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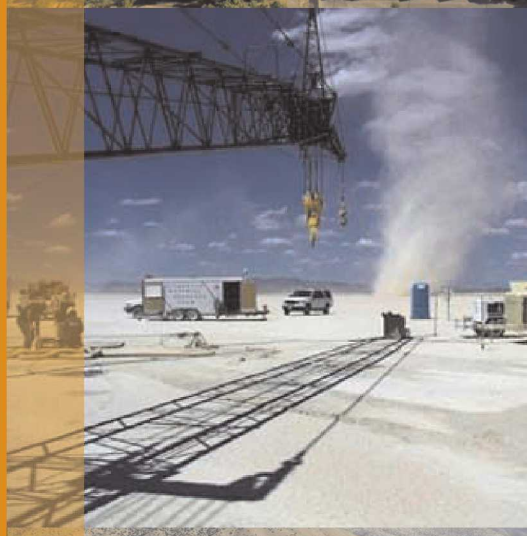

FACILITIES & INFRASTRUCTURE FIVE–YEAR INVESTMENT PLAN

FY 2019 - 2023

Sandia National Laboratories

National Nuclear Security Administration

U.S. DEPARTMENT OF ENERGY

Sandia National Laboratories is a multimission laboratory managed and operated by National Technology & 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.

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I. Introduction & Purpose of Five–Year Facilities & Infrastructure Planning

The Facilities & Infrastructure (F&I) Five-Year Investment Plan (Five-Year Plan) presents a framework to acquire, maintain, modify, and dispose real property assets with indirect- and direct-funded investments to sustain and modernize Sandia's F&I portfolio. This plan begins with a description of the principles used to guide decision-making for indirect-funded investments followed by a high–level view of F&I investments planned in the near– and mid–terms to meet emerging F&I needs required to support current and future mission work across Sandia's campuses.

This five–year F&I investment–planning program facilitates:

- A better understanding of risk to Sandia's capabilities in recommending specific investments
- Greater accountability and transparency to funding sources for how funds are being invested
- Greater predictability for Portfolio and Space Management and Work Planning and Control organizations within Infrastructure Operations to better inform project planning, programming, budgeting and execution activities
- A better understanding of anticipated F&I work for all members of the workforce
- A comprehensive understanding of anticipated F&I investments and sequencing based on anticipated funding to meet mission needs.

The printed version of this plan is released annually. The web version will be updated continually to reflect emerging/evolving priorities across the Labs.

I.a. Alignment with Other Planning Documents

At a high level, the Five–Year Plan is intended to align with National Nuclear Security Administration (NNSA), Department of Energy (DOE), and Sandia Strategic Plans; the NNSA Master Asset Plan (MAP); the Sandia Infrastructure Investment 2040 Strategy; the Long–Range Development Plan (LRDP); the Campus & Tech Area Master Plans (MPs); and the Corporate Investment Plan (CIP). The Five–Year Investment Plan translates long–term mission needs affecting F&I outlined in these other plans into implementable strategies Sandia can eventually execute through the CIP in the near–term.

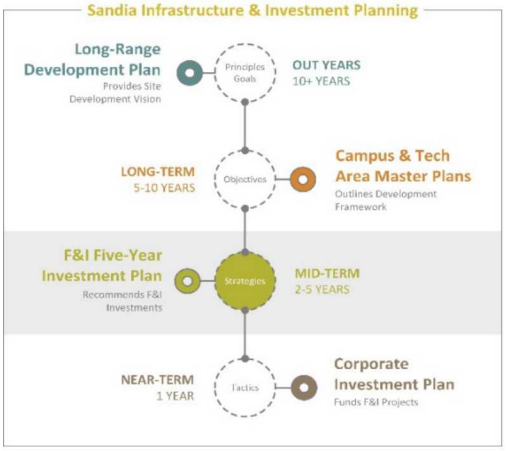


Figure 1. Understanding the Integrated F&I Plan with Focus on the Five–Year Plan

I.b. Sandia's Long–Range Development Vision

Sandia's long–range development vision is to "provide exceptional facilities and infrastructure that support our diverse missions, inspire our workforce, and demonstrate our dedication to national services and world–class engineering and science." The LRDP breaks this vision down further to help guide the physical development of facilities and infrastructure and tie Sandia development activities back to the overall strategic mission established in the SNL Strategic Plan. The following principals align the Sandia mission with the development of the physical campus at all Sandia sites.

LRDP Linkages

Support Mission Work. Coordinate with Laboratory/Division Leadership to ensure F&I meet mission needs.

Agility. Provide F&I that responds to changing missions and environments in a timely and constructive way.

Strategic Focus. Perform a systematic prioritization of F&I investments to ensure investments are implementing vision and goals.

Tech Transfer. Foster the transfer of technology between Sandia and governmental institutions, universities, and the broader community.

Recruitment & Retention. Provide physical spaces, site amenities, and F&I that create a healthy, pleasant, and walkable environment.

Internal Collaboration. Provide physical spaces and flexible facilities that provide on–site locations for internal collaboration.

II. Sandia's F&I Portfolio

Sandia sustains an aging infrastructure at multiple sites with the average facility age being 39 years. Most of Sandia's assets directly support NNSA missions, but Sandia also maintains nine owned or leased facilities for other DOE programs. Overall, assets are highly utilized with an 89% utilization rate. The following statistics include all of Sandia's assets, including leased and permitted assets, across all sites.

1,200	302	7.6m	$6.9b	$399m	$800m	12,256
Assets	square miles	gross square feet	replacement plant value	deferred maintenance	repair needs	People

II.a. Risk Management

NNSA's Enterprise Risk Management (ERM) model provides a holistic view of the risk posed by each asset across the enterprise and insight into investment opportunities to reduce risk. Sandia's 2017 ERM data (see chart below) reveals several assets in need of replacement or recapitalization. Assets in the upper right corner (red box) represent higher risk to mission and are the focus of investments. These assets have a Mission Dependency Index (MDI) score greater than 60, representing higher importance to mission, and a Laboratory Operating Board (LOB) condition rating of Inadequate (red dots) or Substandard (yellow dots), representing higher consequence and likelihood of failure.

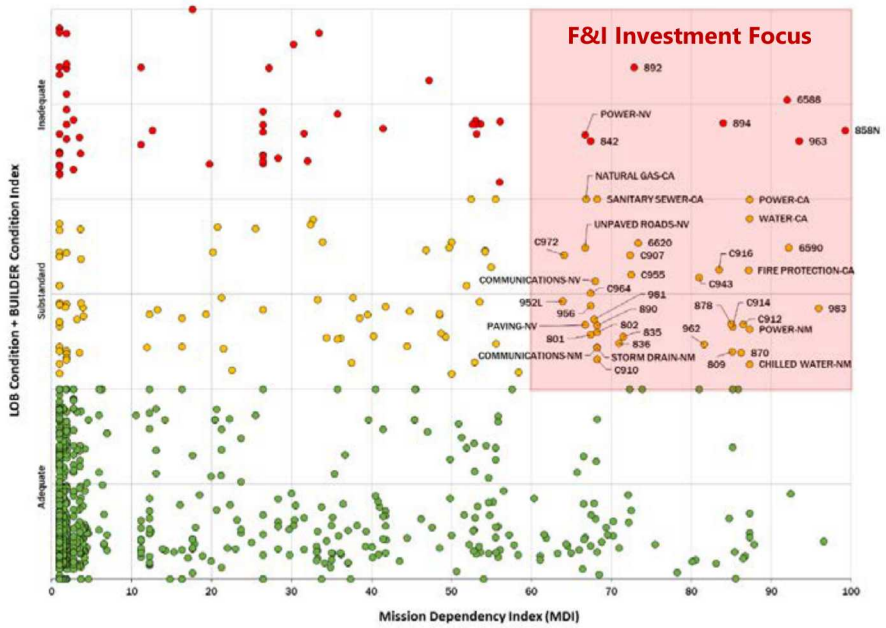


Figure 2. 2017 Enterprise Risk Management

II.b. Sandia's Sites

Sandia's real property asset (RPA) portfolio supports mission work at four primary sites in New Mexico (SNL/NM), California (SNL/CA), Nevada (TTR), and Hawaii (KTF). Through real estate transactions, Sandia also operates at other locations such as Alaska; Washington, DC; and Texas. Due to the nature and location of work at Sandia, this plan focuses on the four primary sites. The following maps and table provide context for location and magnitude of Sandia's F&I at each site.

