

LA-UR-23-23915

Approved for public release; distribution is unlimited.

Title: ALDFO Continuous Improvement

Author(s): Jaramillo, Leo
Anderson, Edward C. Jr.

Intended for: Slides to be presented at the Director's Spring 2023 Off-site Retreat

Issued: 2023-04-17



Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by Triad National Security, LLC for the National Nuclear Security Administration of U.S. Department of Energy under contract 89233218CNA000001. By approving this article, the publisher recognizes that the U.S. Government retains nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or to allow others to do so, for U.S. Government purposes. Los Alamos National Laboratory requests that the publisher identify this article as work performed under the auspices of the U.S. Department of Energy. Los Alamos National Laboratory strongly supports academic freedom and a researcher's right to publish; as an institution, however, the Laboratory does not endorse the viewpoint of a publication or guarantee its technical correctness.

ALDFO Continuous Improvement

Ed Anderson and Leo Jaramillo
Facilities & Operations

April 18, 2023

Lab Agenda Snapshot

2023 Update

The Laboratory Agenda provides a structured framework that identifies the strategic objectives, critical outcomes, near-term R&D, and production and mission-support activities needed to accomplish our mission.

Strategic Objectives

Nuclear Deterrent

Lead the nation in evaluating, developing, and ensuring effectiveness of our nuclear deterrent, including the design, production, and certification of current and future nuclear weapons.

Threat Reduction

Anticipate persistent and emerging threats to global security; develop and deploy revolutionary tools to detect, deter, and respond proactively.

Technical Leadership

Deliver scientific discoveries and technical breakthroughs to advance relevant research frontiers and anticipate emerging national security risks.

Trustworthy Operations

Consistently demonstrate and be recognized by diverse stakeholders for trusted and trustworthy operations.

Critical Outcomes

Pit Production

Securely and optimally produce pits leveraging the nation's Plutonium Center of Excellence (Pu CoE) to support deterrence.

Computational Breakthroughs

Research, develop, and routinely apply world-leading computational methods, approaches, applications, and technologies to solve Los Alamos' most computationally challenging science and security problems.

Integrated Deterrence

Develop, and demonstrate capabilities to strengthen U.S. deterrence across the complete conflict spectrum.

Threat Response

Develop and deploy technical solutions supporting future nonproliferation, counterproliferation, and counterterrorism strategies.

Climate & Clean Energy

Enable regional and national achievement of Administration 2030/2050 climate and clean energy objectives through scientific, technological, and partnership initiatives that build on established LANL capabilities.

Culture Enhancements

Challenge culture elements in our work environment that support inclusive staff engagement, respectful behaviors, and learning opportunities that are the foundation for safe, secure, compliant, and quality performance of our missions.

Non-Nuclear Production

Develop integrated non-nuclear production capabilities to address gaps in the national Nuclear Security Enterprise (NSE).

Experimental Advances

Advance LANL's experimental characterization tools in conjunction with our computational solutions to underwrite decisive assessment without the need for a nuclear test.

Technology Modernization

Optimize and apply advanced technologies to enable modernization of the deterrent and its critical workloads.

Quantum Leadership

Assert LANL leadership in the National Quantum Initiative; enable emergent scientific and national security needs by advancing quantum-relevant capabilities in materials, algorithms, simulation, and devices.

Biosecurity Preparedness

Enable national preparedness and response to infectious diseases and biosecurity threats by harnessing the sciences along with other innovative scientific approaches.

Operational Capacity

Meet the capacity requirements necessary to perform current and future missions.

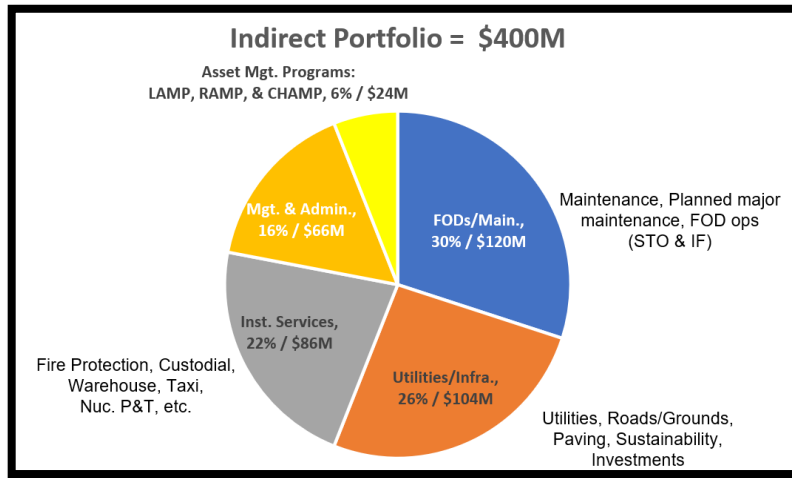
Force for Good

Be recognized as a force for good by Northern New Mexico communities and valued by stakeholders to perform missions with national operational impact.

