Remarks Regarding the Chemistry and Metallurgy Research Replacement Nuclear Facility (CMRR-NF) at Los Alamos National Laboratory (LANL)

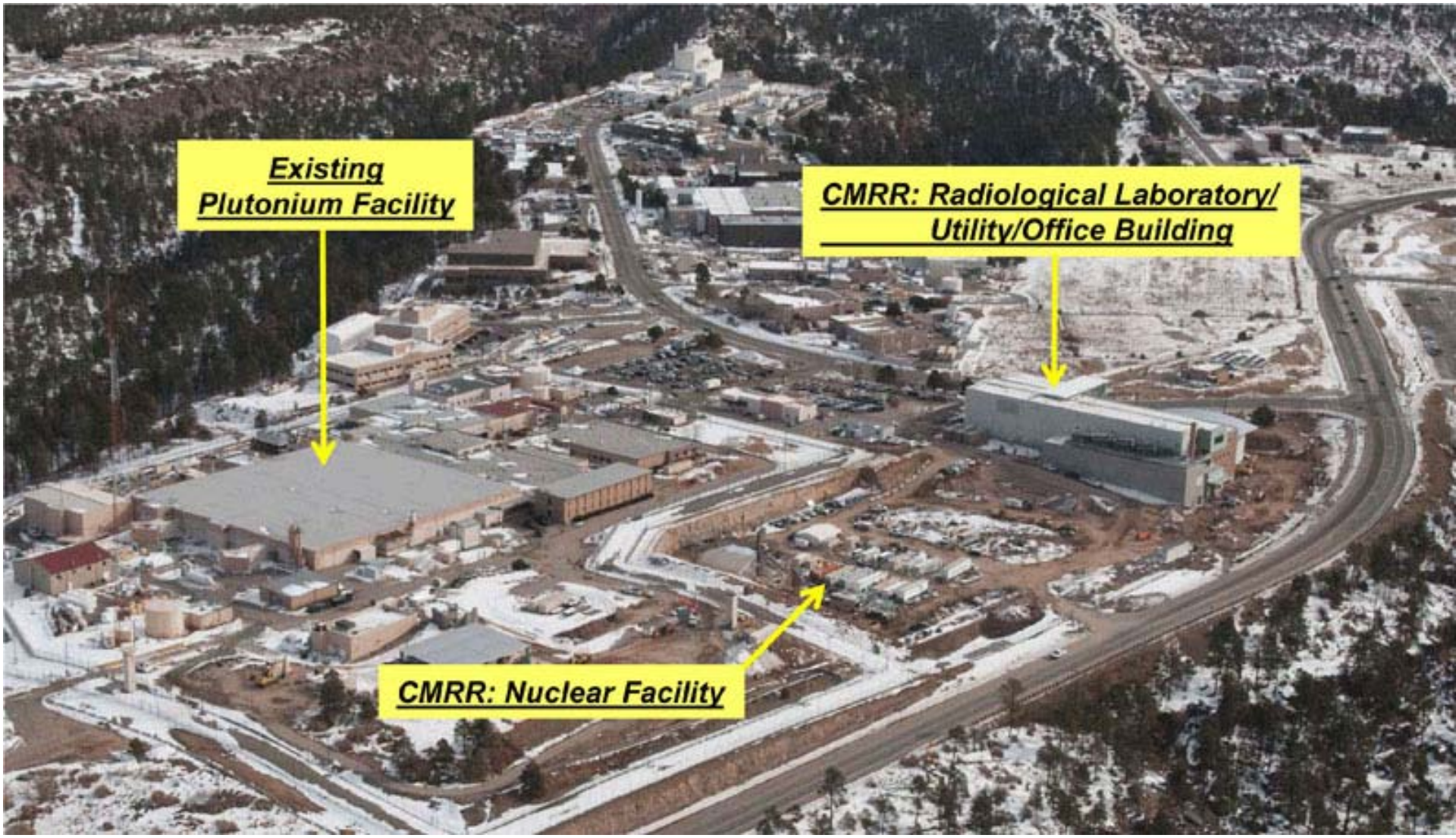
Greg Mello, Los Alamos Study Group, July 19, 2011

Abstract

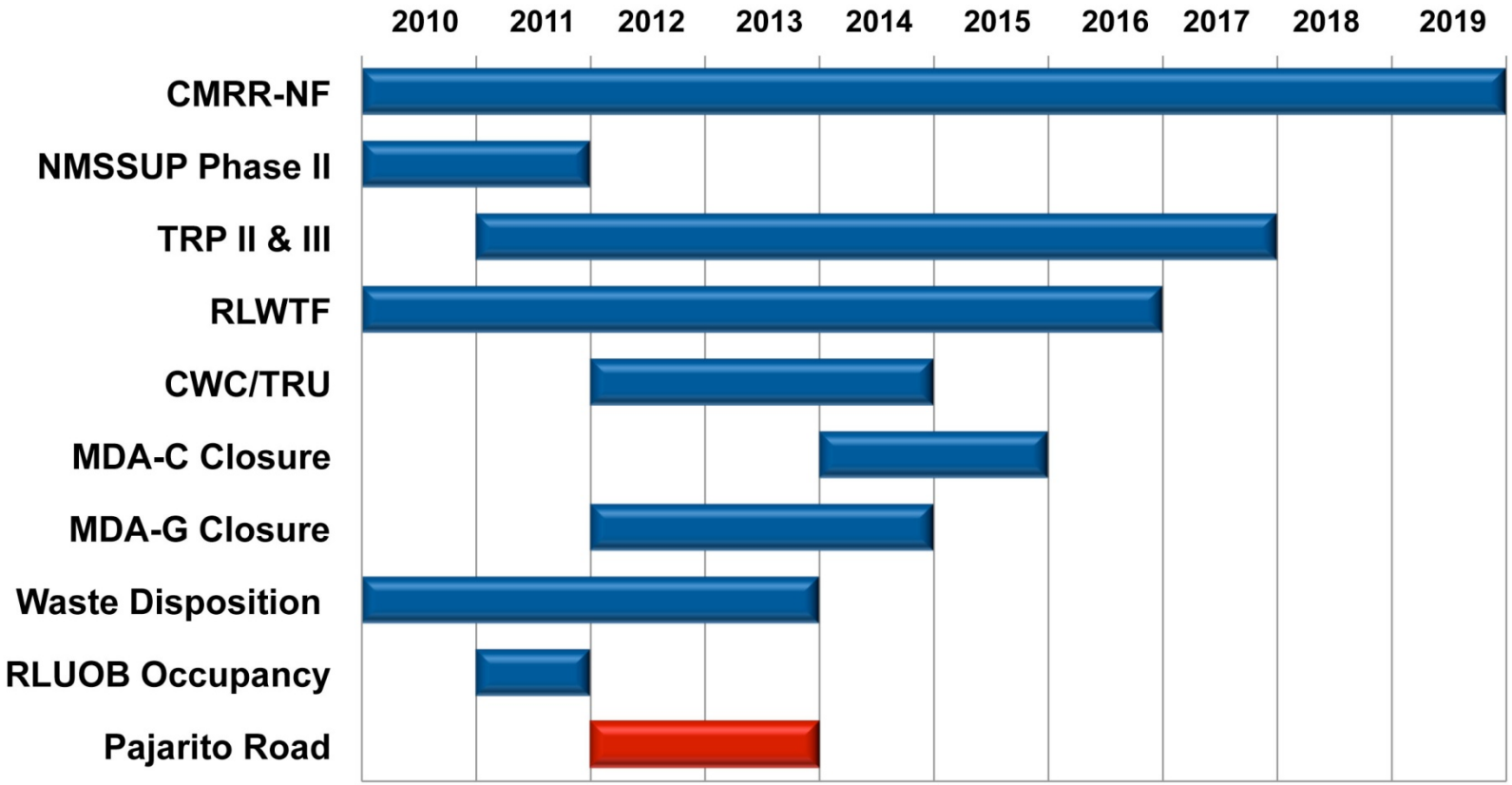
CMRR-NF should not be built because it is not needed for any core NNSA mission including maintaining a large and diverse nuclear stockpile indefinitely, it has very great opportunity costs for other NNSA and DOE programs and other compelling federal priorities, it is very managerially risky, it retards safety improvements at LANL, and it lacks clarity as to purpose, requirements, cost, and feasibility. It should not be built *now* for a host of additional reasons such as its incompleteness of design, competition for internal resources, and low priority. Longer delays would bring greater net benefits – in dollars, program continuity, decreased management risk across the NNSA complex, and other benefits. For reasons that transcend federal control it may never be built and operated regardless of formal policy intentions for reasons including declines in oil imports, broad (and rapid) economic and social decline, and related supply chain issues. CMRR-NF is already an embarrassing, politically-driven fiasco and together with other unrealistic NNSA/DoD plans should be paused while more realistic management plans for warheads and pits are developed for a range of stockpile configurations. CMRR-NF is a flagship boondoggle that perfectly illustrates NNSA's inept management, which damages national security.

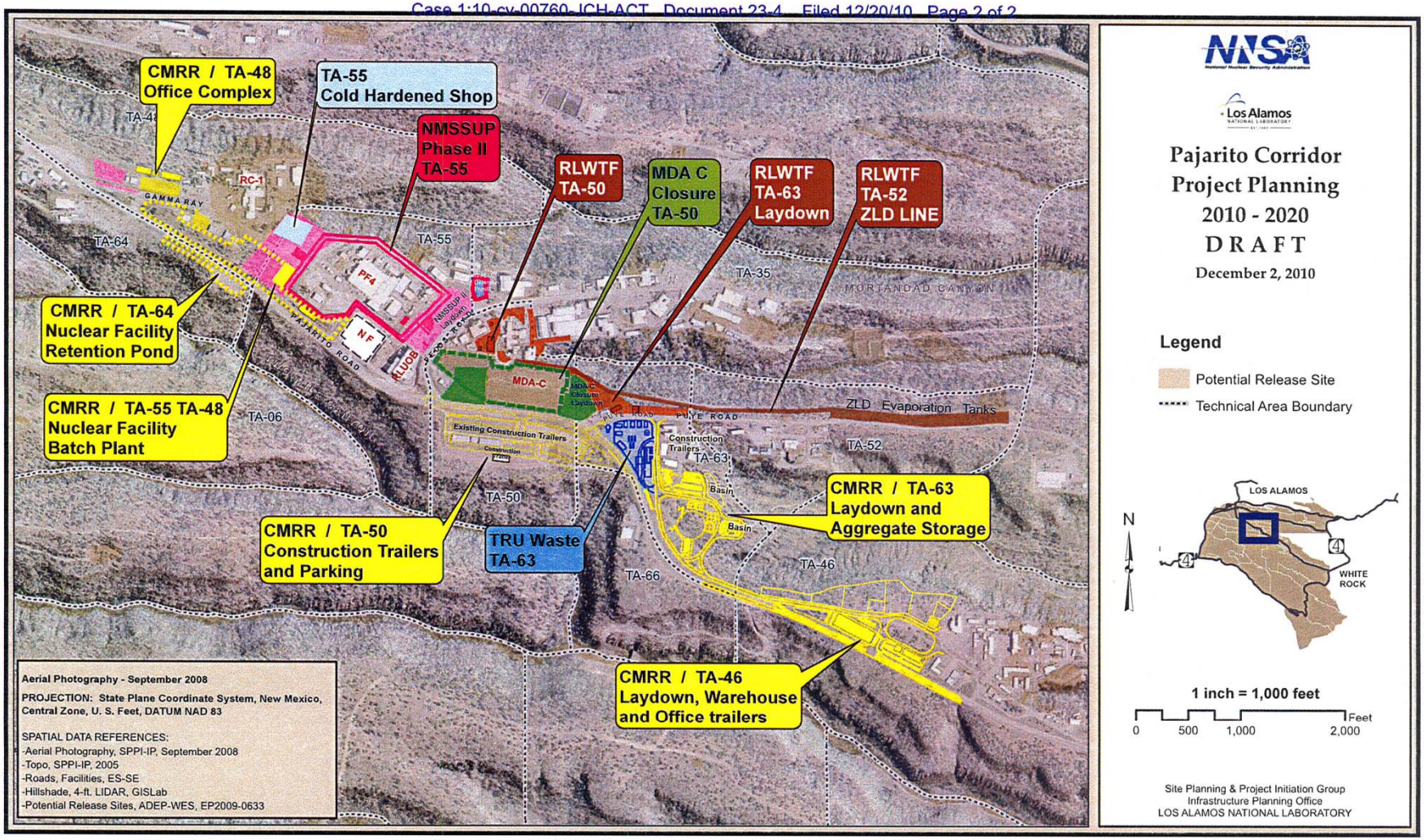
Things are in the saddle and ride mankind. Emerson

Some aerial photos, maps, and plans follow, which will help ground our discussion.


