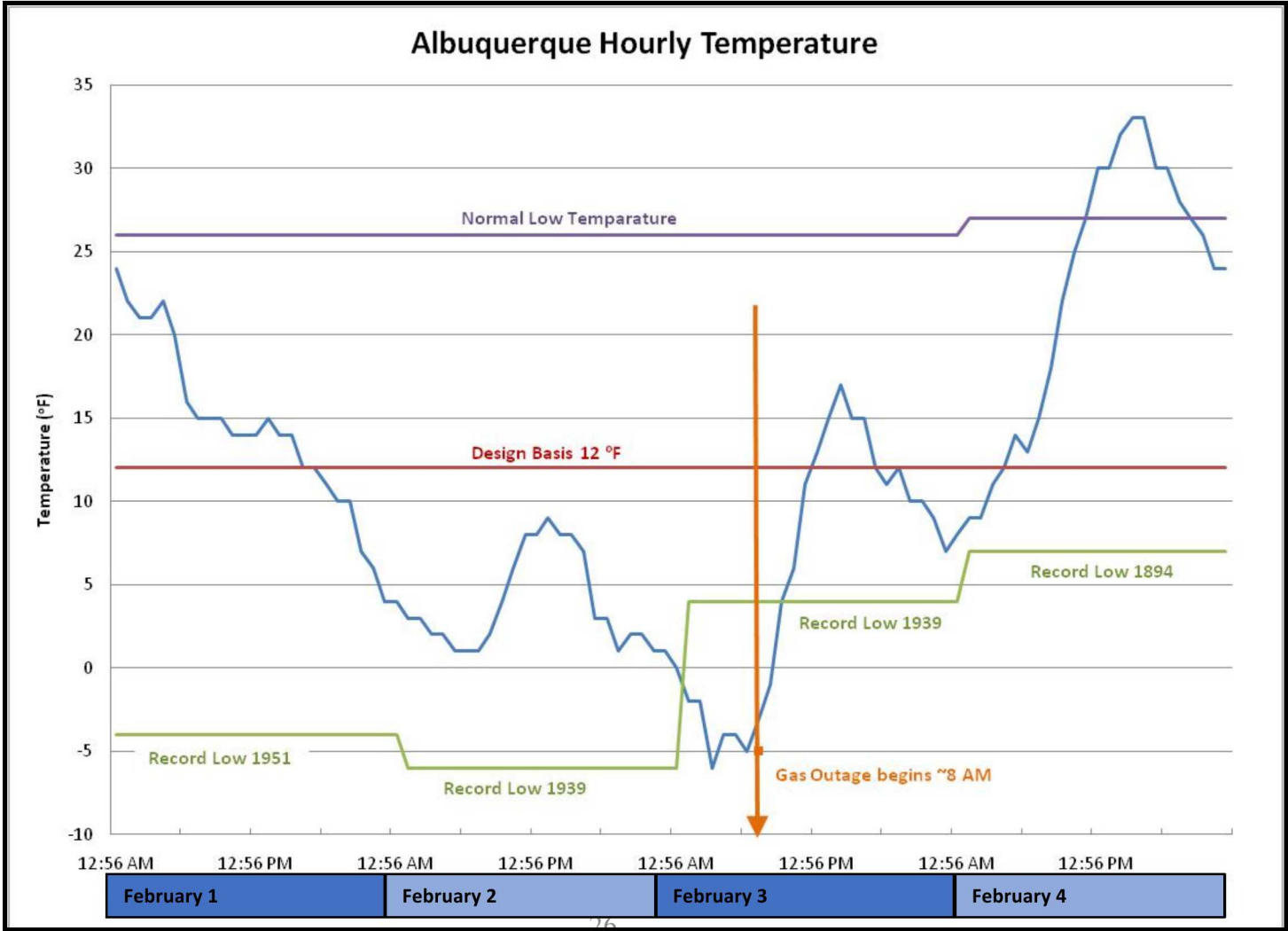


Albuquerque Sunport  
Hourly Temperatures  
January 25 - February 7, 2011

Note: Chart obtained from NOAA  
National Weather Service.