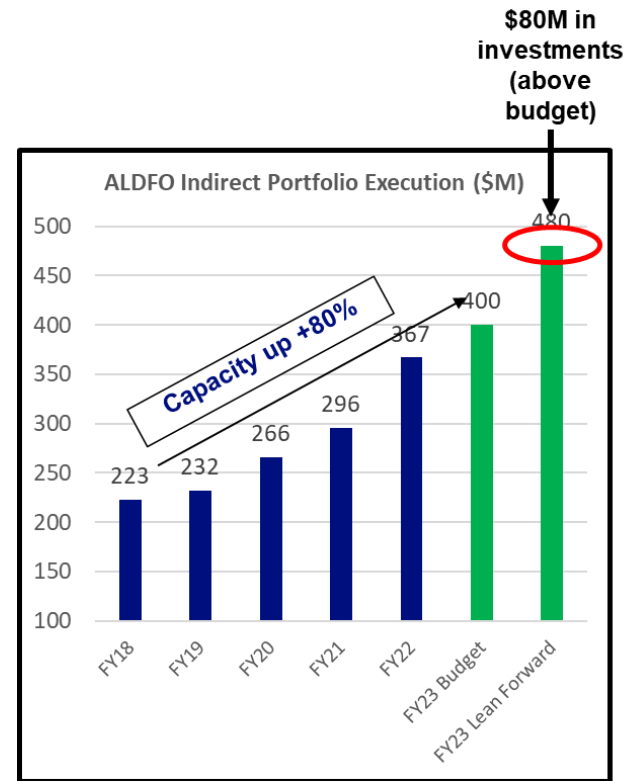
LA-00-25-21331

ALDFO has taken a Lean Forward posture to increase Operational Capacity

- ALDFO total FY23 budget = \$859M
- ALDFO total FY23 indirect budget = \$400M

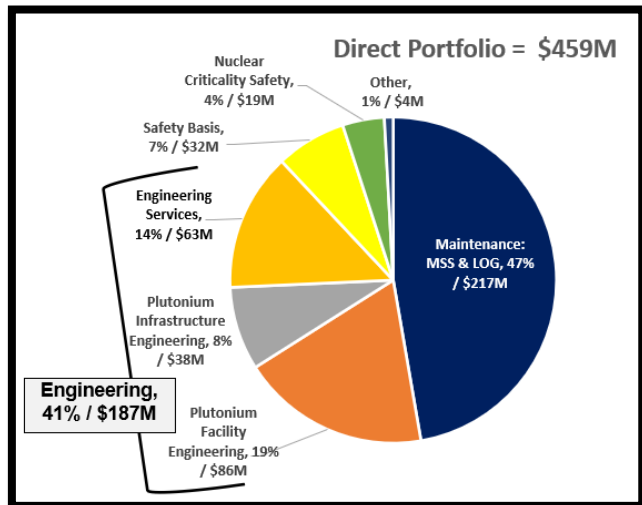


- Significant momentum going into FY23
 - FY22 YTD Feb = \$108M, FY23 YTD Feb = \$165M (up 53%)
 - FY23 ROE = \$423M (current pace), FY23 Forecasted costs = \$484M
 - FTEs: FY22 = 711, FY23 YTD = 837, FY23 Forecast = 907



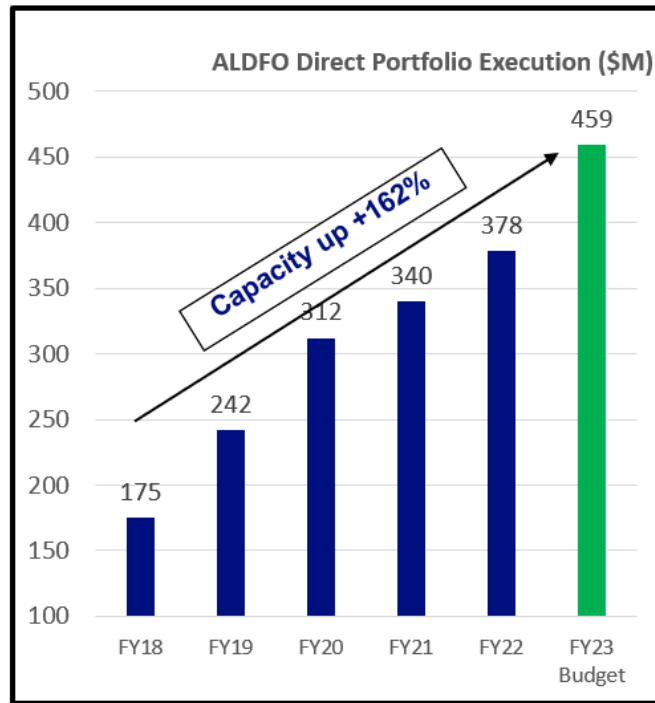
ALDFO is focused on supporting the growing Weapons Program and Construction Projects