Existing
Plutonium Facility
CMRR: Radiological Laboratory/
Utility/Office Building
CMRR: Nuclear Facility

Major Projects Near Concurrent Activities





NNSA

Los Alamos NATIONAL LABORATORY

Pajarito Corridor Project Planning 2010 - 2020

D R A F T

December 2, 2010

Legend

- Potential Release Site
- Technical Area Boundary

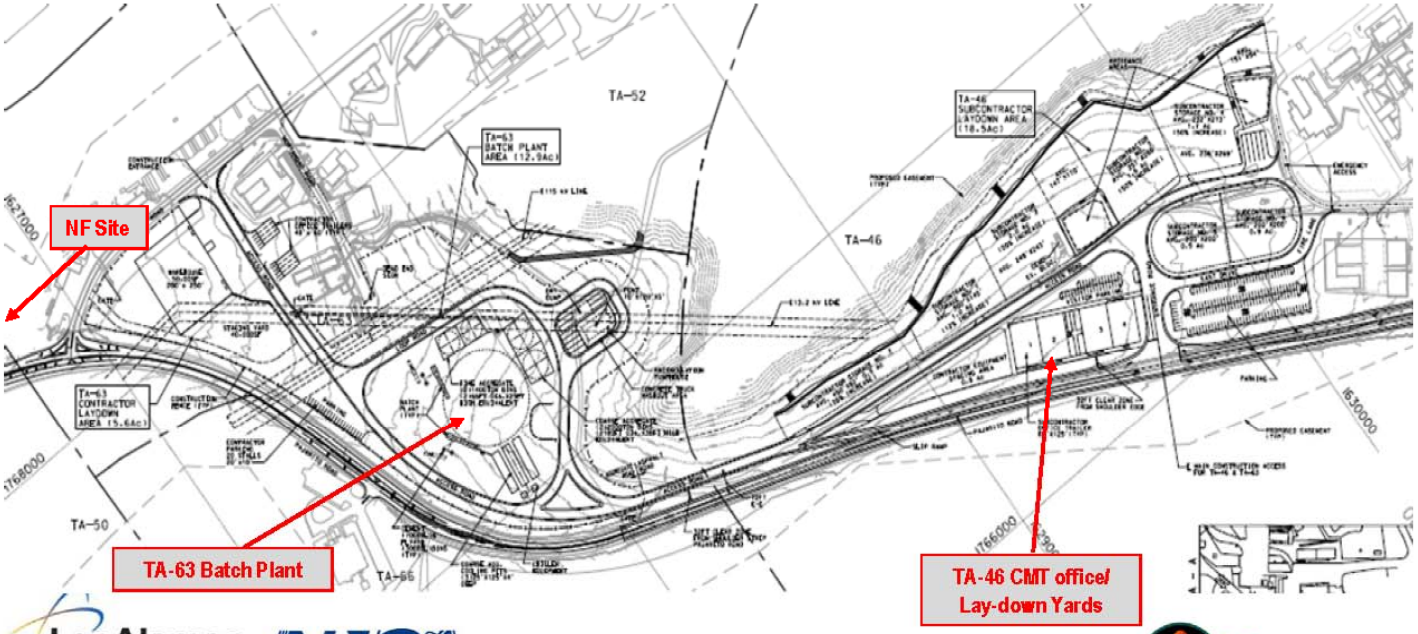
1 inch = 1,000 feet

0 500 1,000 2,000 Feet

Site Planning & Project Initiation Group
Infrastructure Planning Office
LOS ALAMOS NATIONAL LABORATORY

Construction Site Infrastructure

Lay-down/fabrication yards offices will be established approximately 1 mile from the NF construction site at TA-63 and TA-46 due to lack of available space at the NF construction site.



Los Alamos NATIONAL LABORATORY EST.1943 NNSA

CHEMISTRY & METALLURGY RESEARCH REPLACEMENT

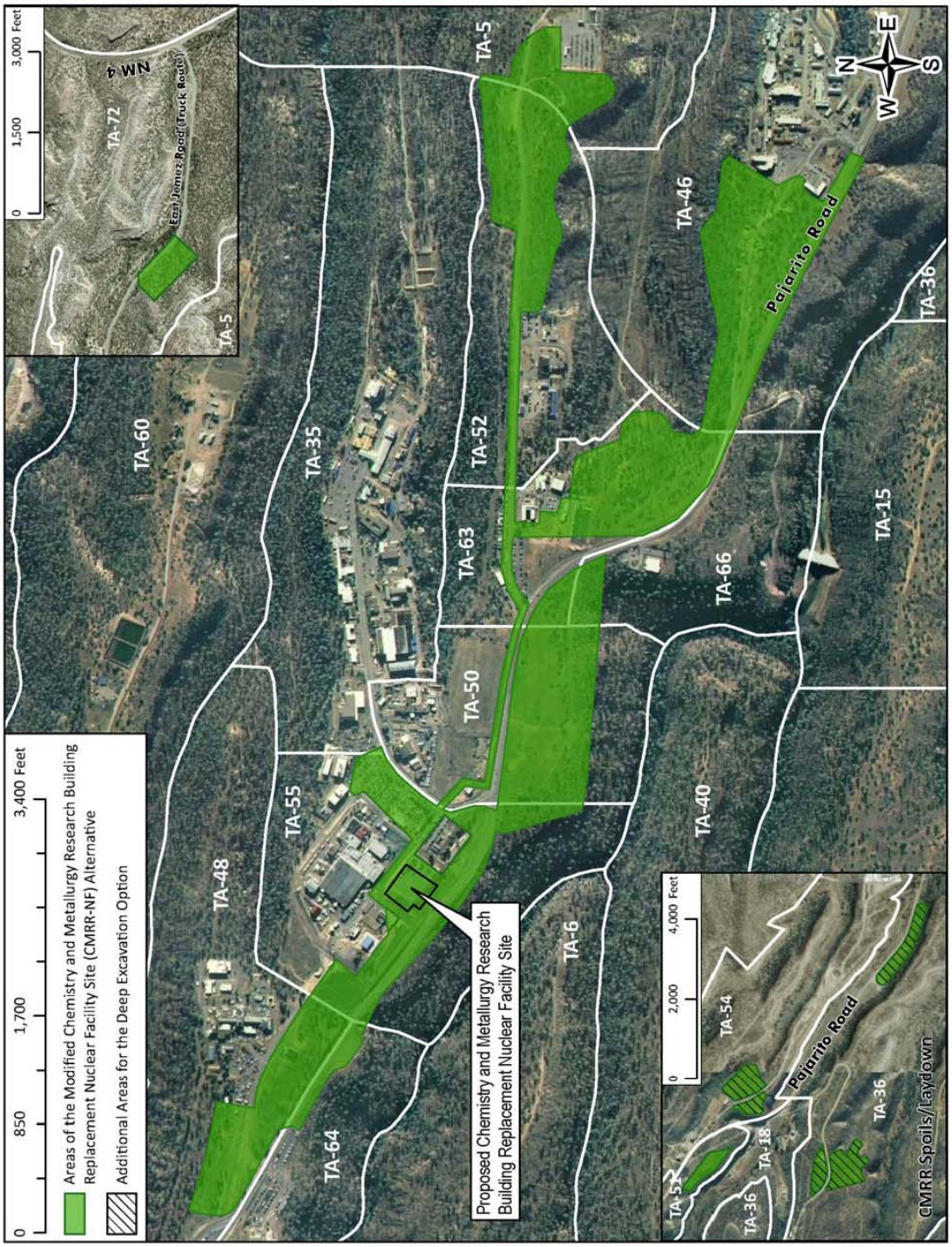


Figure 2–9 Potentially Affected Areas Under the Modified CMRR-NF Construction Plan

Consolidated Waste Capability

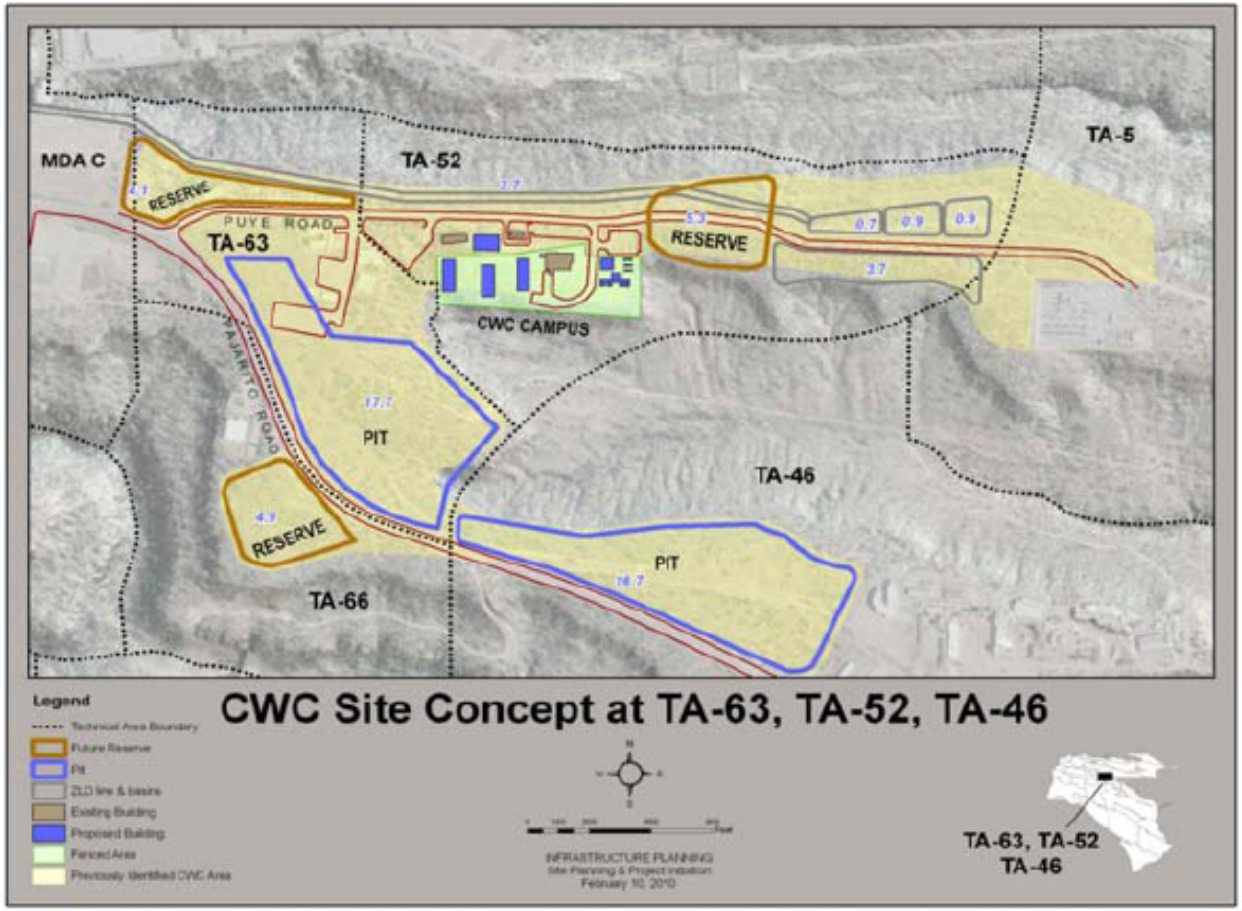


Figure D–11. Site overlay of the Consolidated Waste Capability for addressing TRU, Low Level and Mixed Low Level radioactive waste.