# Design Basis Requirements



# Weather Forecast

Date	Events	FMOC Response
Jan 29 and 30	Weather forecast issued indicating snow and sub-freezing temperatures expected for most of New Mexico	<ul style="list-style-type: none"><li>• Snow removal equipment prepared and resourced scheduled.</li></ul>
Feb 1	Start of 88 hours of sub-freezing temperatures	<ul style="list-style-type: none"><li>• Preventive measures include heat-loading buildings by eliminating “night set back” mode and monitoring building condition thru FCS.</li><li>• Snow clearing activities begin.</li></ul>



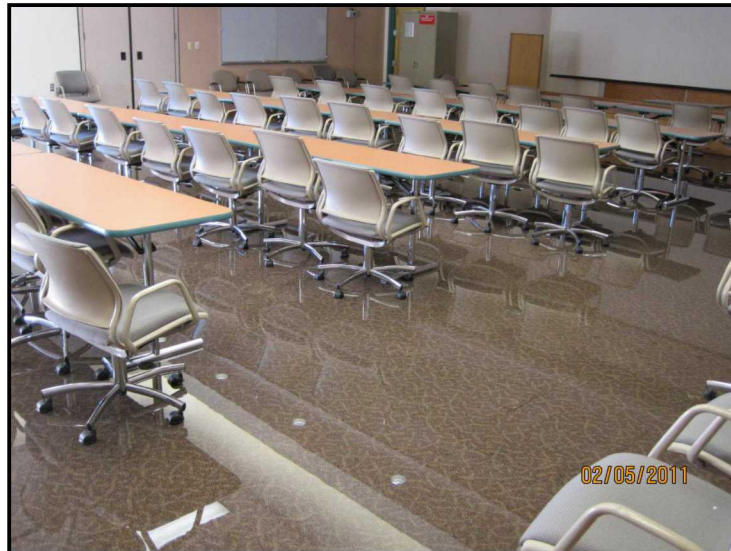
# Curtailment and Outage

Date	Events	FMOC Response
Feb 2	Request from NM Gas Co. for voluntary curtailment of demand. PNM notifies SNL of potential power disruption. Freeze damage to heating and sprinkler systems begins.	<ul style="list-style-type: none"> <li>• Strategic session to determine response to gas and electrical curtailment requests</li> <li>• Systems put into “Night Set back mode” at 6:00AM to conserve gas.</li> <li>• Key facilities notified of potential</li> </ul>
Feb 3	Gas supply to Sandia and KAFB shut off.	<ul style="list-style-type: none"> <li>• Notifications begin to Line Management.</li> <li>• MO-88 converted into FMOC emergency operations center.</li> <li>• Lab spaces exhaust ventilation closed.</li> <li>• Office buildings switched to 0% outdoor air.</li> <li>• Water system pumps circulating to prevent freeze.</li> <li>• Sprinkler systems isolated.</li> <li>• Fire patrols begin.</li> <li>• FMOC begins 24/7 coverage.</li> </ul>



# Recovery Actions

Date	Events	FMOC Response
Feb 3, cont.	Gas service starts being restored. Decision to close SNL/NM Feb 4.	Boiler restarts commence, building by building. Recovery actions to restore systems and repair damage.
Feb 4 thru 10	Outdoor high temperatures above freezing.	Recovery actions continue until all systems restored.



# Estimated Costs and Impacts

- Costs associated with Staff Sent Home
  - Inclement Weather (Feb 1)
  - Gas Shut Down – Lab Closure (Feb 3-4)
- Infrastructure Response and Repair Total Costs – > \$1M
  - Emergency Response (Heating, Water damage, fire suppression systems, surveillance)
  - Subcontractor support
  - Emergency Operations & Security
- 191 Facility Fire Suppression Systems Isolated and Returned to Service
- 113 Facilities with reported leaks
- >450 work orders related to leaks
- ~8000 hours of labor