- ALDFO total FY23 budget = \$859M
- ALDFO total FY23 direct budget = \$459M
(Weapons \$385M, Construction = \$68M, Other = \$5M)

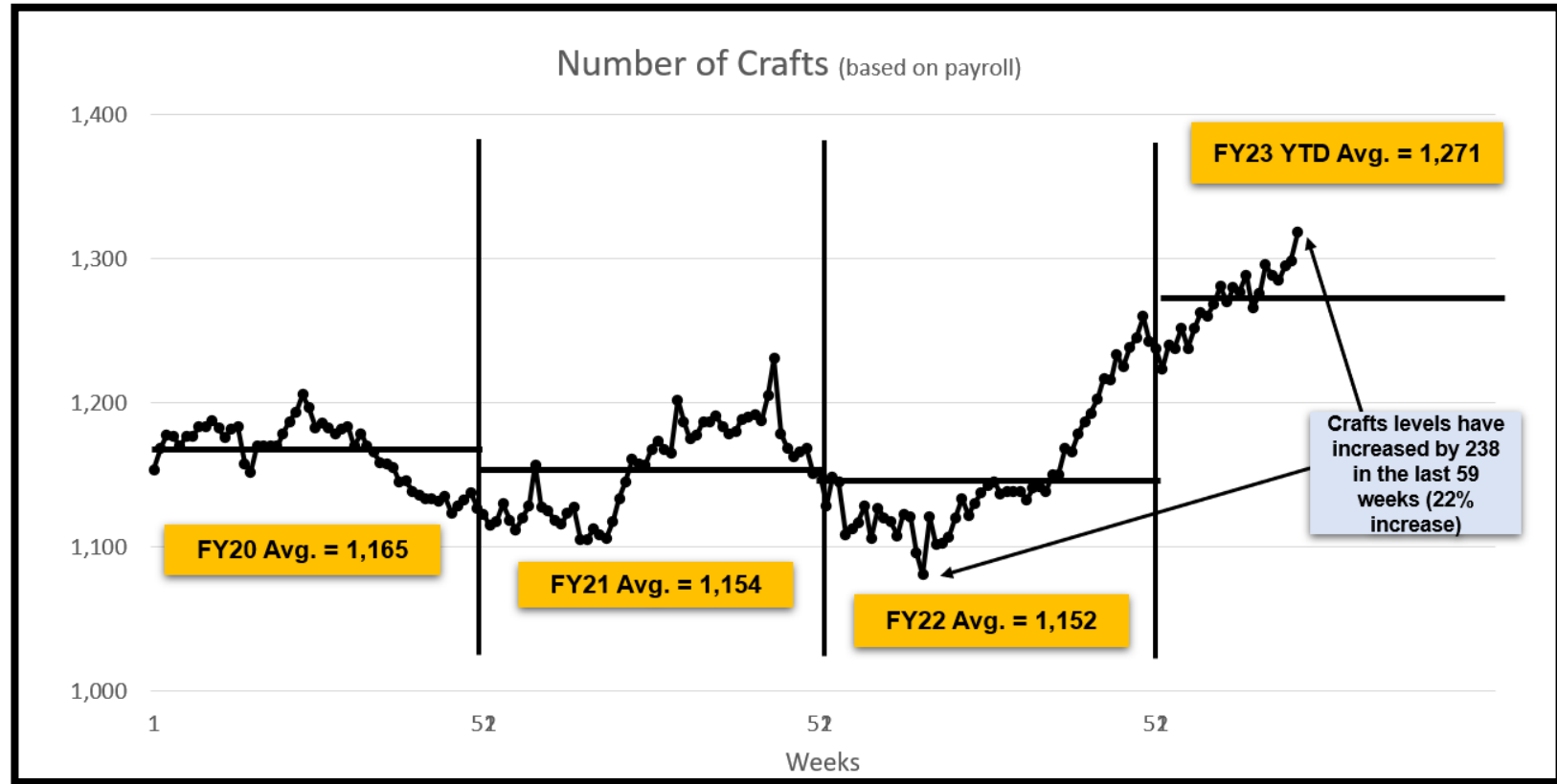


- Building momentum into FY23 (more work than people)
 - FY22 YTD Feb = \$133M, FY23 YTD Feb = \$172M (up 19%)
 - **FY23 ROE = \$442M (current pace)**, FY23 Forecasted costs = \$394M (needs updates)
 - FTEs: FY22 = 553, FY23 YTD = 658 – continue to increase staff levels