Figure 3. Sandia's Four Primary Sites

Table 1. Breakdown of Sandia's Assets

FY2017	Ownership	#	GSF (M)	RPV ($M)	DM ($M)	Repair Needs ($M)
Building	DOE Owned	730	6.8	4,973	312	610
	Leased/Permitted	115	0.6	117	-	-
OSFs	DOE Owned	192	-	1,740	85	183
	Leased/Permitted	3	-	0	-	-
Trailer	DOE Owned	158	0.2	79	2	6
	Leased/Permitted	2	0	2	-	-
Grand Total		**1,200**	**7.6**	**6,911**	**399**	**800**

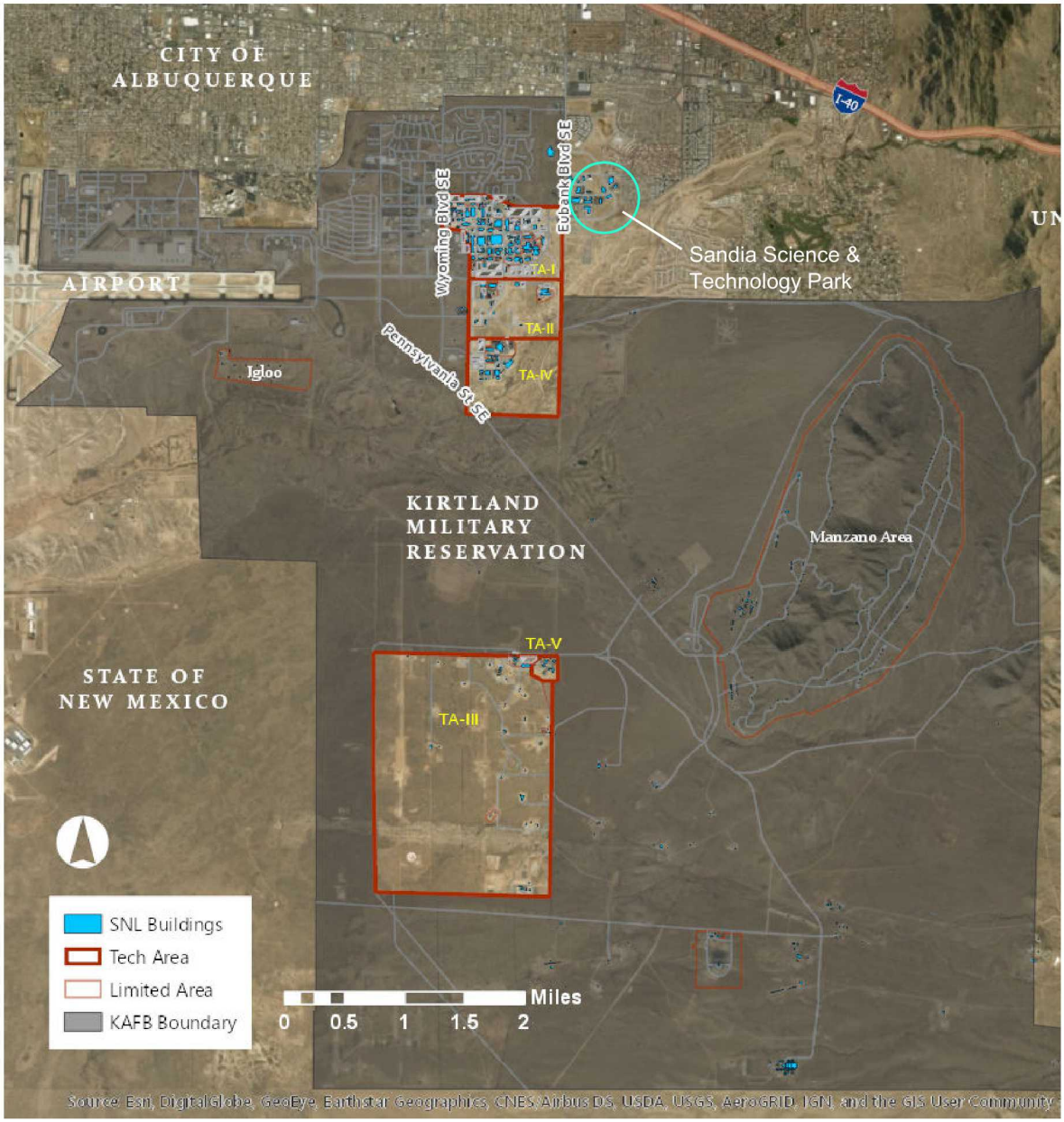


Figure 4. SNL/NM in Albuquerque, NM

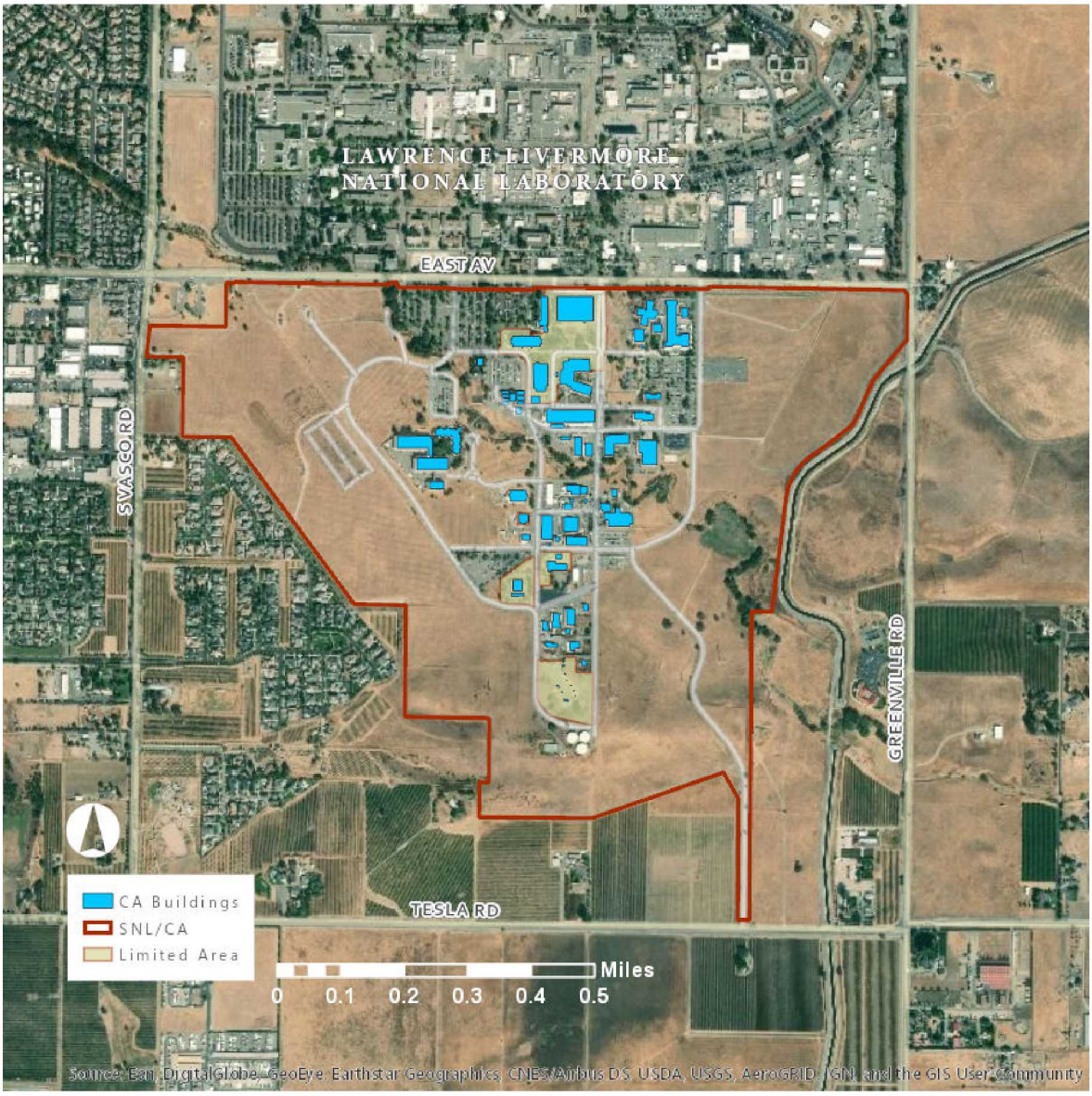


Figure 5. SNL/CA in Livermore, CA

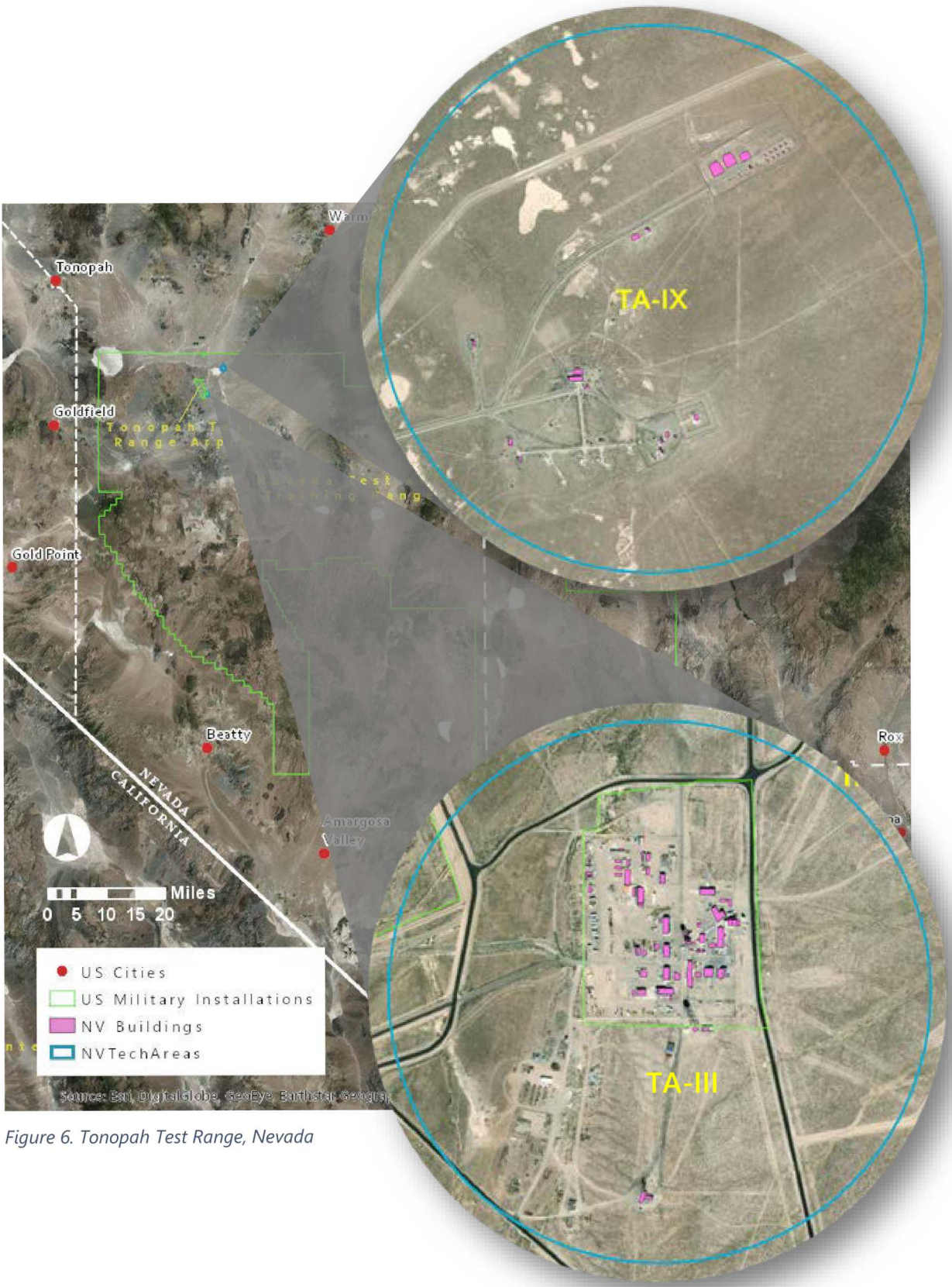


Figure 6. Tonopah Test Range, Nevada

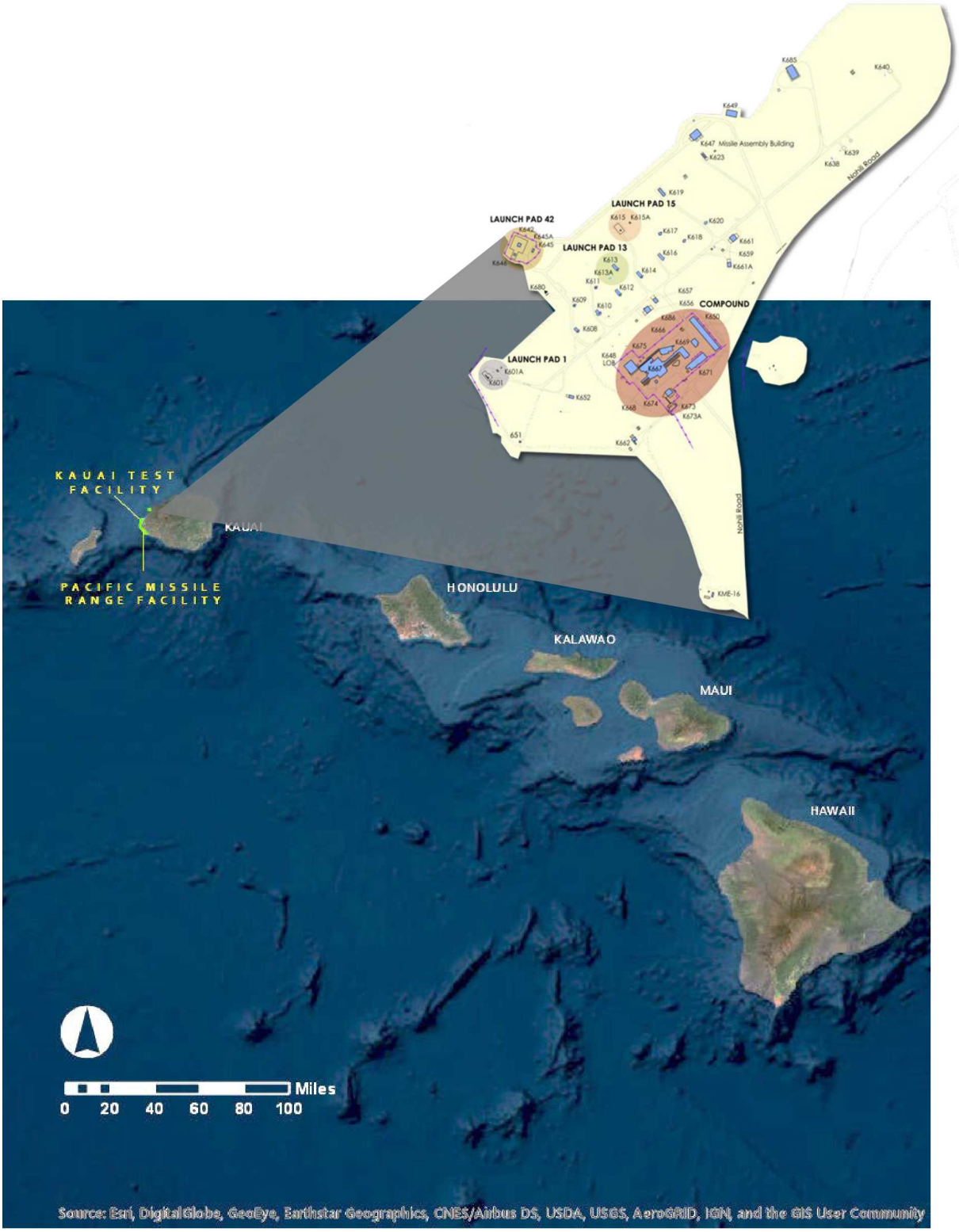


Figure 7. Kauai Test Facility, Hawaii

III. F&I Investment Plan, FY 2019–2023

III.a. Investment Planning Principles

Sandia has two major types of investments largely based on funding source: direct investments and indirect investments. Direct–funded investments are mission–based, reduce risk to the mission, advance corporate objectives, and prioritized by executive leadership at the corporate and DOE headquarters level. Indirect–funded investments represent the one source of capital revenue that Sandia can most control and budget and are founded on a principles–based approach toward F&I investing. The following philosophies guide decision-making in the areas of F&I indirect investments and are known as the Facilities & Infrastructure Recapitalization & Sustainment (FIRSt) Principles:

Embrace an Enduring Recapitalization Program

- Address major building and institutional infrastructure modernization and sustainment
- Steward Labs' level capabilities
- Ensure strategic alignment with mission area portfolios
- Identify sustainable funding from multiple sources including line

Optimize Utilization of Existing Space

- Accommodate near–term growth with existing space capacity and consolidate where and when possible
- Optimize longer–term space strategies through Centralized Space Management
- Partner with capability owners to identify lab and storage space

Effectively Manage Laboratory Footprint

- Remove inadequate, costly, and obsolete assets from inventory
- Analyze and plan for full life–cycle cost when adding footprint (initial investment + ensuing operations and maintenance)
- Conduct long–range planning

Sandia's F&I planning, project development, and budgeting approach overlaps planning horizons and development of integrated site planning documents. In general, planning for F&I investment is a multi-phase process beginning with identification of a need based on the understanding of mission risk driven by requirements outlined in the Stockpile Stewardship & Management Plan (SSMP) and the Nuclear Posture Review (NPR) and the health of capabilities related to F&I condition and capacity.

In this context, five-year planning describes how investment needs advance through project development to implementation. Planning for investments less than $20M typically mature within the five-year planning period, with specific funding approvals starting with the budget year for congressional notification allowing funds to be committed two years later. Indirect and direct corporate investment planning typically spans 2–3 years to cover project development with implementation over 1–2 fiscal years driven by timing of funds availability and the ability to commit and spend funds within the fiscal year.

III.b. General Funding Outlook

In the next five years, Sandia will make the following annual investments by funding source for FY19-23. Funding for FY20 and beyond are estimates based on past funding. Of the direct funding sources listed below, CBI focuses on programmatic equipment while other funds go toward F&I investments. Disposition funding is minimal due to high utilization rate and projected growth in work and workforce. With respect to indirect funding, Sandia leverages its limited indirect funding through the Overhead Management Business Office (OMBO), Maintenance program, and customer-funded projects. Knowing which projects a customer is funding is difficult.

Table 2. Annual Investments by Funding Source ($millions). Data current as of 9/15/18.

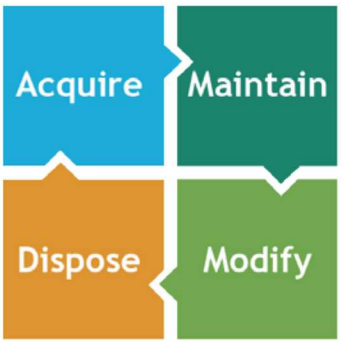
Funding Source	FY19	FY20	FY21	FY22	FY23
Direct					
Line Item	0.2	4.3	10.0	70.0	59.0
Recapitalization	50.9	25.0	40.0	40.0	40.0
Disposition	–	–	–	1.1	–
CBI	26.2	16.0	15.0	15.0	15.0
Maintenance (NA–50)	6.0	12.0	13.0	12.0	12.0
Indirect					
OMBO	49.5	52.5	43.0	17.0	15.0
DM Special Emphasis Program	4.0	–	–	–	–
Maintenance (Projected)	54.3	55.4	56.5	57.6	58.8
*Projects**	25.7	25.7	25.7	25.7	25.7
*Customer–Funded***	67.0	67.0	67.0	67.0	67.0

**Restoration/DM, Utility Savings, Renovation, Mission Enabling Moves & Mods*

***Average Division Support, Program Infrastructure Recovery, etc.*

IV. Sandia's Strategic Investment Framework

The goal of this F&I Investment Plan is to sustain and modernize Sandia's F&I portfolio.



Sustainment includes *maintenance, repair, or renovation activities necessary to keep a real property asset in good working order over its useful life.*[1] In order to sustain an affordable and healthy F&I portfolio, Sandia has adopted a four–part framework to apply its funding strategically. The four objectives for this framework are to **Acquire, Maintain, Modify, and Dispose (AMMD)** real property assets across Sandia's campuses. Utilizing this framework enables management to first visualize the interrelationships and impacts of proposed projects in the near– and mid–terms and then make portfolio–based investment decisions that also consider abating the total life–cycle costs of the F&I inventory.

Modernization includes *activities that keep existing facilities relevant and updated in an environment of changing standards and missions.*[2] This framework supports corporate objectives to modernize the work environment for recruitment and retention purposes while meeting Sandia's contractor obligations of real property asset management (RPAM) under the Department of Energy (DOE) Order 430.1C and the NNSA Program Management Plan (PMP) to provide mission–ready facilities and infrastructure.

This section breaks down the four–part framework by providing the following for each AMMD objective:

- **Definition** defines each objective
- **Our strategy(ies)** summarizes how each objective will be achieved
- **LRDP Linkages**[3] creates line of sight from five-year planning to long-range development goals outlined in the LRDP
- **What we have done** shows progress
- **Our future plans** outline where we are headed
- **Investment timeline** provides perspective for near-term investment plans

[1] DOE O 430.1C, Attachment 1, Page 13.
[2] DOE O 430.1C, Attachment 1, Page 9.
[3] See Long–Range Development Plan for full description of goals.

IV.a. Acquire

Definition

To add or replace RPAs through purchase or construction using various funding sources or real estate transactions.

Our Strategy

Our strategy for acquiring F&I at Sandia includes major and minor construction along with leasing activities to replace existing F&I that is failing or will soon fail, poses a risk to mission, and/or does not accommodate new programs and growth.

LRDP Linkages 

Our Major Construction Strategy

This strategy includes planning and executing congressionally approved line items. A line item is a distinct design, construction, betterment or fabrication activity, effort or project greater than $20M for which Congress will be requested to authorize and appropriate specific funds.[4] Line items support vital mission work at our nation's labs across NNSA. Sandia proposes line items for major capabilities either to sustain/improve existing or provide new F&I.

What We Have Done

- Developed a single vision of major investment priorities to the year 2040 through the Sandia Infrastructure Investment 2040 Strategy[5]
- Commenced work on the following project:

Project	Site	Status	Funding
Emergency Operations Center (EOC) Building	SNL/NM	In Progress	Direct

[4] DOE Order 413.3B

[5] In early 2018, an effort began with a group of Associate Laboratory Directors (ALDs) to create a tool to communicate Sandia's corporate vision for major investment in facilities and infrastructure as well as consistent messaging for Sandia's external sponsors. The current document reflects the work completed in partnership with portfolios, division, the line, and facilities. In the future, this document will become an interactive web tool.