A. Reasons not to build CMRR-NF include the following:

1. CMRR-NF is not needed for the long-term maintenance of a very large, powerful, diverse nuclear stockpile, the primary mission of the National Nuclear Security Administration (NNSA).

   a. Primarily, CMRR-NF is not needed because large-scale pit production, its sole coherent justifying mission, is not needed. In fact, pit production *for the stockpile*, as opposed to maintenance of current pit production capability through the manufacture of test pits, is not needed at *any* scale.

   b. Even if pit production were begun at modest levels, CMRR-NF would not be needed. In 2000 and 2001, a Hazard Category (HC) II Nuclear Facility was not considered necessary to fully replace the existing Chemistry and Metallurgy Research (CMR) facility for all then-foreseen LANL missions. A HC III "or less" facility (i.e. with material at risk [MAR] of less than or equal to 900 grams of Pu-239 equivalent) was considered sufficient.

   c. Reasonable alternatives for both conservator and larger but still modest pit production levels, using existing and planned facilities at LANL and elsewhere, are available for a fraction of the cost, delay, and risk.

   d. The stockpile being maintained today is less than 50% of that maintained in 2000 when LANL proposed a HC III "or less" CMRR.

   e. By the time CMRR-NF comes on line in 2023 or after, essentially all the U.S. nuclear stockpile will have been processed through Life Extension Projects (LEPs) that did not involve pit production. These warheads will have been maintained and upgraded for roughly an additional 30 years of service.

2. CMRR-NF is not needed for nuclear materials storage.

    a. In 1994, LANL held 2.7 metric tons of plutonium, presumably mostly at PF-4 where there is a 4,500 sq. ft. storage vault, about half the space at the former Rocky Flats plant. This is plenty for all needed missions.

    b. Vault space in PF-4 is poorly managed, i.e. is managed for diffuse purposes.

3. CMRR-NF is not needed for analytical chemistry (AC).

    a. RLUOB contains as much or more AC space (19,500 sq. ft.) than is currently available in any two CMR wings (16,000 sq. ft.).

    b. LANL has other radiological laboratories.

4. CMRR-NF is not needed for the metallurgical characterization (MC) services needed to support modest levels of pit production, or to surveill existing warheads.

    a. Rationalization of programs, floor space, vault space, and equipment within the existing plutonium facility (Building PF-4) will provide adequate MC capability if it does not already do so. *See* von Hippel testimony, citing Government Accountability Office (GAO), LANL, and Secretary of Energy Advisory Board (SEAB).

5. CMRR-NF is not needed to prepare explosive experiments using plutonium in large tanks, a currently proposed mission for the facility.

    a. These experiments have manifestly not been needed themselves, and are not needed in the future, to maintain the existing stockpile.

    b. It is not clear that future untested warheads can be reliably certified using these or any combination of experiments and modeling.

    c. These experiments also entail potentially severe diplomatic risks.

6. CMRR-NF is very expensive.

    a. It is currently expected to cost between $3.7 and $5.8 billion (B), not including CMR demolition and disposal (D&D).

    b. D&D costs have been estimated at roughly $400 million (M) in current dollars.

    c. It has large opportunity costs within NNSA Weapons Activities program and NNSA overall, within Energy and Water accounts, with respect to other important domestic and military programs, and in deficit reduction.

    d. Despite promises from the Obama Administration to seek unprecedented levels of funding for Weapons Activities, considerable funding uncertainty remains.

    e. The CMRR-NF project has experienced approximately a 15-fold cost increase since the first published cost estimates in the 2001-2 timeframe (using the upper end of current estimates, as experience strongly suggests this will be more accurate), a 45-fold decrease in useful sq. ft. per dollar over that same period, and a 16-year delay in the estimated date of first operation.

7. CMRR-NF is managerial risky.

   a. It conflicts with existing programs at LANL and nationwide for money, management attention, nuclear engineers, and scarce nuclear-qualified vendors and workers.

   b. At LANL, CMRR-NF strongly competes for physical space in TA-55 and in the Pajarito Corridor.

   c. It may cause the closure of Pajarito Road for two years, which 4,400 LANL workers use to reach their workplaces.

   d. Deep excavation (up to 130 feet) and related construction immediately adjacent to an operating plutonium facility, which itself requires a wide variety of structural and safety upgrades, may be tricky.

   e. Especially given the extensive and intrusive additional upgrades to PF-4 which are now required, PF-4 operations could easily be halted for an extended period.

   f. Between now and 2023, the national security impacts of CMRR-NF will be entirely negative, as they would be for any huge, decade-long, heavy construction project in that location. Just how negative, no one can predict.

8. The CMRR-NF design concept may be changing and its safety performance standards and future functionality could both be degraded.

9. The project lacks clarity regarding:

    a. purpose and need;

    b. specific functional requirements;

    c. design concept;

    d. capital cost and schedule (baseline) and operating (life cycle) costs;

    e. safety performance standards;

    f. impact on other programs and capital projects; and finally

    g. what entity should manage the project.

All in all CMRR-NF is a major government fiasco and probably would already be viewed as such were poor project management not the long-standing norm at DOE.

The project's present momentum is political and bureaucratic in nature, not the result of sound management.

There is no national security reason *not* to delay CMRR-NF, since the structure is not needed to maintain all the nuclear weapons in the U.S. arsenal indefinitely.

A requirement to build CMRR-NF and to do so now, with its costs, risks, and impacts, is a *political* decision to seek new, large-scale, prompt stockpile options. These options must consist of large numbers of previously uncertified (i.e. novel) nuclear primaries, or else previously certified primaries for use in novel warheads.

Certification of either is uncertain.

CMRR-NF is required for these novel stockpile options only if:

a) the production rate sought is beyond what PF-4 could provide by 2023;

b) the required promptness in starting production exceeds other options which might be implemented using the suite of other facilities expected to be available then; and

c) there is a requirement to produce these pits without displacing other programs at PF-4, which is mostly devoted to non-pit purposes.

B. CMRR-NF final design should be paused or slowed.

Pausing and *slowing* are different strategies with different costs and benefits. Only the former partially meets the legal requirements of the National Environmental Policy Act (NEPA).

1. DOE, an agency with one of the worst project management records in the U.S. government, is planning to construct several large, unique, complex nuclear facilities simultaneously.
    a. DOE has multiple large nuclear facilities under construction (C) or planned (P) for construction in the present decade.
        i. The Hanford Tank Waste Treatment and Immobilization Plant (WTP, C);
        ii. The Mixed Oxide Fuel Fabrication Facility (MFFF) at the Savannah River site (SRS, C);
        iii. The Uranium Processing Facility (UPF, P) at Y-12;
        iv. The Pit Disassembly and Conversion Facility (PDCF, P) at SRS; and
        v. The Salt Waste Processing Facility (SWPF, C) at SRS.
    2. These projects (and CMRR-NF) compete for budget and other resources with each other, with other DOE and NNSA programs, with other nuclear construction, and with expected DOE and NNSA pension fund shortfalls. A shortfall in DOE or NNSA anywhere is a problem for them everywhere.

4. The U.S. has done little large-scale nuclear construction in the past two decades and may not be able to successfully complete all these projects even under the most favorable assumptions – assumptions which would be far from realistic.

    a. The U.S. lacks an adequate base of qualified nuclear suppliers to support multiple large nuclear projects.

    b. Engineers and other technical specialties are in short supply.

    c. Commercial nuclear reactor construction competes with NNSA and DOE capital construction, and both compete with hiring by federal agencies – DOE, NNSA, the Nuclear Regulatory Commission (NRC), and DNFSB.

    d. The competition is global. Los Alamos is a relatively unattractive residential relocation destination; in one NNSA study it was the least attractive of eight possible residential locations.

    e. CMRR project managers have expressed concern about how to house the potential influx of CMRR-NF workers. These and other regional and institutional liabilities could disadvantage CMRR-NF and set the stage for project delays, cost increases, and under diminishing budgets, failure.

5. This upsurge in nuclear facility construction is occurring against a background of profound national concern about budget deficits, as yet unresolved.

6. The PDCF project has been delayed; its completion date is uncertain. PDCF is the front end of two if not three plutonium disposition pathways (MOX, Pu vitrification, and Pu direct disposal). Delays in PDCF risk corresponding delays in Pu disposition. While the MOX program has no merit, we believe, Pu vitrification and direct disposal do.

7. Less broadly recognized in DOE and NNSA, although broadly recognized outside them, is that by failing to honestly and constructively face our growing energy and climate crisis, and their effects such as increased flooding, DOE, NNSA, and their congressional enablers are profoundly endangering our national security. Dramatically different investments, including those funded in the annual Energy and Water bill, are an essential foundation of any program to revitalize the U.S economically.

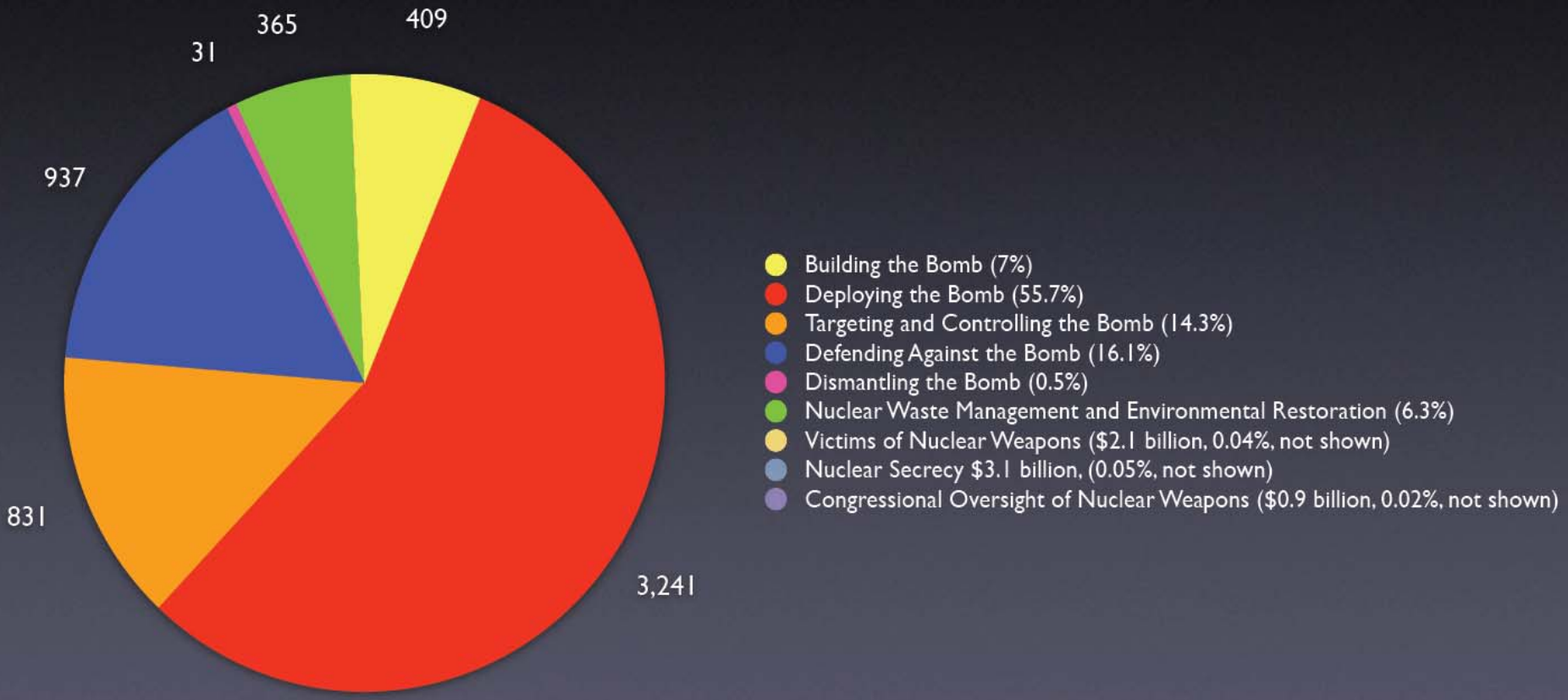
   We will return to this theme later.

The following slides provide some background on NNSA's budget and the Obama nuclear renaissance. CMRR-NF discussion resumes at slide 31.