Expect more
budget later
in FY23



LANL Craft Headcount by Week: FY20 – FY23 YTD

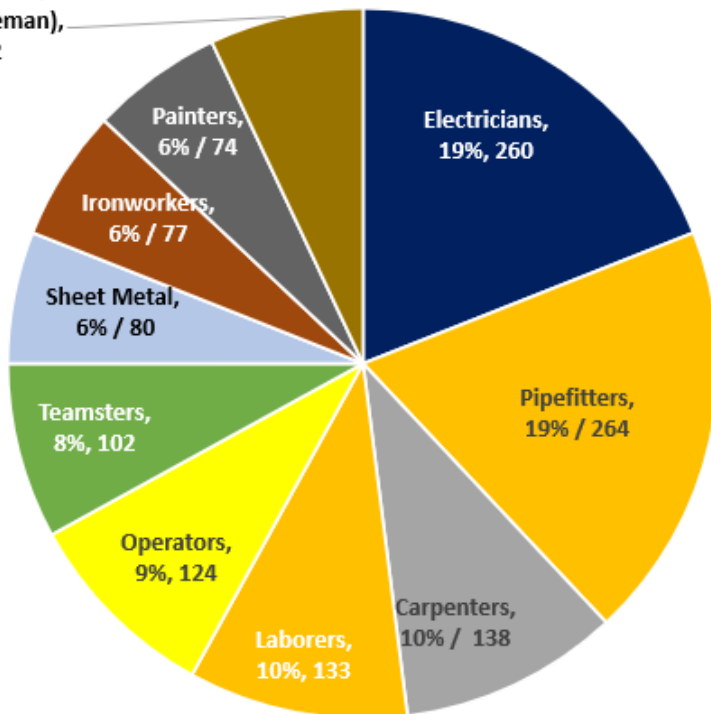


Craft numbers have been increasing since mid-FY22 to support projects and facility ops/maintenance

FY23 LANL Crafts by Type and Assignments

FY23 LANL Crafts by Type – 1,354 total

Other (Insulators,
Roofers, Masons,
Relamper, Lineman),
7% / 102



Craft Assignments

- Maintenance – 617 / 46%
- Construction – 290 / 21%
- Craft Support: Metal Fab, Structural, Paint Shops, Roads & Grounds – 246 / 18%
- Deployed OPS and Logistics Services – 201 / 15%

Total – 1,354 / 100%

Construction Craft Assignments

TA-55 Construction = 187 / 64%

Core Construction = 103 / 36%

Total = 290 / 100%

Construction Crafts by Type

Electricians – 120 / 41% (46% of all)

Pipefitters – 54 / 19% (20% of all)

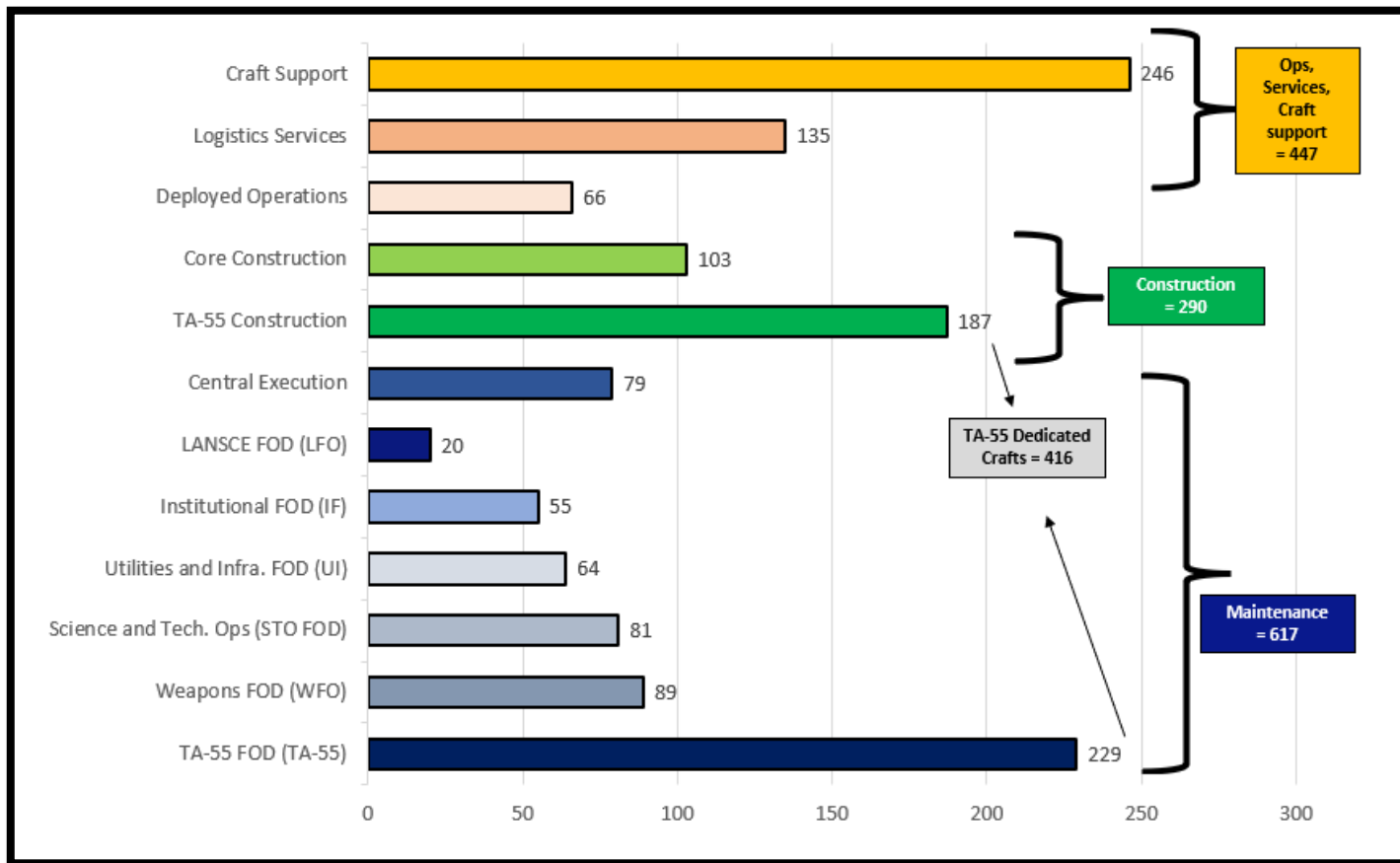
Carpenters – 41 / 14% (30% of all)