Our Future Plans

The 2040 Strategy outlines Sandia's top ten major investment priorities as follows:[6]

- MESA Annex (Strategic Rad–Hard Microsystems for Evolving Threats)
- Power Sources Capability Sustainment
- Combined Radiation Environments Survivability Test (CREST)
- Refurbish/Re–capitalize Saturn Accelerator
- Next Generation Pulsed Power Facility (NGPPF)
- (CA) Weapon Engineering, Science, and Technology Laboratory (WEST Lab)
- Integrated Weapon Evaluation Capability
- Consolidated Environmental Testing
- Test Range Capability Sustainment
- Neutron Generator Enterprise

Our Minor Construction Strategy

Minor construction activities are defined as construction activities less than $20M that include projects characterized as General Plant Projects (GPPs), Institutional General Plant Projects (IGPPs). A minor construction project is a plant project not specifically authorized by law for which the approved total estimated cost does not exceed the minor construction threshold.[7] According to DOE accounting standards, minor construction can be accomplished through either direct or indirect funding. Due to a line item focus on strategic materials and the GPP threshold increasing, NNSA recommended Sandia review previous line item submissions for potential minor construction strategies. Therefore, some of the projects included in this plan support a single need, while others will be related to each other to address immediate risks and meet a longer-term goal.

What We Have Done

Project	Site	Status	Funding
Building 1012 Battery Test Facility (BTF)	SNL/NM	In Progress	Direct
B905 (Explosive Components Facility) Addition	SNL/NM	Complete	Direct
TA–IV Mission Support Building	SNL/NM	In Progress	Direct
725 Data Center Addition	SNL/NM	In Progress	Indirect
CA Data Center	SNL/CA	In Progress	Direct
Building C926	SNL/CA	Complete	Indirect
Building 756	SNL/NM	Complete	Indirect

[6] List current as of 7/26/18. For latest list of priorities, see latest copy of Sandia Infrastructure Investment 2040 Strategy.
[7] DOE Financial Management Handbook

Our Future Plans

- Explosive Manufacturing Science and Technology
- TTR Mission Support Facility
- New Radiation Protection Instrumentation Calibration Facility (B818 & B819)
- New Q–Cleared Building
- New Agile Facility (Generic High Bay Lab)
- New Employee Integration Center
- Northwest TA–I Parking Structure
- New Medical and Benefits Building
- New building (GPP) to provide appropriate space for orgs occupying space in Building 6585

Figure 8. Proposed new parking structure to provide 400-500 spaces

Our Leasing Strategy

Sandia's strategy for acquiring temporary interests in real property includes leasing buildings and land from the private sector; permitting buildings and land from other government entities; and acquiring licenses, easements, or Memorandum of Understanding (MOU) (as acceptable by NNSA). Our leasing strategy also includes alternative financing (AF), a process whereby DOE and its operational elements use private development to provide the use of capital assets under the auspices of an operating lease.[8] AF endeavors tend to be short–term and must qualify as an operating lease.

What We Have Done

- Innovation Parkway Office Center (IPOC) lease
- University of New Mexico tactical lease
- Center for Collaboration and Commercialization (C3) in UNM Rainforest Building lease
- Achieved CD–0 for Collaboration in Research Engineering and Advanced Technology and Education (CREATE) facility under AF at SNL/CA

Figure 9. CREATE facility at SNL/CA

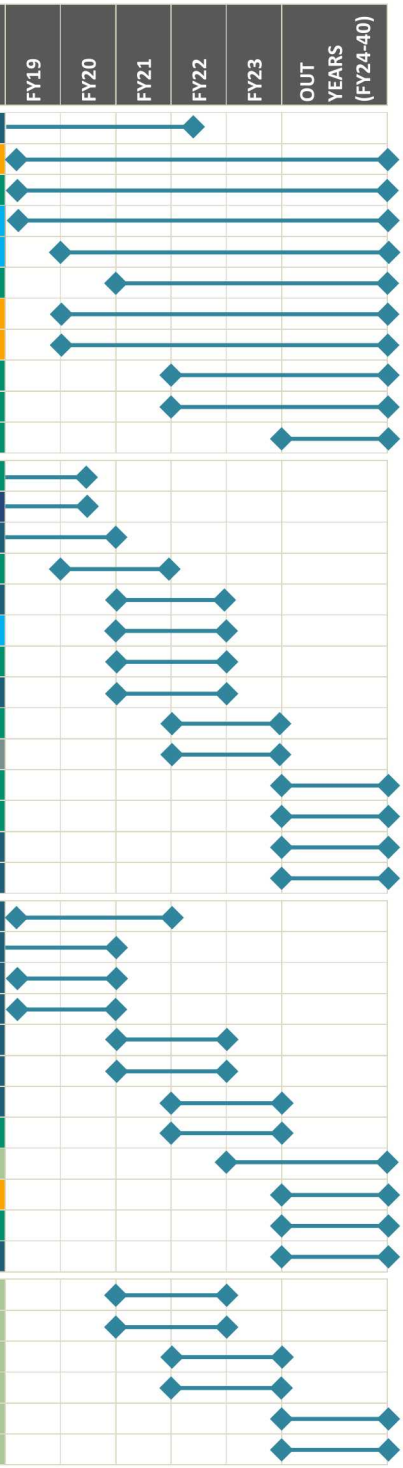
[8] DOE G 430.1–7, Page 2.

Our Future Plans

- New Leases, Licenses, & Permits
  - Northern Virginia Corporate SCIF lease
  - AutonomyNM Innovation Hub
  - Utility Easements between KAFB Permits
  - CD–1 through CD–4 to pursue AF for CREATE/LVOC
- Lease, License, & Permit Renewals
  - IPOC – 2019–2027
  - Advanced Materials Laboratory (AML) – 2019–2026
  - Texas Tech University – 2020–2030
  - Sandia Synergy Center (SSC) – 2020–2030
  - Carlsbad, 4100 National Park Hwy – 2020–2030
  - Radar Reflector Array Lease in Belen – 2020–2030
  - TTR Parking Lot – 2022–2032
  - Cyber Engineering Research Laboratory (CERL) – 2021–2031
  - Hawthorne Army Depot Bunkers in Nevada – 2019–2044
  - Renewal of 57 KAFB Permits

Investment Timeline

	ACQUIRE PROJECTS	PRIMARY LABS LEVEL CAPABILITY GROUPING
LINE ITEMS (>$20M)	Emergency Operations Center	Enabling Operations
	Power Sources Capability Sustainment	Weapons Engineering & Design
	Combined Radiation Environments for Survivability Testing (CREST)	Engineering Environments
	Neutron Generator Enterprise Consolidation (NGE+)	Production
	MESA Annex	Micro-Electronics
	Next Generation Pulsed Power Facility (NGPPF)	Radiation Effects
	CA-Weapon Engineering, Science, & Technology Laboratory (WEST Lab)	Weapons Engineering & Design
	Integrated Weapon Evaluation Capability	Weapons Engineering & Design
	Consolidated Environmental Testing	Engineering Environments
	Test Range Capability Sustainment	Test Ranges
	Full Replacement of Saturn & HERMES Project	Engineering Environments
DIRECT (<$20M)	TA-IV Mission Support Building	Radiation Effects
	CA Data Center	Mission Computing
	Technical Area-IV District Chilled Water Loop -North Loop Connection	Enabling Operations
	Explosive Facilities Upgrade - New STAB Facility	Engineering Environments
	Technical Area-IV District Chilled Water Loop -South Loop Connection	Enabling Operations
	Explosive Component Advanced Manufacturing and Prototyping Facility	Production
	TTR Mission Support Facility	Test Ranges
	New Radiation Protection Instrumentation Calibration Facility (B818 & B819)	Enabling Operations
	New Explosives Machining Facility (EMF)- Coyote Canyon	Engineering Environments
	New Geosciences Complex (Replace 849/851)	Material Science
	Training Consolidated Fabrication and Laboratories (9940H)	Engineering Environments
	Training Offices Building (9940 T)	Engineering Environments
	M Ave Telecommunication Backbone Extension	Enabling Operations
	NM TA-IV Telecommunications Ductbank Installation	Enabling Operations
INDIRECT (<$20M)	New Q-Cleared Building	Enabling Operations
	ABQ Generic Modular Lab	Enabling Operations
	New Employee Integration Center	Enabling Operations
	Northwest TA-I Parking structure	Enabling Operations
	(CA) New flexible, Limited Area, agile office (LAMP1)	Enabling Operations
	New Medical and Benefits Building (replace 831/832)	Enabling Operations
	(CA) New flexible Limited Area, highbay agile lab (LAMP2)	Enabling Operations
	Explosives Activity Consolidation (aka Energetics Offices & Light Labs Building)	Engineering Environments
	New Engineering & Integrated Technologies Support Facility	National Security Operations
	TA-I – Nuclear Weapon & Manufacturing Flex Facility	Weapons Engineering & Design
	TA-IV Accelerators Flexible Facility	Radiation Effects
	Mission Support Office /Admin TA-I	Enabling Operations
CUSTOMER FUNDED (<$20M)	Bldg. 895 Physical Security Laboratory Addition	National Security Operations
	New Cyber Research Facility	National Security Operations
	New Information Technology Facility	National Security Operations
	New Industrial Control Systems Facility	National Security Operations
	New Data Analytics Facility	National Security Operations
	TA I- National Security Flex Facility	National Security Operations