Estimated Minimum Incurred Costs of U.S. Nuclear Weapons Programs, 1946-1996*

in billions of constant 1996 dollars

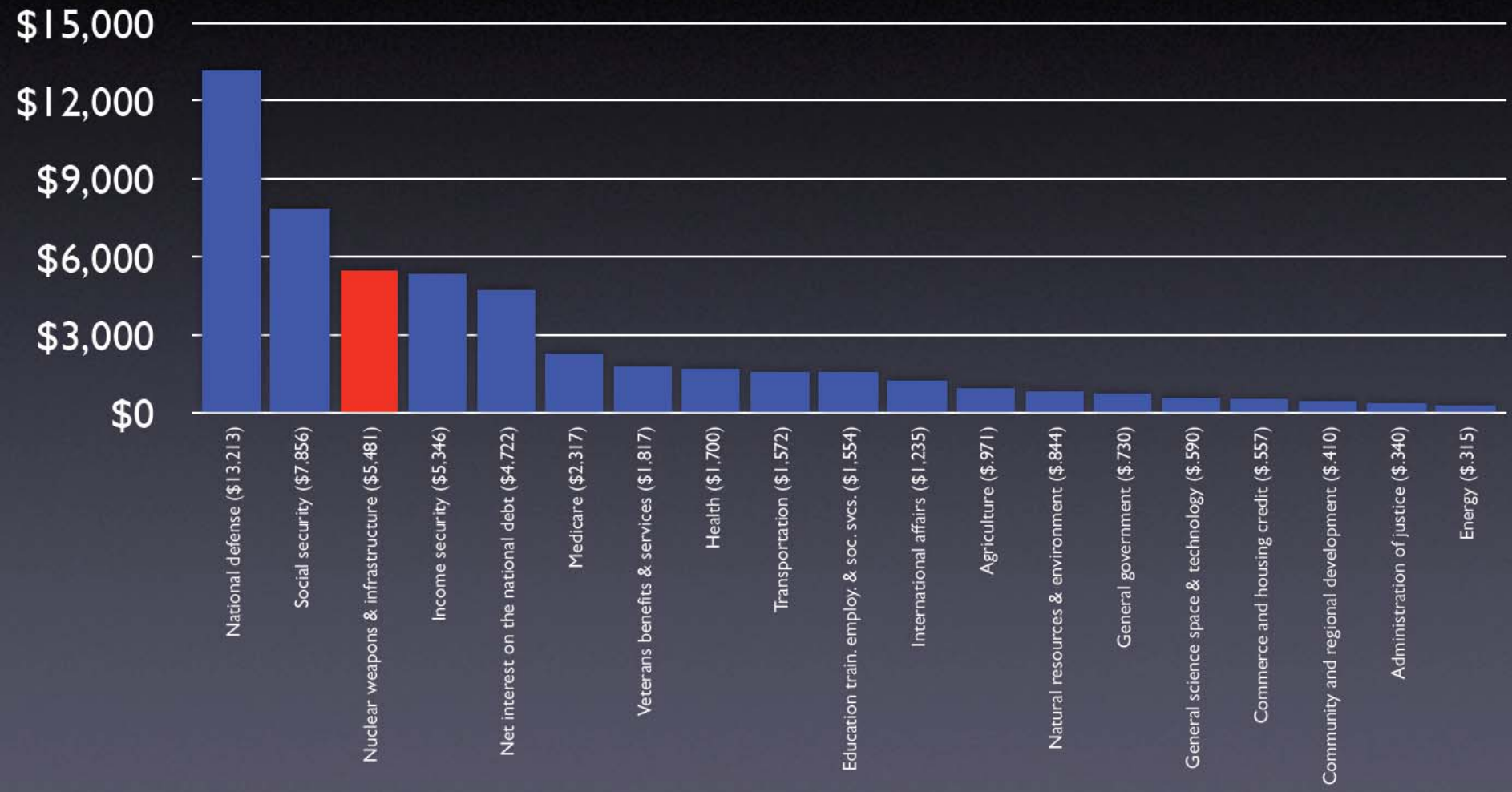
Total - $5,821.0 billion



* Includes average projected future-year costs for nuclear weapons dismantlement and fissile materials disposition and environmental remediation and waste management. Total actual and estimated expenditures through 1996 were $5,481.1 billion.

U.S. Government Historical Obligations by Function, 1946-1996

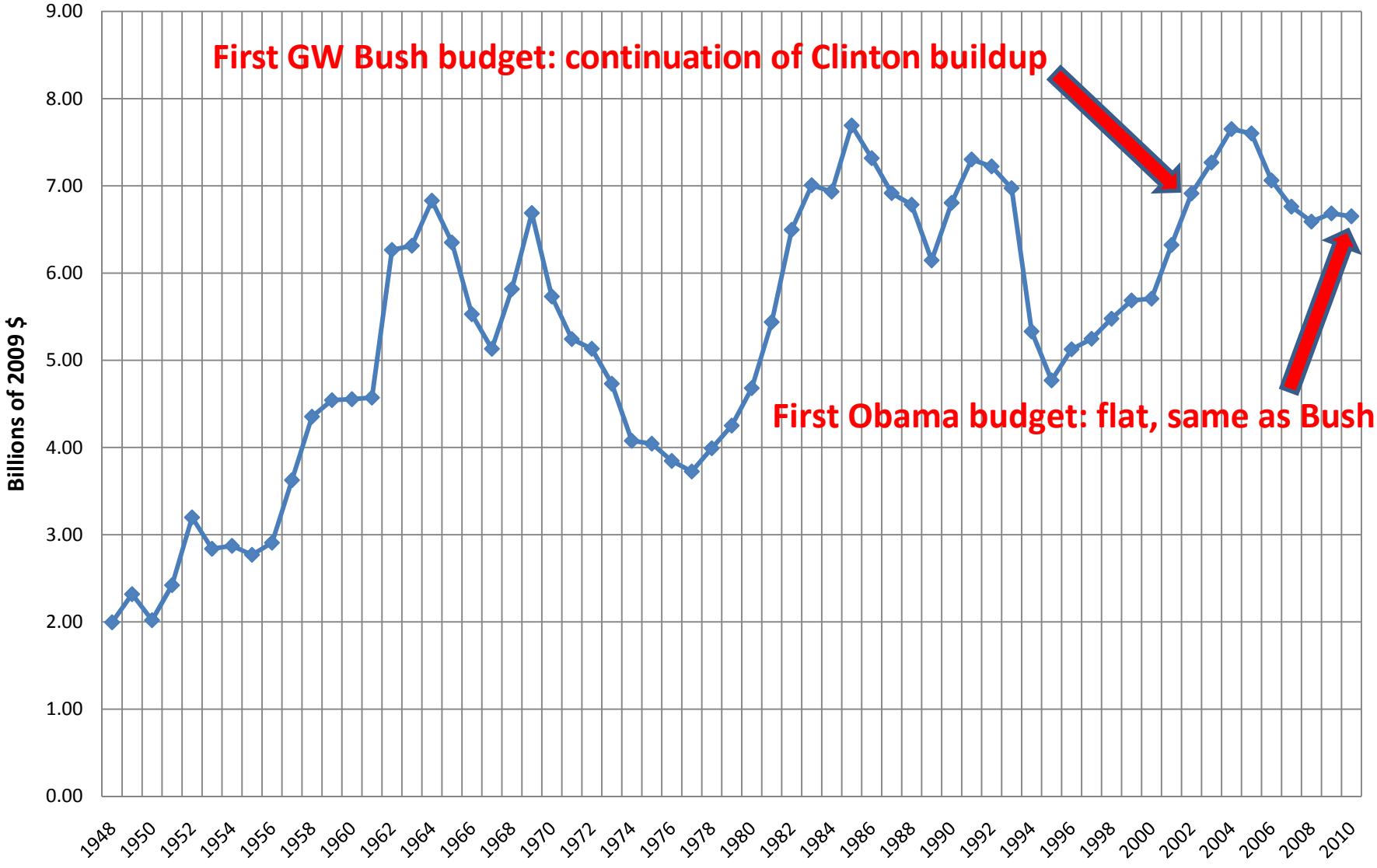
Total = $51,558 trillion



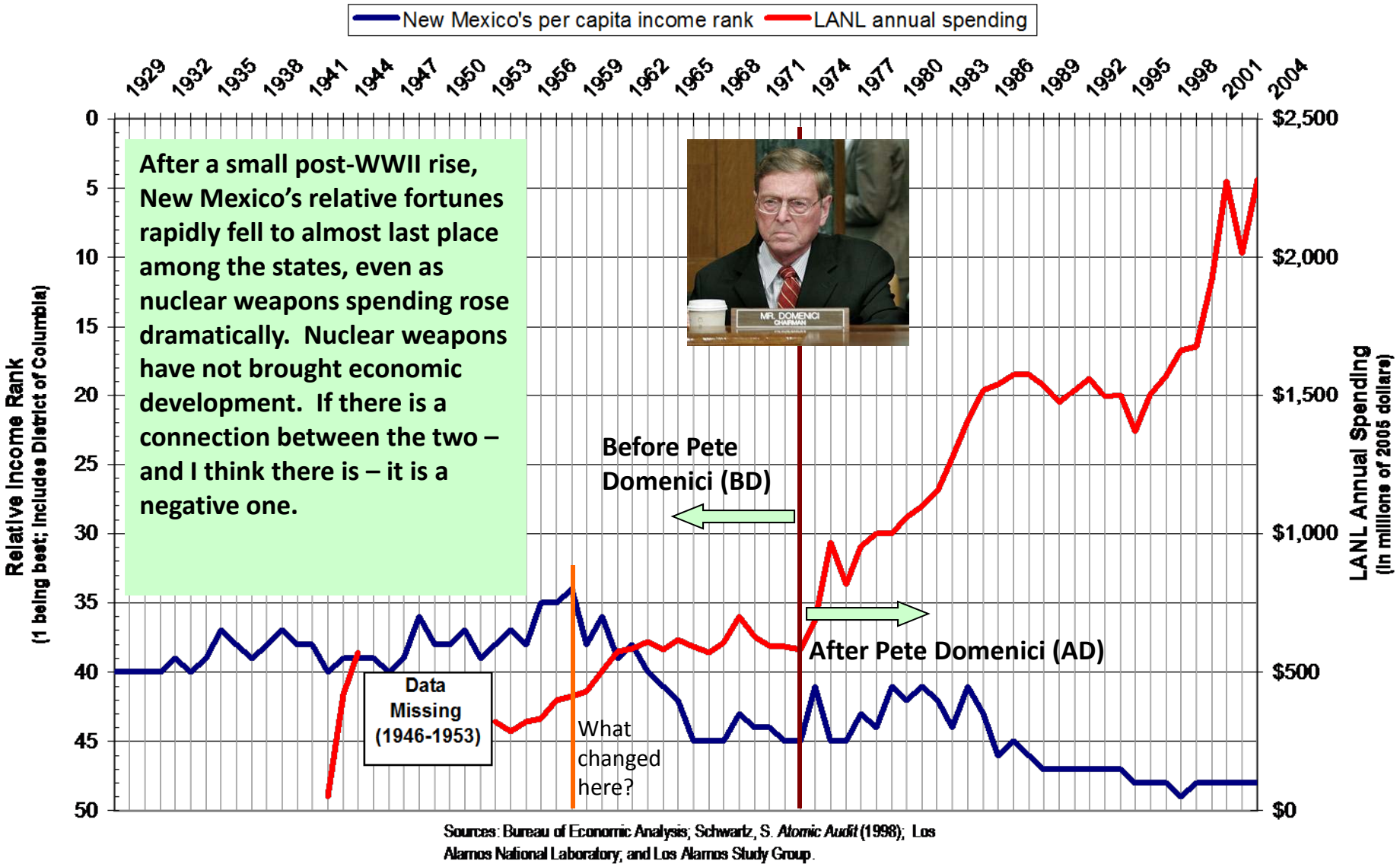
Note: National defense category has been adjusted to exclude nuclear weapons and infrastructure costs. Nuclear weapons costs are a combination of actual and estimated costs. Program totals do not match overall total because of rounding and the addition of undistributed offsetting receipts (not shown).

AEC/ERDA/DOE/NNSA Annual Spending for Nuclear Weapons Research, Development, Testing, and Production

NNSA admin. costs included. FY2011 is $6.90 B without admin.; $7.59 B + admin. is requested for FY2012.