Sheet Metal – 32 / 11% (40% of all)

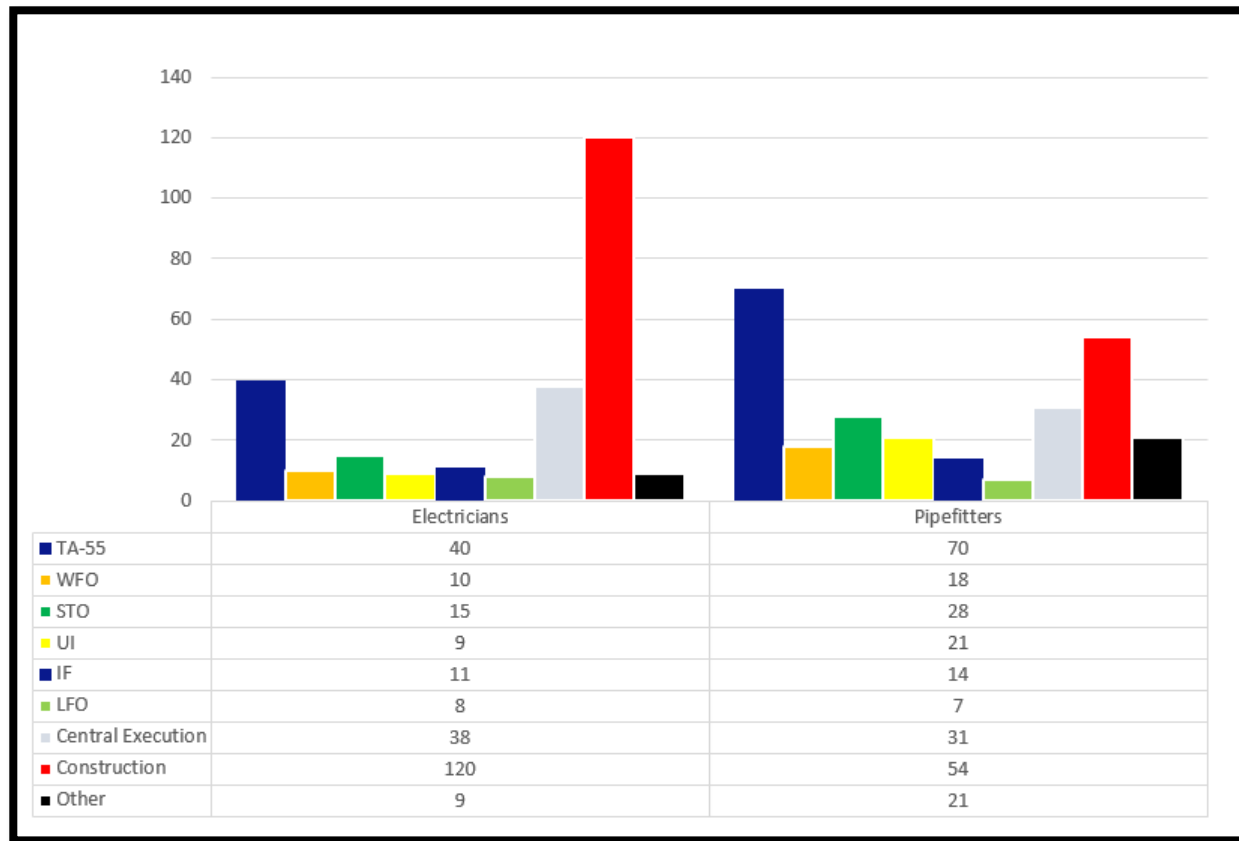
Other – 43 / 15%

Total – 290 / 100%

FY23 LANL Crafts by Assignment = 1,354



FY23 LANL Electricians and Pipefitter by Assignment



Electricians and Pipefitters make up over 50% of all maintenance craft, these are the critical resources to execute additional facility work in any area. To execute more in any one area, would require movement of these resources between FODs, Construction work, and other areas. Recognizing that LANL continues to pursue hiring in these trades.

LANL Deferred Maintenance

LANL Deferred Maintenance (DM) as a % of Replacement Plant Value (RPV)

	FY20	FY21	FY22	Change (FY22-FY20)
LANL DM	\$1,192M	\$1,369M	\$1,364M	+\$172M / 14%
LANL RPV	\$36,408M	\$37,261M	\$40,838M	+\$4,430M / 12%
LANL DM/RPV ratio	3.3%	3.7%	3.3%	Rise in RPV decreased FY22 ratio