IV.b. Maintain

Definition

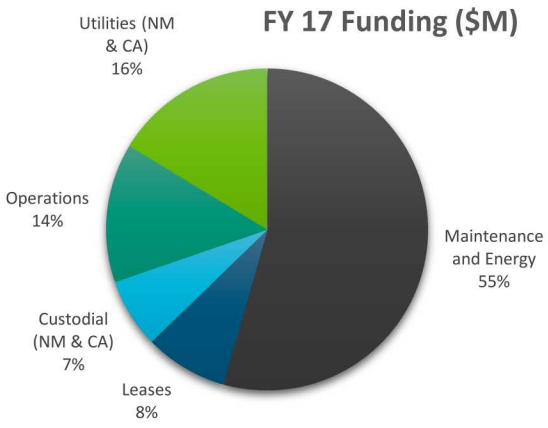
Maintenance is the work required to sustain property in a condition suitable for its designated purpose, including preventive and predictive maintenance.[9]

Our Strategy

Our strategy to maintain assets in an acceptable condition begins with management working in partnership with NNSA to determine levels of acceptability and then funding day–to–day maintenance activities with operational overhead to keep facilities in good condition. Sandia also receives a small amount of maintenance funding directly from NNSA for specialized facilities supporting NW activities, namely at TTR and SNL/NM (MESA). In the meantime, Sandia is working with NA-50 to gradually increase direct-funded maintenance and decrease indirect burden.

Table 3. Breakdown of Indirect Maintenance Funding at Sandia

ACTIVITY (Indirect Funded)	FY17 FUNDING ($M)
Maintenance and Energy	59.1
Leases	9.0
Custodial (NM & CA)	7.6
Operations (Base Support, Fire Prot., etc.)	15.2
Utilities (NM & CA)	17.7
TOTAL	108.6



In addition to the day–to–day work, Sandia invests in repair activities. Repair is defined as the restoration of failed or malfunctioning equipment, system, or facility to its intended function or design condition. This may include replacement of parts, components, or assemblies.[10]

LRDP Linkages

[9] DOE O 430.1C, Attachment 1, page 8.
[10] DOE O 430.1C, Attachment 1, Page 12.

What We Have Done

Project	Site	Status	Funding
Deferred Maintenance Special Emphasis Program for FY 17–18[11]	All	In Progress	Indirect
SiFAB NW Acid Exhaust Lateral Replacement	SNL/NM	In Progress	Direct
TA–III/V 14" Water Main Replacement	SNL/NM	In Progress	Direct
Average $13.3M invested in restoration projects thru Indirect Service Center	All	In Progress	Indirect
Sandia's Roofing Restoration Program[12]	SNL/NM SNL/CA	In Progress	Indirect
Sandia's Elevator Restoration Program	SNL/NM SNL/CA	In Progress	Indirect
Replaced roofs on buildings 868, 6588, 03–69, & 03–51 through NNSA Roof Asset Management Program (RAMP)	SNL/NM TTR	Complete	Direct
Pilot Project completed under NNSA Chiller AMP (CHAMP)		Complete	Direct

Our Future Plans

- Direct–funded Maintenance pilot project for MESA at SNL/NM
- NM/CA Restoration Programs
  - Chilled Water
  - Building Control System
  - Restrooms
  - Building envelope
  - High Voltage System
  - Low Voltage System
- NM Waterline System Restoration Program
- CA Potable Water Line Replacements
- CA Electrical Substation and Emergency Generator Replacement
- NM Tech Area 1 Subs 35, 36, 37 & 41 Replacement
- TTR – Main 13.8 kV Substation Replacement
- TTR Standby generator, load breaker, and ATS at Generator Building (n–53) Replacement
- B858N SiFAB HEPA Filter Replacements
- TTR Above Ground Tap Boxes at Station 39 and Station 24 Replacement
- B700 Builders & Exhaust Fans Replacement
- Continue working with NA-50 AMP programs

[11] Sandia reduced DM across its sites by investing $69M in facilities replacements in FY 17–18.
[12] Sandia improved the condition of roofs in TA–I at SNL/NM with major buildings like 802 and 880 changing from "failed" to "excellent."

Investment Timeline

	MAINTAIN PROJECTS	PRIMARY LABS LEVEL CAPABILITY GROUPING	FY19	FY20	FY21	FY22	FY23	OUT YEARS (FY23-40)
DIRECT (<$20M)	CA Electrical Substation & Emergency Generator Replacement	Enabling Operations	◆	◆				
	NM HV 5kV OH Feeder Replacements	Enabling Operations	◆	◆				
	B858N SiFab HEPA Filter Replacements	Micro-Electronics			◆	◆	◆	
	TTR - Main 13.8 kV Substation Replacement	Enabling Operations			◆	◆		
	TTR Above Ground Tap Boxes at Station 39 and Station 24 Replacement	Enabling Operations			◆	◆		
	Tech Area 1 Subs 37 and 41 Replacement	Enabling Operations			◆	◆	◆	
	Tech Area 1 Subs 35 and 36 Replacement	Enabling Operations			◆	◆	◆	
	KTF Power Infrastructure for Mission Support Compound Replacement	Enabling Operations				◆	◆	
	TA1 18th St. Hand Holes Replacement	Enabling Operations					◆	◆
	SNL CA Bldg C919 Site Main Switchyard Controls System Replacement	Enabling Operations					◆	◆
	NM Domestic and Fire Protection Water Line Replacement	Enabling Operations					◆	◆
	NM Storm Drain Sustainment	Enabling Operations					◆	◆
INDIRECT (<$20M)	DM SE Tail Funding	Enabling Operations	◆	◆				
	Restoration Projects	Enabling Operations	◆	◆	◆	◆	◆	◆
	Roof Sustainment Plan	Enabling Operations	◆	◆	◆	◆	◆	
	Elevator Sustainment Plan	Enabling Operations	◆	◆	◆	◆		
	Chilled Water Sustainment Plan	Enabling Operations	◆	◆	◆	◆	◆	◆
	Building Control Sustainment Plan	Enabling Operations	◆	◆	◆	◆	◆	◆

Maintenance and repair work does not include line items and/or customer-funded projects.

Figure 10. NM Severely corroded steel gas pipe

Figure 11. CA substation

IV.c. Modify

Definition

To alter the interior arrangements and/or physical characteristics of an asset with improvements resulting in better quality, increased capacity, or extended useful life.

Our Strategy

Sandia's strategy to modify viable assets across the sites includes investing in projects that increase utilization through renovations, improve overall working conditions and quality of space, and renovate buildings to change use or increase capacity.