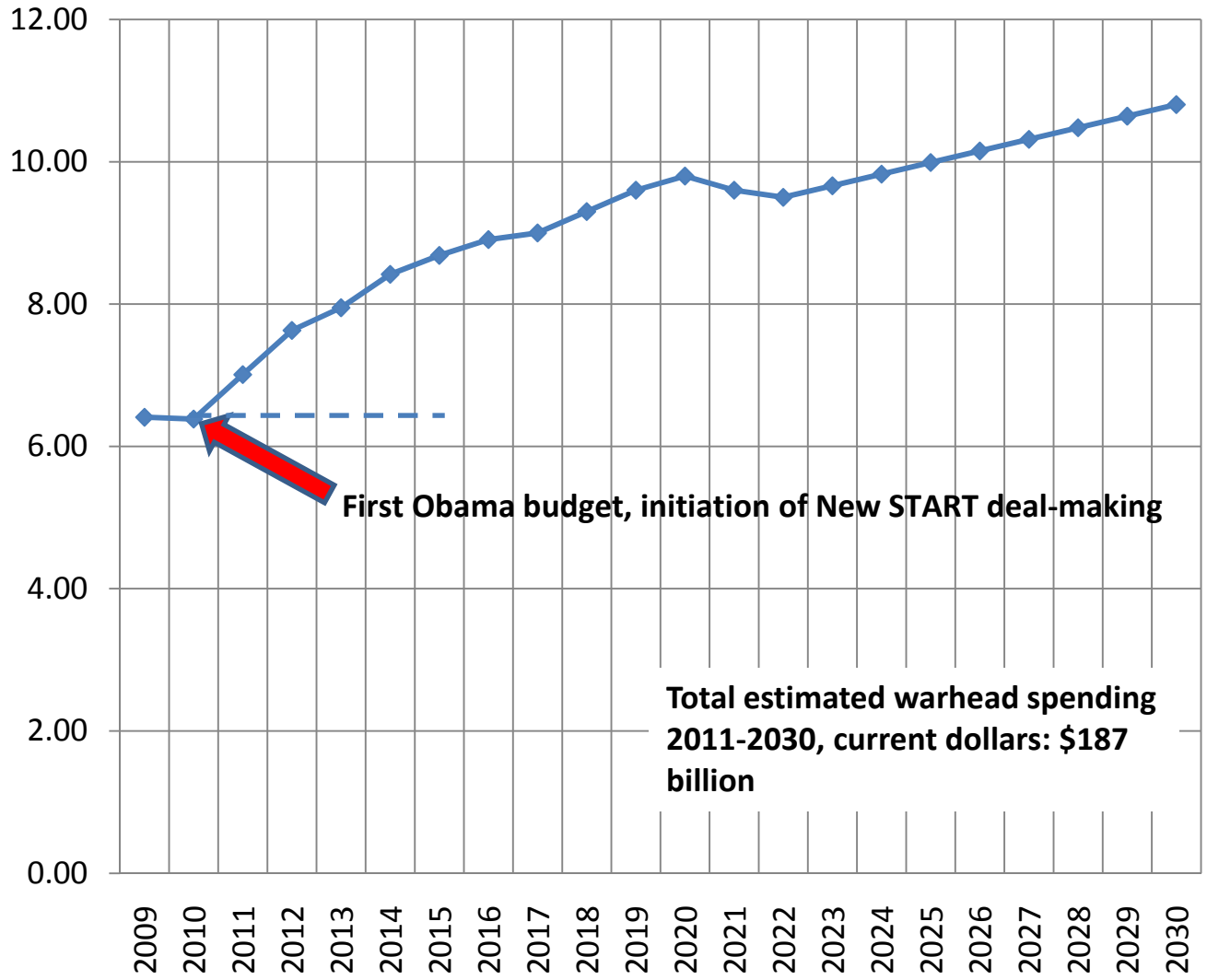
Per Capita Personal Income in New Mexico relative to the U.S. as a whole (1929-2004) with Los Alamos National Labs (LANL) annual spending (1943-2004)



Sources: Bureau of Economic Analysis; Schwartz, S. *Atomic Audit* (1998); Los Alamos National Laboratory; and Los Alamos Study Group.

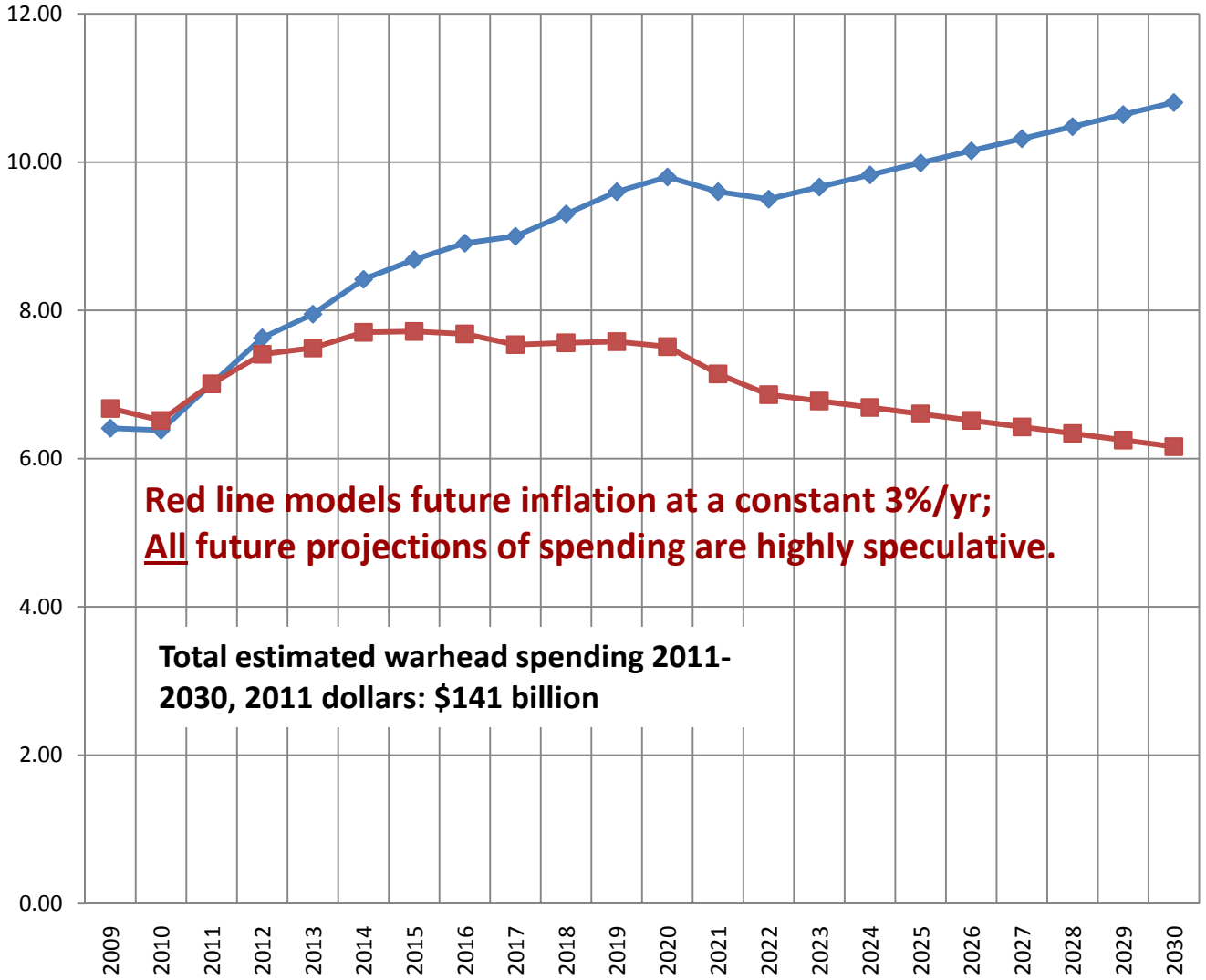
U.S. Nuclear "Weapons Activities" (Warhead) Spending in $ Billions: Actual 2009 & 2010, Requested 2011 & 2012, Projected 2013 and Afterwards

(White House, 11/17/10; NNSA 2/7/11; upper estimate for 2017-2020; not corrected for inflation)



Nuclear Weapons Activities Spending in $ Billions, Requested 2011 & 2012; Projected 2013 and After

(White House, 11/17/10; NNSA 2/7/11; upper estimate chosen for 2017-2020)



The 10-year version of Obama's promise to Kyl, before adding more 6 months later

FY 2011 Biennial Plan and Budget Assessment on the Modernization and Refurbishment of the Nuclear Security Complex

	FY 2011 Congressional Budget					FYNSP + 5				
Fiscal Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Directed Stockpile Work	1.898	1.901	1.999	2.240	2.346	2.4	2.5	2.5	2.4	2.5
Science Technology & Engineering Campaigns	1.737	1.732	1.716	1.717	1.731	1.9	2.0	2.1	2.2	2.3
Readiness in Technical Base and Facilities	1.849	1.873	1.841	1.927	1.998	2.5	2.7	2.7	2.4	2.2
Other Weapons Activities	1.525	1.527	1.525	1.517	1.573	1.6	1.7	1.7	1.7	1.8
(dollars in billions) Total	**7.009**	**7.033**	**7.082**	**7.401**	**7.648**	**8.4**	**8.9**	**9.0**	**8.7**	**8.8**

FY2011 Biennial Plan and Budget Assessment on the Modernization and Refurbishment of the Nuclear Security Complex, Annex D, p. 66, May 2010

The 20-year version of Obama's promise to Kyl, before adding more 6 months later

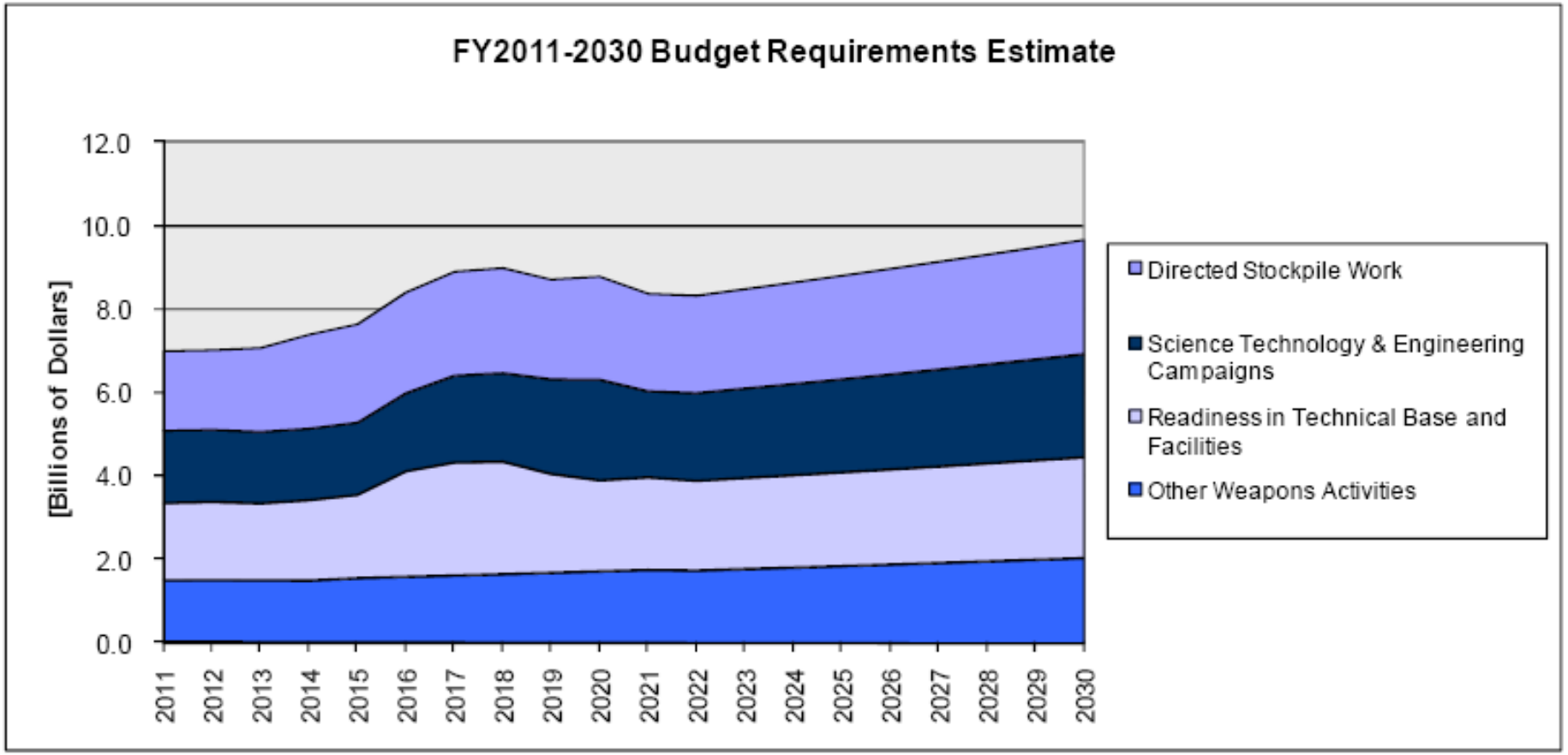


Figure D–23. An Out-Years Budget Requirements Estimate of the Weapons Activities[1] of the NNSA in then-year dollars.