NNSA DM/RPV ratio	5.0%	5.0%	4.84%	Congressional mandate for NNSA to reach ratio of 2.67% by 2030

Top 10 LANL Facilities for Deferred Maintenance

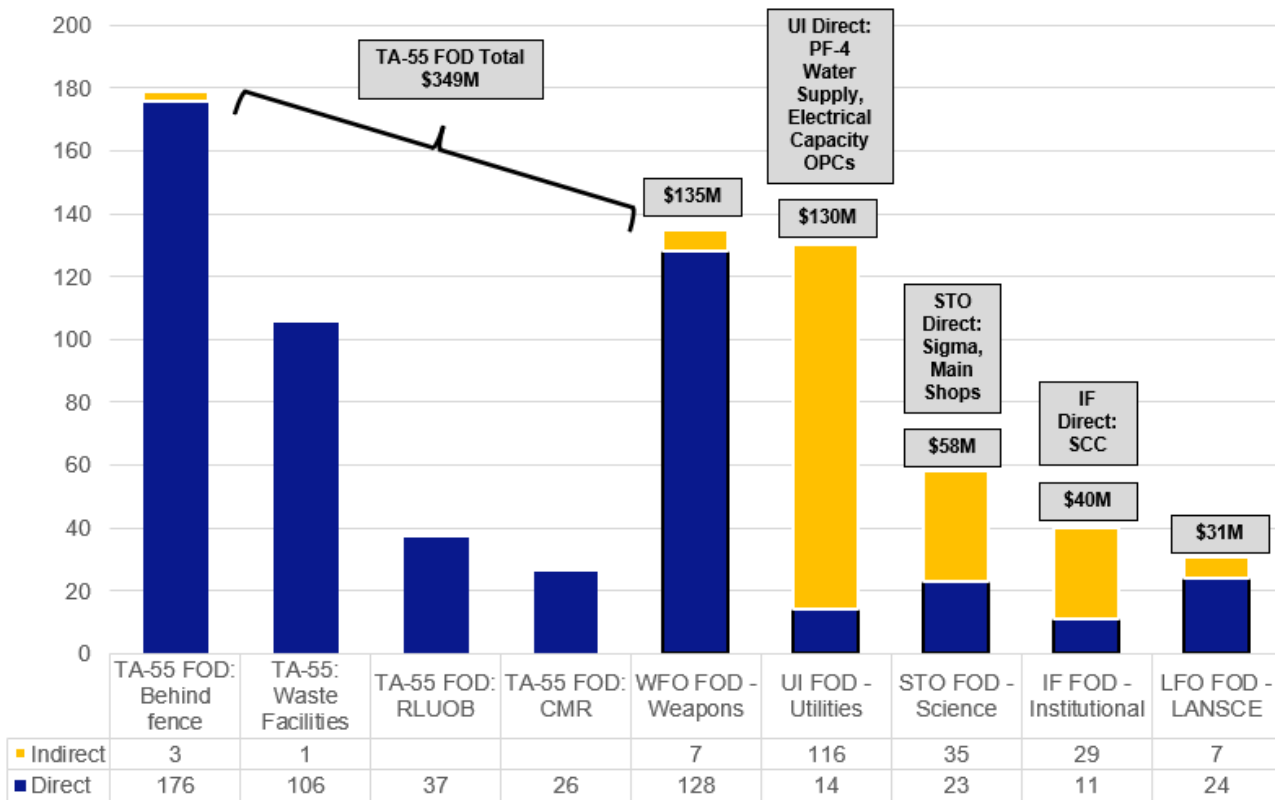
Property ID	Property Name	Area Name	FY22 Deferred Maintenance
03-0029	CMR LABORATORY	TA55	\$281,085,015
53-0003	LANSCE ACCELERATOR BLDG	LANSCE	\$223,412,700
55-0004	PLUTONIUM BLDG	TA55	\$118,709,000
03-0022	Z STEAM PLANT C106140	UI	\$54,159,690
03-0040	PHYSICS BLDG	STO	\$37,607,450
99-1789	PARKING (VEHICULAR)	UI	\$31,072,119
03-0066	SIGMA BLDG	STO	\$26,877,220
99-1739	SECONDARY ROADS	UI	\$20,679,784
48-0001	LABORATORY BLDG	STO	\$19,602,560
03-5829	PLANTS (GAS-FIRED)	UI	\$19,380,229
Top Ten sub-total			\$832,585,767
All Other sub-total			\$531,280,772
Grand Total			\$1,363,866,539
Top Ten of Total %			61%