LRDP Linkages

What We Have Done

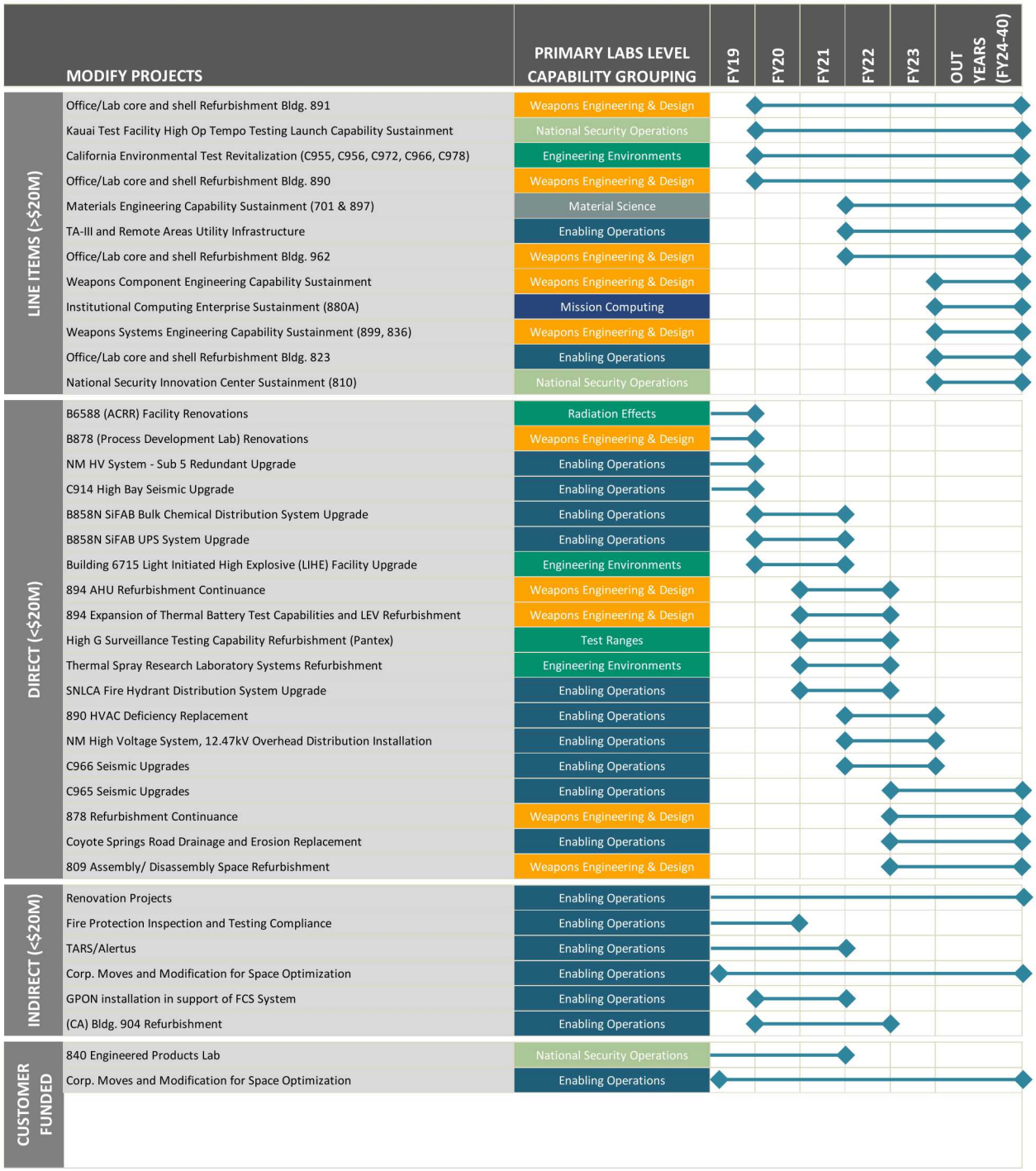
Project	Site	Status	Funding
Primary Standards Lab Renovations	SNL/NM	In Progress	Direct
B894 Systems Renovations (until WEF compete)	SNL/NM	In Progress	Both
Thunderbird Café modifications	SNL/NM	In Progress	Indirect
C912 renovations (2 phases)	SNL/CA	Complete	Indirect
Building 6588 Renovation	SNL/NM	In Progress	Direct
Building 870 Renovation	SNL/NM	Complete	Direct
Building 880 D–aisle Renovation	SNL/NM	In Progress	Indirect
SSiFR	SNL/NM	In Progress	Direct
B905 (Explosive Components Facility) Renovation	SNL/NM	Complete	Direct
B862 (Standby Power Plant) Upgrades	SNL/NM	In Progress	Direct

Our Future Plans

- Multi-program lab and office building renovations (Bldgs 810, 821, 823, 890, 891, 897, 962, and C910) – Commonly referred to as the "Clone buildings"
- Renovations in NM buildings 802, 809, 835, 836, and 878
- Renovations in CA buildings C912, C928, C943 and C940
- Sanitary Sewer Improvements in CA
- C914 Seismic upgrades in CA
- Building 6715 Light Initiated High Explosive (LIHE) Facility Upgrade
- B858N SiFAB Bulk Chemical Distribution System and UPS System Upgrade
- Thermal Spray Research Laboratory Facilities Systems Refurbishment
- MESA Sustainment
- Facilities Controls System (FCS) Modernization
- CA Environmental Test Revitalization (Bldgs C955, C956, C966, C972, and C978)

- Moves and modifications (space optimization/consolidation for mission enabling organizations)
- High G surveillance testing capability Addition & Refurbishment
- B894 High Risk Modifications

Investment Timeline



IV.d. Dispose

Definition

To reduce or eliminate an RPA through demolition, transfer, or real estate transaction.

Our Strategy

Our strategy is to replace old, expensive, and difficult–to–maintain facilities with modern, flexible, collaborative, and efficient space in accordance with sustainable practices. This means disposing of real property no longer needed to fulfill current requirements or missions and there is no need for the property in the near future. However, there are not many opportunities in FY19-23 to do so due to high utilization rates and projections of Sandia sustaining a relatively level workforce over the five-year period.

LRDP Linkages 

What We Have Done

Demo Project	Site	Status	Funding
MO157, MO158, MO159, T41, T77 (trailers by credit union)	SNL/NM	Complete	Indirect
T39, T14–16, T57, T17–18, T23	SNL/NM	Complete	Indirect
Redwood Center	SNL/CA	In Progress	
Maralisa Meadows Corp. Apartments Lease	CA	Complete	Indirect
K1010, K1010A, and K1010B	KTF	In Progress	Direct
K659, K662, K662A, K687A, KH17A Demo	KTF	Complete	Indirect
KH8, KH10, KH17 Disposition	KTF	Complete	Indirect
03-81T, 09-06, 09-18, 09-62, 88-01, 89-05, 03-71, 12-00, 19-00, 21-00, 22-00, 03-82T Demo	TTR	Complete	Indirect
03-79 & 03-78 Disposition	TTR	Complete	Indirect
Nuvuk Land Lease	AK	Complete	Indirect

Our Future Plans

- Demolish Buildings 13–00, 16–00, 10–02, 23–17, 23–18, 23–19, and 23–20 at TTR (awaiting approvals to proceed)
- Demolish other smaller buildings, sheds, and trailers at SNL/NM
- Demolish Buildings 894 and 892 at SNL/NM to redevelop space in TA-I
- Sierra Peaks Lease in NM

Investment Timeline

	DISPOSE PROJECTS	PRIMARY LABS LEVEL CAPABILITY GROUPING	FY19	FY20	FY21	FY22	FY23	OUT YEARS (FY24-40)
DIRECT (<$20M)	Mt. Haleakala Disposition	Enabling Operations	◆	◆				
	TTR Area 03 and 09 Misc. Demolition	Enabling Operations	◆	◆				
	Bldg. 6580 and 6581 Demolition	Enabling Operations	◆	—	—	—	—	◆
	SNL-NM Bldg. 862 Disposition	Enabling Operations			◆	—	◆	
	SNL-NM Bldg. 803 Disposition	Enabling Operations			◆	—	◆	
	SNL-NM Bldg. 851 and 851A/E Disposition	Enabling Operations				◆	—	◆
	SNL-NM Bldg. 818 and 819 Disposition	Enabling Operations				◆	—	◆
INDIRECT (<$20M)	SNL-TTR Area 03 Disposition of 4 Facilities	Enabling Operations	◆	◆				
	SNL-NM TA-V Disposition of 1 Facility	Enabling Operations	◆	◆				
	SNL-NM CTF Disposition of 14 Facilities-Real Prop	Enabling Operations	◆	◆				
	SNL-NM CTF Disposition of 12 Facilities-Personal Prop	Enabling Operations	◆	◆				
	SNL-CA Disposition of 8 Facilities	Enabling Operations	◆	◆				
	TTR Area 13, 16, 18 and 23 D&D	Enabling Operations	◆	◆				
	SNL-NM TA-I Disposition of Bldg. 6018 and 6030	Enabling Operations	◆	—	◆			
	SNL-NM TA-I Disposition of 2 Sheds (860E & 860F)	Enabling Operations	◆	—	◆			
	MO216 D&D	Enabling Operations	◆	—	◆			
	SNL-NM Bldg. 842 Disposition	Enabling Operations				◆	◆	
	SNL-TTR Bldg. 03-50 and 03-51 Disposition	Enabling Operations				◆	◆	
	SNL-NM Building 875 Disposition	Enabling Operations				◆	—	◆
	SNL-NM Bldg. 869 Disposition	Enabling Operations				◆	—	◆