FY2011 Biennial Plan and Budget Assessment on the Modernization and Refurbishment of the Nuclear Security Complex, Annex D, p. 66, May 2010

Obama's 10-year promise, made under duress to Kyl and the Republicans last fall

Table 1 Ten Year Projections for Weapons Stockpile and Infrastructure Costs

$ Billions	Fiscal Year										
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Directed Stockpile	1.5	1.9	2.0	2.1	2.3	2.5	2.6	2.6	2.6	2.6	2.6
Science Technology & Engineering Campaigns	1.6	1.7	1.8	1.8	1.8	1.8	1.9	2.0	2.1	2.2	2.3
Readiness in Technical Base and Facilities	1.8	1.8	2.1	2.3	2.5	2.5	2.5	2.7	2.8-2.9	2.9-3.1	2.9-3.3
UPF	*0.1*	*0.1*	*0.2*	*0.2*	*0.4*	*0.4*	*0.4*	*0.48-0.5*	*0.48-0.5*	*0.48-0.5*	*0.38-0.5*
CMRR	*0.1*	*0.2*	*0.3*	*0.3*	*0.4*	*0.4*	*0.4*	*0.48-0.5*	*0.4-0.5*	*0.3-0.5*	*0.2-0.5*
Secure Transportation	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Defense Programs Subtotal	**5.2**	**5.7**	**6.1**	**6.5**	**6.9**	**7.1**	**7.3**	**7.5-7.6**	**7.7-7.9**	**7.9-8.2**	**8.0-8.4**
Other Weapons	1.2	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.5
Subtotal, Weapons	**6.4**	**7.0**	**7.4**	**7.8**	**8.2**	**8.5**	**8.7**	**8.9-9.0**	**9.2-9.3**	**9.4-9.6**	**9.4-9.8**
Contractor Pensions Cost Growth			0.2	0.2	0.2	0.2	0.2	* TBD	* TBD	* TBD	* TBD
Total, Weapons	**6.4**	**7.0**	**7.6**	**7.9**	**8.4**	**8.7**	**8.9**	**8.9-9.0**	**9.2-9.3**	**9.4-9.6**	**9.4-9.8**

Numbers may not add due to rounding

* Anticipated costs for contractor pensions have been calculated only through FY 2016. For FY 2017-2020, uncertainties in market performance, interest rate movement, and portfolio management make prediction of actual additional pension liabilities, assets, and contribution requirements unreliable.

FY2011 Biennial Plan and Budget Assessment on the Modernization and Refurbishment of the Nuclear Security Complex, "November 2010 Update," p. 9

The current (February 2011) NNSA budget request (for FY2012)

NNSA Summary by Appropriation

	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Weapons Activities Appropriation							
Defense Programs							
Directed Stockpile Work	1,564,290	1,898,379	1,963,583	2,111,439	2,327,859	2,529,992	2,630,707
Science Campaign	294,548	365,222	405,939	418,216	416,284	394,315	404,097
Engineering Campaign	149,679	141,920	143,078	168,418	165,898	159,449	158,693
Inertial Confinement Fusion Ignition and High Yield Campaign	457,486	481,548	476,274	476,381	471,668	485,237	495,026
Advanced Simulation and Computing Campaign	566,069	615,748	628,945	616,104	628,100	643,120	659,210
Readiness Campaign	106,744	112,092	142,491	130,753	130,754	133,706	135,320
Readiness in Technical Base and Facilities	1,810,279	1,848,970	2,326,134	2,484,259	2,742,504	2,729,657	2,734,890
Secure Transportation Asset	240,683	248,045	251,272	249,456	252,869	261,521	267,773
Total, Defense Programs	5,189,778	5,711,924	6,337,716	6,655,026	7,135,936	7,336,997	7,485,716
Nuclear Counterterrorism Incident Response	223,379	233,134	222,147	219,737	232,680	236,045	242,205
Facilities and Infrastructure Recapitalization Program	95,575	94,000	96,380	94,000	0	0	0
Site Stewardship	63,308	105,478	104,002	104,699	175,370	207,488	212,706
Safeguards and Security							
Defense Nuclear Security	769,823	719,954	722,857	729,795	729,173	756,110	814,967
Cyber Security	123,338	124,345	126,614	125,416	125,321	126,898	130,003
Subtotal, Safeguards and Security	893,161	844,299	849,471	855,211	854,494	883,008	944,970
National Security Applications	0	20,000	20,000	20,000	20,000	20,000	20,000
Congressionally Directed Projects	3,000	0	0	0	0	0	0
Use of Prior Year Balances	-81,830	0	0	0	0	0	0
Total, Weapons Activities	6,386,371	7,008,835	7,629,716	7,948,673	8,418,480	8,683,538	8,905,597

NNSA FY2012 CBR p. 10

NNSA Pension Payment Estimates

	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
NNSA	260.2	442.5	839.1	892.3	961.7	943.5	892.4

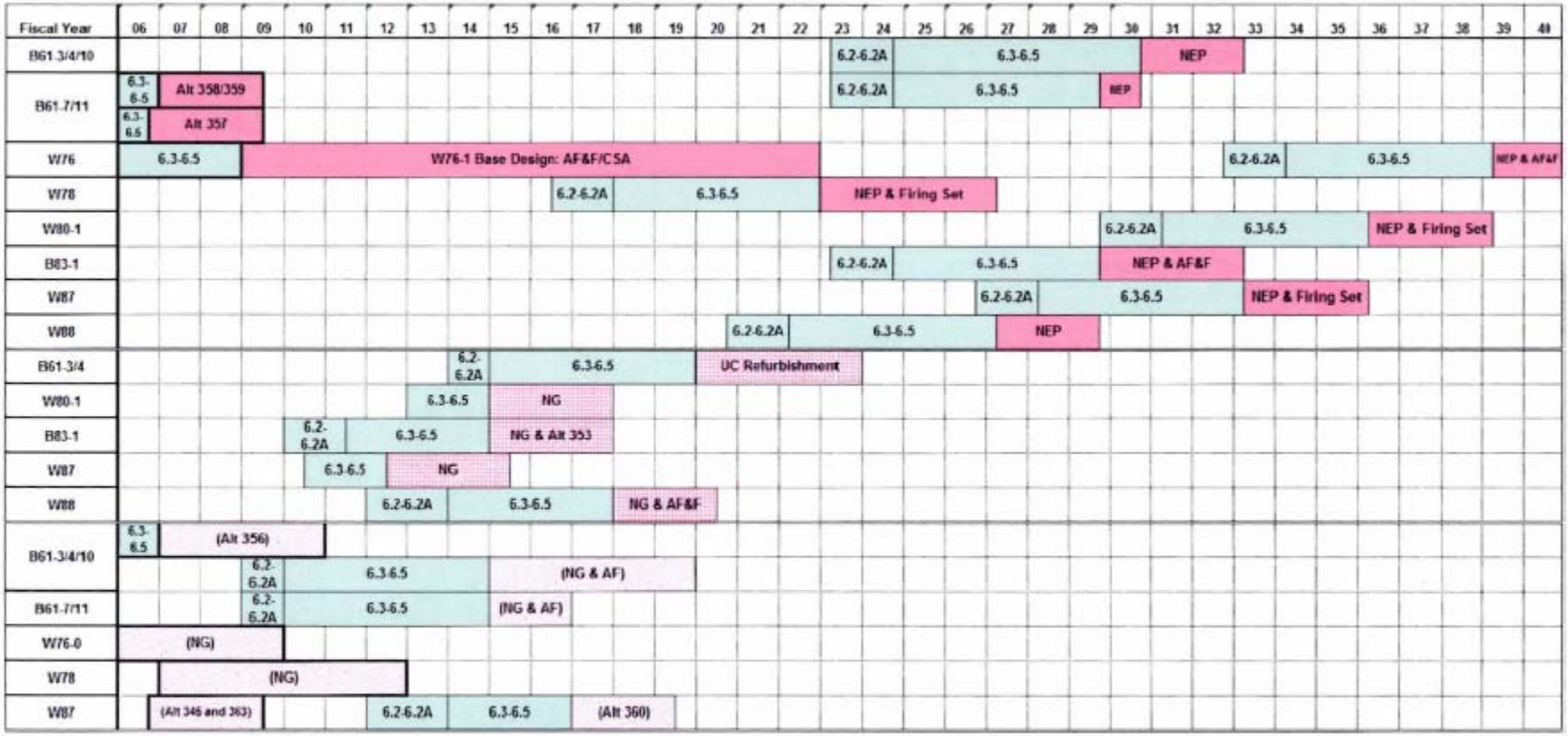
Total over 7 years: $5.2 billion (B)
Total over next 5 years: $4.5 B

NNSA FY2012 CBR p. 16

UNCLASSIFIED

Prepared near the end of the George W. Bush Administration

FY09 Refurbishment Planning Schedule



As of September 30, 2008

Authorized

Phases
6.2 - 6.5

Refurbishments (6.6)
Field ( )
Pantex Major
Pantex Minor
Drivers are inside boxes

Dates for Field refurbishments represent deliveries of kits to DOD, and dates for Major and Minor Pantex refurbishments represent delivery of refurbished weapons to DOD.
Non-authorized activities represent our best current estimate.
Alt 356 replaces spin rocket motors in the B61-3/4/10s. Alt 358 and 359 replace spin rocket motors in the B61-7 and B61-11, respectively.
Alt 357 is the life extension program for the B61-7/11.
Alt 353 replaces the gas transfer system (GTS) on the B83 Readiness State-1 and Readiness State-2 bombs, only.
Alt 345 GTS deployment was completed on the required W87 warheads in early FY 2003. Alt 345 will restart with deployment of W87s on Minuteman III (SERV configuration).
Alt 363 changes fire set assembly covers on W87s prior to deployment on Minuteman III (SERV configuration).
Alt 360 replaces the GTS on W87s.
B61-3/4 UC Refurbishment - potential alternatives include CONUS field replacement.
NOTE: A Phase 6.2/6.2A Study was initiated in September 2008 to identify feasible options to combine the non-nuclear and nuclear B61 refurbishments -- this chart will be modified once schedule information is clarifi

The Obama warhead redesign and rebuild schedule is more ambitious than GW Bush ended up with – probably too ambitious to be achievable.