Types of Money to support Facility Maintenance and Operations

Direct Facility funding Weapons Programs and NNSA Infrastructure (NA-90: ALDICP portfolio) FY23 budget ~\$550M	Indirect Facility funding Indirect budgets managed by ALDFO FY23 budget ~\$180M	Planned Major Maintenance (PMM) Indirect budgets managed by ALDFO FY23 budget ~\$20M	Asset Mgmt. Programs (AMPs) Indirect budgets managed by ALDFO FY23 budget ~\$25M	Indirect Infrastructure investments (IPPO) Indirect budgets managed by ALDICP FY23 budget ~\$75M	Direct Recapitalization Projects (NA-90) Direct budgets managed by ALDICP FY23 budget ~\$287M, (~\$200M in carryover included)
Support for Direct funded Weapons facilities : TA-55, RLUOB, CMR, Waste Facilities, DAHRT, SCC, Sigma, LANSCE accelerator, WETF, HE/Firing/Detonator sites and facilities, etc.	Support for all facilities outside direct model: lab-wide office buildings, labs, institutional infrastructure (utilities, roads, etc.), supports majority of lab square footage and tenants , primarily used for preventative and corrective maintenance	Support for projects beyond basic maintenance in indirect facilities, typically \$1M-\$5M projects such as replacing a boiler or HVAC system , portfolio is not funded to cover significant building upgrades or recapitalization	NNSA complex-wide program with single vendors for all sites, RAMP (Roofs) – managed by Kansas City, CHAMP (Cooling and Heating) – managed by Livermore, LAMP (Low-Voltage) – pilot project at LANL	Indirect investment profile FY23-FY30 (over 8 years), ~\$700M in planned projects, approx. 70% of portfolio is slated for Pajarito Corridor projects , Investment profile is: New construction ~\$500M, Utility infrastructure ~\$110M, Maintenance / Recap ~\$30M , Leases/Acquisitions ~\$12M (Entrada, Viome, Pebble lab facilities, etc.), Other ~\$48M	Direct Recap funding is meant to modernize NNSA infrastructure and prioritizes investments to improve the condition and extend the life of structures, capabilities, and/or systems. Projects are mission enabling (TA-55 and Weapons Engineering centric), but also includes Fire Stations

FY23 Facility Operations Director (FOD) Budgets

March month-end (\$M)