Figure 12. NM T14-T18 & T23 before demo

Figure 13. NM T14-T18 & T23 after demo

Figure 14. TTR 09-06 before demo

Figure 15. TTR 09-06 after demo

IV.e. Balancing the Portfolio

Since 2012, Sandia's workforce has grown by more than 3,000 people and continues to face unprecedented increases in mission work for nuclear weapons and national security, including stockpile modernization, testing, cybersecurity, and technical/scientific liaison responsibilities. An overall 89% utilization rate of existing space also drives a longer–term strategy for space management that will accommodate an agile migration strategy to meet changing customer needs. Therefore, Sandia must maintain a balance between all four AMMD objectives.

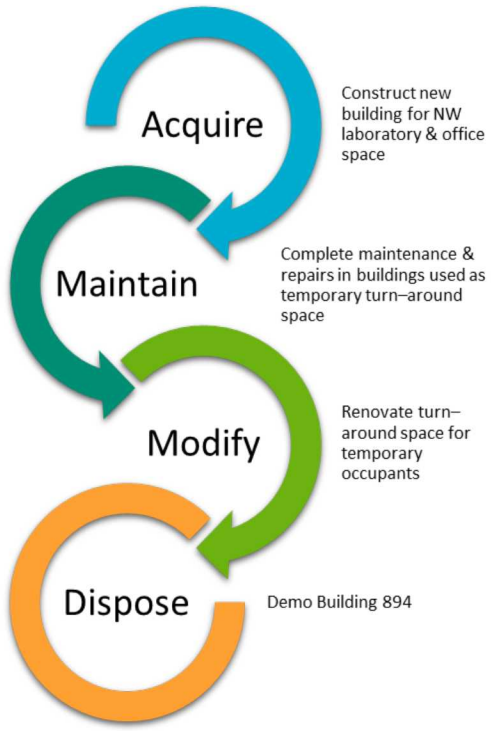


Figure 16. Balancing the four objectives through WEF–PS.

The Weapons Engineering Facility–Power Sources (WEF–PS)[13] line item is an example of the need to balance the four objectives through our four–part strategic framework. The WEF–PS capability currently resides in Building 894 in NM. Regular failures occurring in this deteriorating 1940s–era warehouse pose a risk to mission. Construction of a new facility for the NW lab and office functions described in the WEF–PS line item mission need statement would advance the disposition of Building 894. The benefits of demolishing 894 are significant to the NW mission as well as reducing the overall DM and opening up prime real estate for future site development in TA–I. However, other organizations also work in 894; therefore, a renovation and relocation strategy for 894 occupants to another space in TA–I is also crucial to enable vacating 894.

To back out even further and look at overall footprint management at the SNL/NM campus, moving non-mission essential F&I out of TA-I to free up prime real estate for mission work also necessitates the need to balance the AMMD objectives. The density of the built environment and workforce population in TA-I leaves no room to grow (see SNL/NM map). Whereas, TA-II provides an opportunity to move non-mission essential F&I out of TA-I like Facilities and Operations groups. This would mean building new F&I in TA-II, modifying and maintaining existing F&I to temporarily relocate existing non-mission essential workforce, and then disposing of assets (i.e. mobile offices and trailers) at the end of their useful life to make room in TA-I.

[13] See WEF–PS one–pager available through the Sandia Infrastructure Investment 2040 Strategy webpage: https://info-ng.sandia.gov/fmoc/public/page.php?id=p5b747fd570f07#item-e5b7483ba385f0

V. Conclusion

In order to mitigate risk to Sandia's primary and specific capabilities and begin to realize long-range development goals for physical site development, Sandia's five-year investment planning program will continue to evolve from a tactical list of projects to a more comprehensive plan that recommends specific investments to strategically apply funding pools. As funding pressures increase within the Complex, and Sandia continues to experience programmatic growth, funding challenges are also increasing. The table below summarizes these challenges in addition to others along with recommended actions and policies:

CHALLENGES	• No line items or major recapitalization results in continued overtaxing of aged and outdated F&I
	• Supporting the traditional NW system while being responsive and agile
	• Agility and flexibility in funding/spending challenged by processes, regulations, and requirements
	• High utilization of existing space (89% utilization rate)
	• Inability to get out of inadequate buildings with high DM & RN costs like 894 poses risk to mission for program(s) currently occupying 894 and other assets needing recapitalization but lose funding to 894 due to continued 894 investments
	• Inability to address multi-program lab and office "Clone" buildings due to:
	  ○ Inability to secure funding because Clones support multiple programs other than NW
	  ○ Lack of turnaround space to relocate Clone occupants
	• Projects addressing unplanned occurrences and single–point failures competing with funding long–range site development projects (reactive vs. proactive strategies)
	• Budgeting uncertainties beyond the current FY +2 (outside the CIP budgeting cycle)
	• Funding infrastructure projects

RECOMMENDED ACTIONS & POLICIES	• Define measurable targets for FIRSt principles to strengthen project prioritization criteria • Define measurable targets for each investment objective (Acquire, Maintain, Modify, Dispose) to establish baseline for funding and track progress toward executing strategies in the five-year planning timeframe • Fully implement Centralized Space Management (CSM) to rigorously evaluate current use of space and propose effective and efficient space saving strategies requiring investments • Strengthen business cases that articulate risk to mission and modernization needs for line item requests • Continue to invest in distribution infrastructure (i.e., potable/fire water, sanitary sewer, backup power, and electrical) to increase reliability and reduce operating O&M costs • Allocate funding to implement long–range development objectives for the physical site • Define lease terms that reflect duration of program's use

Sandia plays an important role in safeguarding nuclear weapons and overall national security. Funding constraints for construction and recapitalization of the facilities and infrastructure crucial to Sandia's missions is jeopardizing this role. Implementing this plan will reduce much of the risk and have a considerable positive impact on continued mission success at Sandia National Laboratories.

Appendix - Acronyms

AIP	Accelerator Improvement Project
ALD	Associate Laboratory Director
AMMD	Acquire, Maintain, Modify, & Dispose
AMP	Asset Management Program
BTF	Battery Test Facility
CD	Critical Decision
CBI	Capability–Based Investments
CIP	Corporate Investment Plan
CREATE	Collaboration in Research Engineering and Advanced Technology and Education
CREST	Combined Radiation Environments Survivability Test
CSM	Centralized Space Management
C3	Center for Collaboration and Commercialization
DM	Deferred Maintenance
DOE	Department of Energy
EOC	Emergency Operations Center
ERM	Enterprise Risk Management
FIE	Field Intelligence Element
FIRSt	Facilities & Infrastructure Recapitalization & Sustainment
FY	Fiscal Year
F&I	Facilities and Infrastructure
GPP	General Plant Project
IGPP	Institutional General Plant Project
IPOC	Innovation Parkway Office Center
LOB	Laboratory Operating Board
LRDP	Long–Range Development Plan
MAP	Master Asset Plan
MDI	Mission Dependency Index
MP	Master Plan
NGPPF	Next Generation Pulsed Power Facility
NNSA	National Nuclear Security Administration
OMBO	Overhead Management Budget Office
O&M	Operating & Maintenance
PIR	Program Infrastructure Recovery
PMP	Program Management Plan
RAMP	Roof Asset Management Program
RN	Repair Needs
RPA	Real Property Asset
RPAM	Real Property Asset Management
WEST	Weapon Engineering, Science, and Technology Laboratory