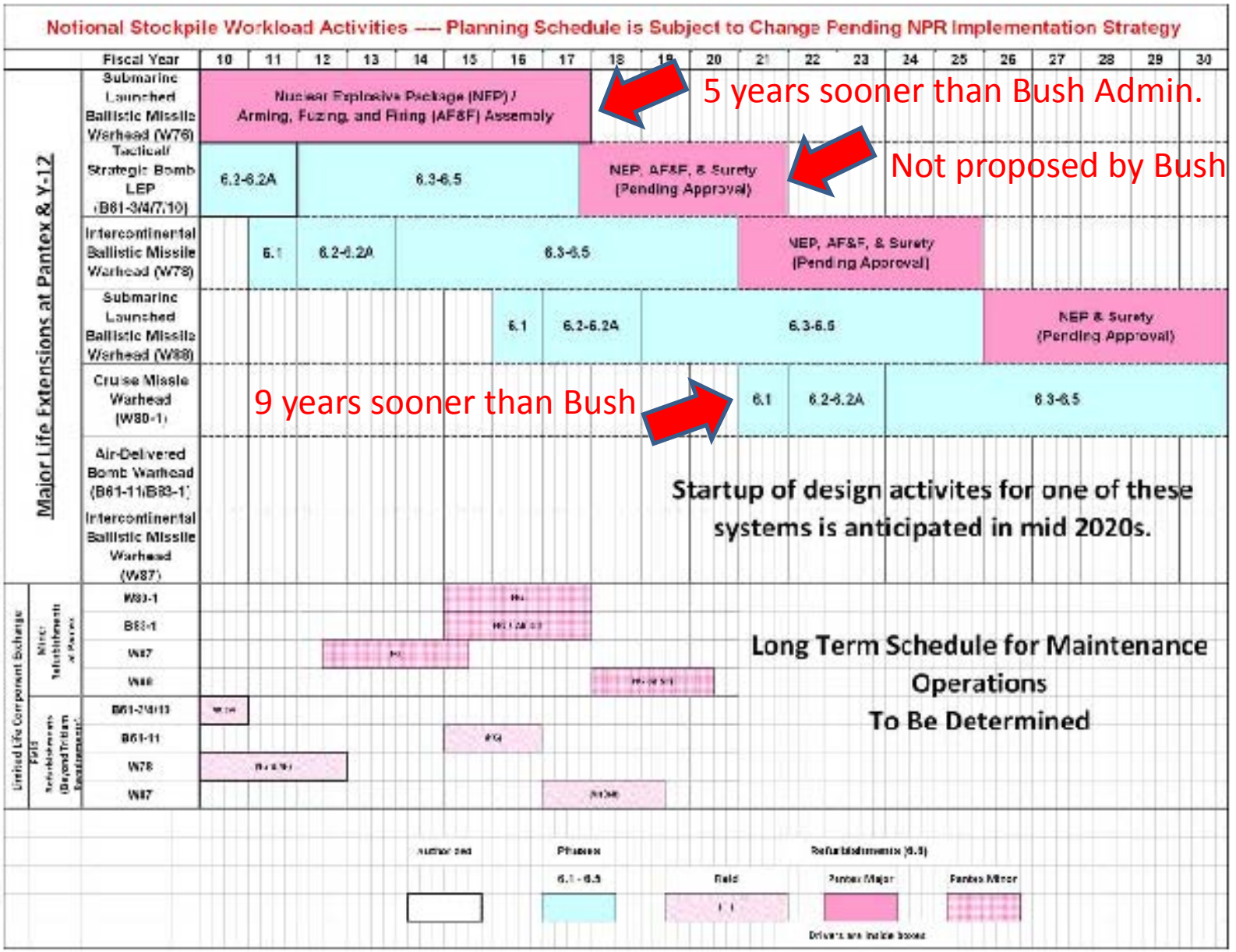


Figure A-1-12. Schedules for Extending the Life of the Nation's Nuclear Deterrent (extensive revisions to this schedule, as a consequence of the 2010 Nuclear Posture Review process, are in progress).

FY2011 Biennial Plan and Budget Assessment on the Modernization and

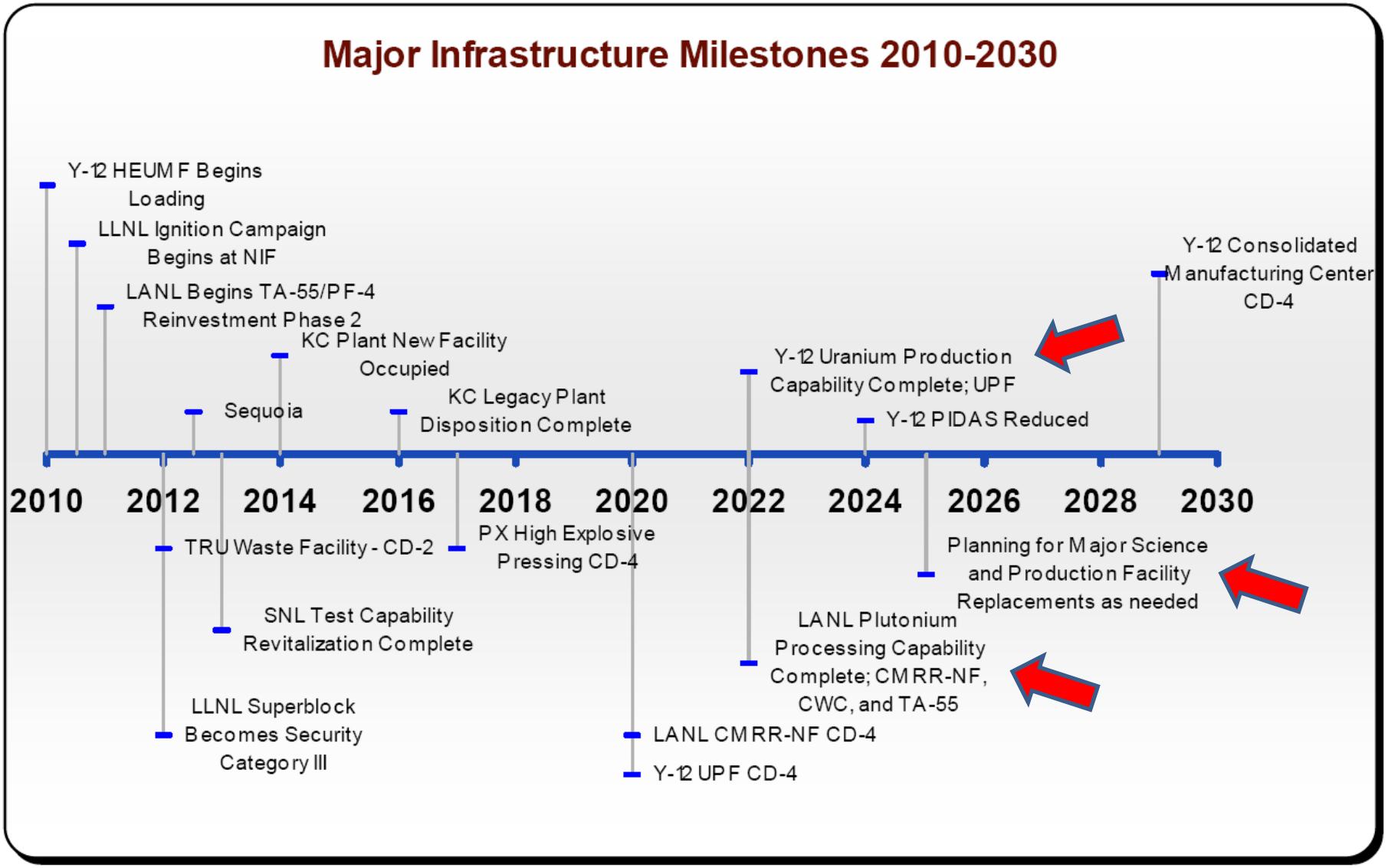


Figure S-6. NNSA Major Infrastructure and Key Milestones

FY2011 Biennial Plan and Budget Assessment on the Modernization and Refurbishment of the Nuclear Security Complex, Summary, p. 24, May 2010

8. If built, CMRR-NF should follow UPF, not lead or proceed simultaneously with it.

   a. UPF is far more important than CMRR-NF to NNSA's warhead deliverables (certified LEPs).

      i. During LEPs, secondaries are remanufactured.

      ii. By contrast CMRR-NF is not needed to extend the life if any U.S. warhead. It is "needed" only to create the capacity for unapproved new stockpile options – options which national policy strongly stigmatizes for technical and other reasons. Nuclear Posture Review:

> *In any decision to proceed to engineering development for warhead LEPs, the United States will give strong preference to options for refurbishment or reuse. Replacement of nuclear components would be undertaken only if critical Stockpile Management Program goals could not otherwise be met, and if specifically authorized by the President and approved by Congress.*

   b. The Strategic Forces Subcommittee of the House Armed Services Committee (HASC-SF) is very concerned about proceeding with CMRR-NF and UPF simultaneously:

> *The committee is concerned that, given its history regarding management of large-scale construction projects, the National Nuclear Security Administration (NNSA) may encounter significant difficulty in managing and executing these programs to build two large, and wholly unique, nuclear facilities simultaneously.*

c. The Army Corps of Engineers and NNSA consultants Pro2Serve and Project, Time, and Cost have told NNSA that it's cost assumptions for UPF are too optimistic and there could be schedule slippage; UPF may cost up to $7.5 B; and proceeding with UPF and CMRR simultaneously has big risks:

> *Significant cost growth of either project may result in a situation where constructing both projects with current anticipated scopes is not feasible due to NNSA funding constraints.*

d. The Corps and these consultants also said prioritizing CMRR-NF over UPF could cause significant delays and permanent reductions in UPF's functional capabilities.

9. Congressional committees have frequently disapproved of NNSA's proposed phased, "design-build" strategy for CMRR-NF, it's lack of a sound cost estimate ("baseline") and have questioned whether LANS is the most manager for the project. Examples:

a. HASC-SF, 2011: *The committee agrees with this decision to establish a mature design before full cost estimates are developed, and expects NNSA to avoid concurrent design and construction for these facilities*.

b. HAC, 2011: *The Committee recommends $200 [M] $100 [M] below the budget request. The Committee fully supports the Administration's plans to modernize the infrastructure, but intends to closely review the funding requests for new investments to ensure those plans adhere to good project management practices…The recommendation…but does not provide the additional funding to support early construction. The NNSA is not prepared to award that project milestone since it must first resolve major seismic issues with its design, complete its work to revalidate which capabilities are needed, and make a decision on its contracting and acquisition strategies. (p. 131)*

c. SASC, 2010: *The committee is very concerned that the NNSA follow the DOE 413 order series and project management and guidance. The NNSA is also directed to conduct a true independent cost estimate for the CMRR Nuclear Facility [CMRR-NF], phase III of the CMRR project. The committee is concerned that the phase III project [CMRR-NF] is being divided into multiple sub-projects. Notwithstanding this management approach the c0111111ittee directs the CMRR baseline to reflect all phases and subprojects for the purposes of the cost and schedule baseline provision and to be accounted for as a single project."*

d. (*many* prior)

10. It is not known at this time whether it is possible to affordably meet CMRR-NF safety and functional design goals.

    a. In 2008 NNSA said it might not be "economically feasible" to meet nuclear industry safety standards for active confinement ventilation at CMRR-NF.

    > *The [NNSA's] CMRR Nuclear Safety Design Strategy…states that it may not be economically feasible to seismically design and qualify some components of the active confinement ventilation system or its support system to PC-3 seismic design requirements.*

    b. The latest increases in projected CMRR-NF cost are causing renewed interest in downgrading design basis safety criteria. On December 20, 2010, LANL wrote a letter to NNSA outlining eleven contemplated changes in the CMRR-NF design – in effect proposing to abandon the design that was previously certified over a multi-year period.

c. The draft Supplemental Environmental Impact Statement (SEIS) describes a new design alternative in which the bottom of the excavation would be raised some 70 feet and replacement of the unconsolidated volcanic ash layer beneath the building would be omitted. This would raise seismic accelerations of the building in the event of an earthquake but would be somewhat cheaper and easier to build.

d. The sweeping nature of the proposed safety design changes and their uncertain status today raise the same serious questions that NNSA raised in late 2008: can CMRR-NF be simultaneously *safe* and *economically feasible*?

e. Do DOE's dramatically-changing assumptions regarding the deposition velocity of airborne respirable plutonium change the appropriate estimates for maximum and population doses from postulated TA-55 accidents?

11. Delaying CMRR-NF would save money.

    a. CMRR-NF would far cost much more to operate than the facilities it would replace. These are: all facilities currently used at CMR (other than those which CMRR-NF will not replace, like the Wing 9 hot cells.) CMRR-NF will increase LANL's operations and maintenance costs by at least $100 million per year and quite likely twice that. Postponing these substantial increased annual costs, which should be far more carefully estimated, would save substantial sums in present value.

    b. The situation at UPF presents a complete contrast. There, the net decrease in operating cost and maintenance associated with construction of UPF and eventual decommissioning of Building 9212 at Y-12 is expected to save $200 million per year. While the true savings are unlikely to be this great – they never are – the potential for major annual savings does appear real.

    c. There will be costs associated with pausing (or slowing) any engineering project, including CMRR-NF. Some may say that if the present design teams are reconstituted to work on higher priority projects, they could never be reassembled, or if so only at great expense. If the project is that difficult and fragile, however, this only begs the question: isn't it a fiasco in the making? Lawmakers should be very suspicious of statements that only one particular contractor and configuration of employees, at one particular time – *right now* -- is capable of building this project. Cost effective execution is more likely after, not before, experience is gained from other projects.

12. The growing PF-4 Reinvestment Project is more important than CMRR-NF and should be prioritized; it is not clear that it can be pursued concurrent with CMRR-NF.

13. Proceeding with CMRR-NF construction simultaneously with nine other Pajarito Corridor capital projects in a congested space will increase costs and risks across the board – and may not succeed.

14. CMRR-NF operation requires the successful completion of a suite of ancillary facilities and projects, some of which are also necessary at some scale and configuration for other purposes; these should be prioritized over CMRR-NF.