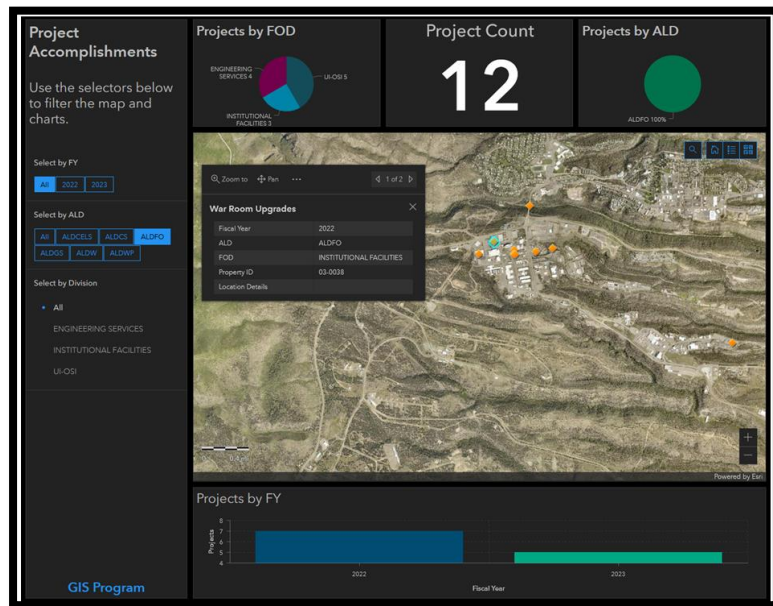


Total FOD budgets = \$743M

\$545M in Direct budgets / \$198M in Indirect Budgets

ALDFO Project Storyboard

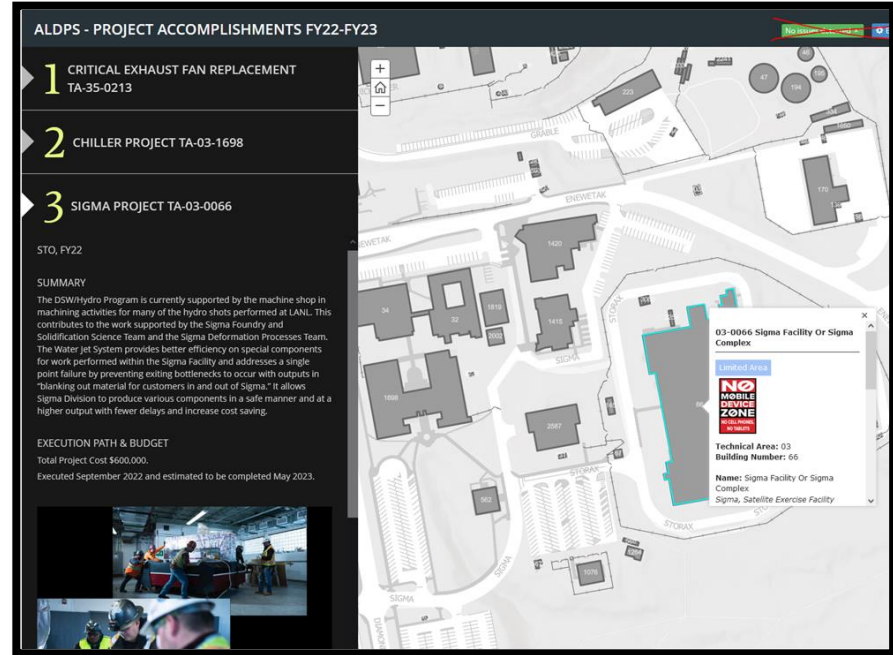
- ALDFO's Project Storyboard is a set of powerful tools that visually captures and summarizes FOD and Division project accomplishments.
- The StoryMap and Dashboard enable easy access to project information through the project detail panel, facilitating informed decision making and improving performance.
- ALDFO's commitment to excellence and transparency in project management.



StoryMap provides a project summary, its execution path, budget, and lessons learned, as well as graphics/photos and location of the project in the main map. The interactive map displays details about the building in the pop-up.

Dashboard Features

- Projects are categorized by Division, FY and ALD, visually representing the distribution across divisions.
- Projects can be filled by FY, allowing for easy tracking and accomplishments for FY22 with FY23 accomplishments approaching.
- The Dashboard can also be filtered to display the number of projects completed by each Division and ALD, measuring overall divisional performance.
- It (will be) can be filtered by total dollar amount per ALD, FY, and Division, showcasing the financial impact of completed projects.



Consistency

Conduct of Operations – Disciplined Operations

ALDFO chartered working group chaired by COO with cross-FOD representation.

- Con-Ops formality, efficiency, effectiveness, consistency
- Standardization processes across FODs
- Customer Centric Service Improvements
- Consistent Metrics
- Culture –Trust
- Subcommunities of Practice
 - Maintenance Managers
 - Operations Managers



Capacity

- Craft Efficiency – More Wrench Time
 - Planning
 - Scheduling
 - Oversight
 - Agility
- Maintenance Subcontracting
- Continue Aggressive Hiring



Response/Delivery

- FOD Specific Engineering Groups (40-50)
- Transparent 5 year Maintenance Planning
- Transparent Programmatic Prioritization
- Corrective Action Team
- Lean-In Planning and Control



For Discussion – Overall Facility Life Cycle Strategy

- ALDFO & ALDICP Team to Lead Development
 - New Facilities
 - Refurbishments
 - Recapitalizations
 - Major Maintenance
 - Maintenance
 - D&D Facilities
 - Programmatic Priority List
- Structured Prioritization Process Informed by RALDs
- Annual Concurrence by the LT