15. Some buildings at LANL, in addition to PF-4 and CMR, are unsafe and if needed should be replaced sooner, rather than later.

16. The scale and timing of the CMRR-NF construction project jeopardizes the scientific identity of LANL.

17. Superblock at LLNL is available as a backup in the absence of CMRR-NF.

18. Missions at PF-4 may decrease, including both pit production and competing programs.

19. LEP schedules are artificial, optimistic, and may not be met, allowing delay in any proposed pit production to match distant out-year, as yet unapproved, LEPs.

20. The overly-ambitious CMRR-NF project continues to delay the implementation of alternatives which would remove the risks of continuing work in the CMR building.

C. CMRR-NF may never be built and operated regardless of formal policy intentions.

1. Peak oil. We believe oil costs are now too high to sustain economic growth for a variety of reasons. We see a serious oil shock within the next 12-24 months.

    a. Oil producing areas in the world are unstable. Light, sweet, cheap oil is especially important.

    b. Oil has no scalable substitutes, especially for diesel fuel.

    c. Ethanol lacks net energy but is raising commodity prices, helping inflation, putting downward pressure on real GDP – and starving millions.

    d. Natural gas reserves are not what they are fracked up to be. It costs money to get and use that gas too.

    e. Net oil exports to net oil importers have been falling for the past five years and are now in irreversible decline.

    f. China and Asia generally are consuming an increasing fraction of these net exports. Should Chinese and Indian growth continue as in the past and net exports continue to fall as expected, very large shortfalls in oil availability appear by the middle of this decade.

    g. *Net*, not gross, oil and energy *produced per dollar* are important for the non-energy economy. Texas and Kern County and Alberta (sadly) will thrive because an enormous amount of investment is necessary there.

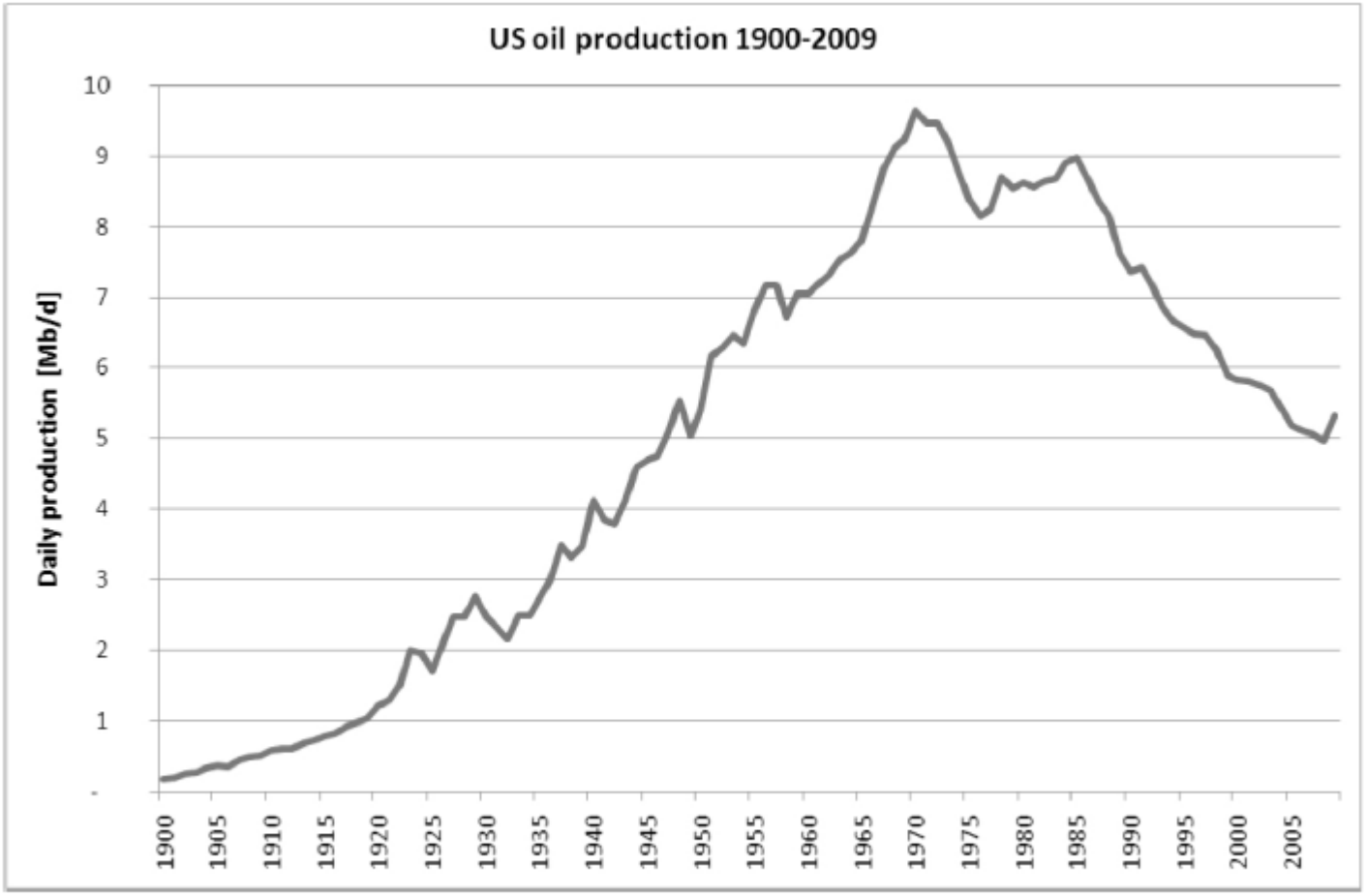


Figure 18: Historical production of oil in the USA from 1900 – 2009 [82].

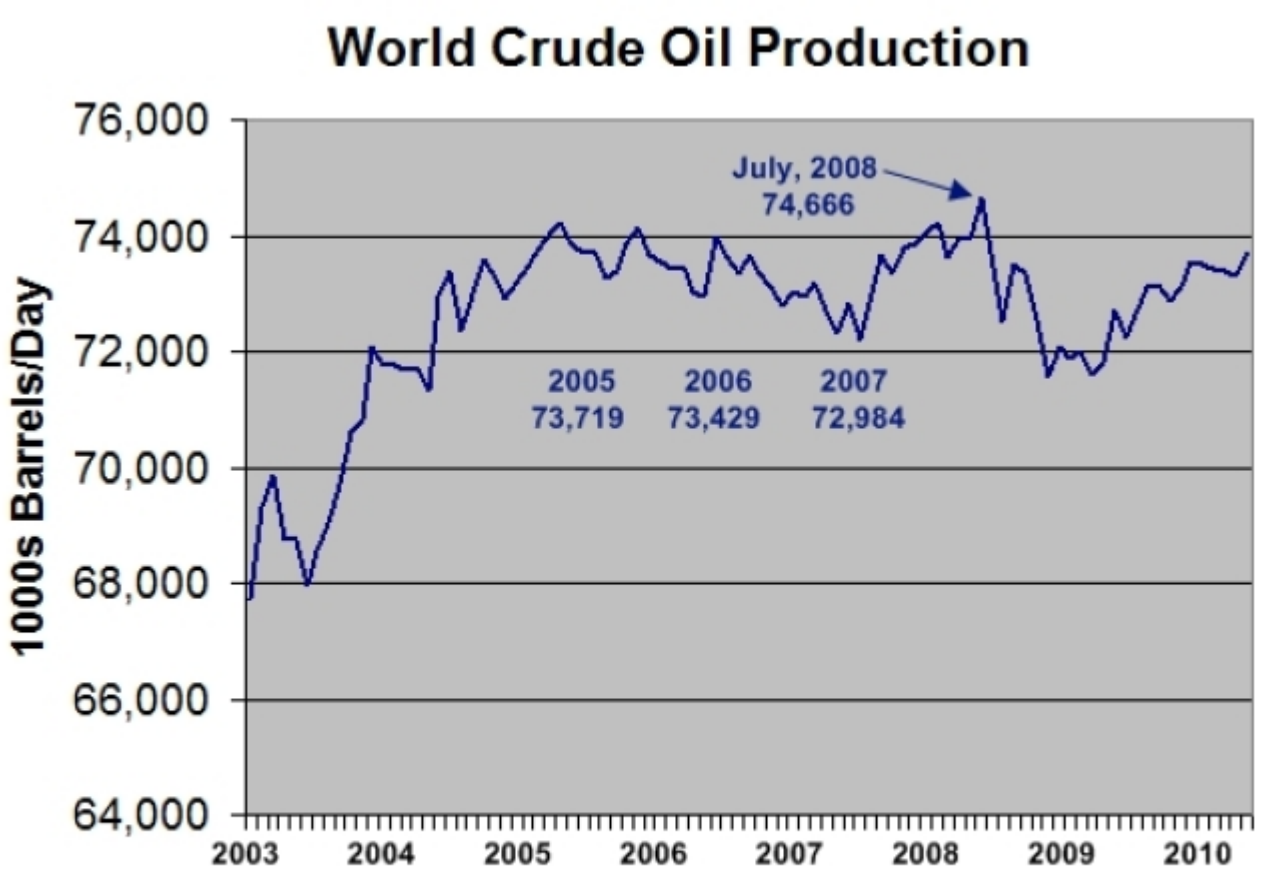


Figure 20b: EIA data for global conventional oil production[86]. The average world production through July is 73.426 mbpd in 2010.

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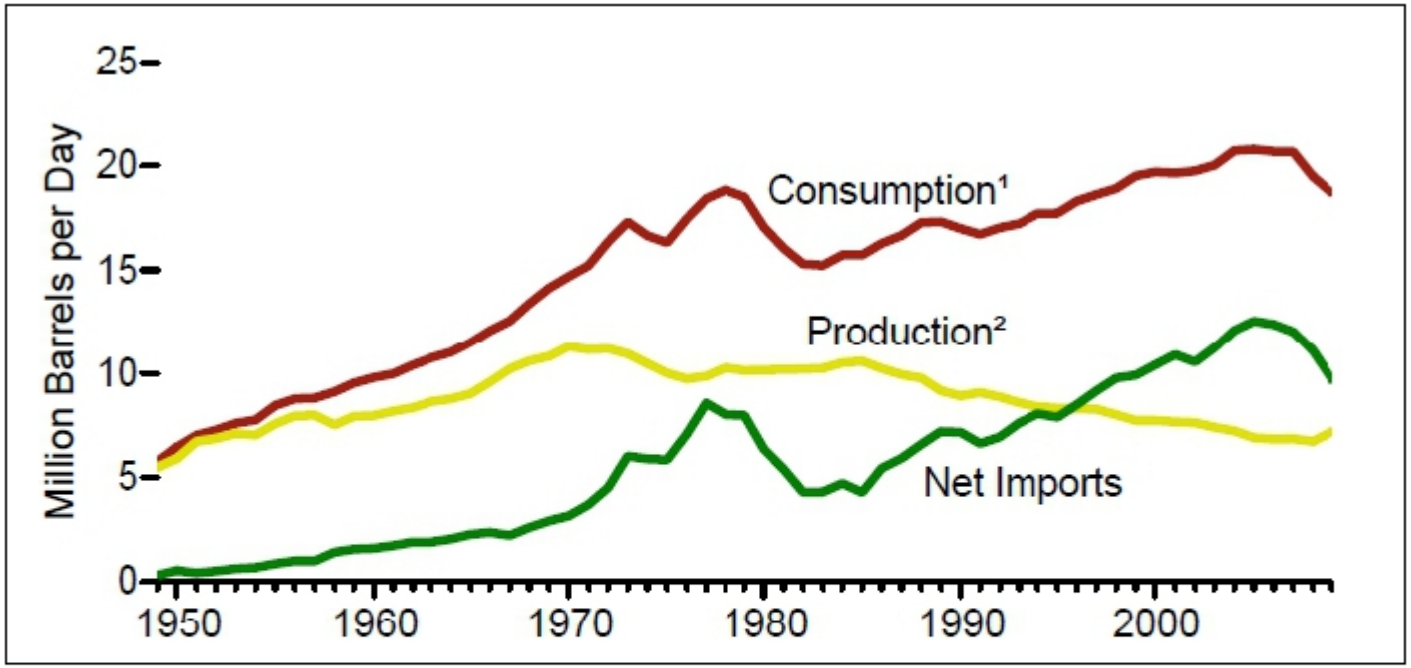
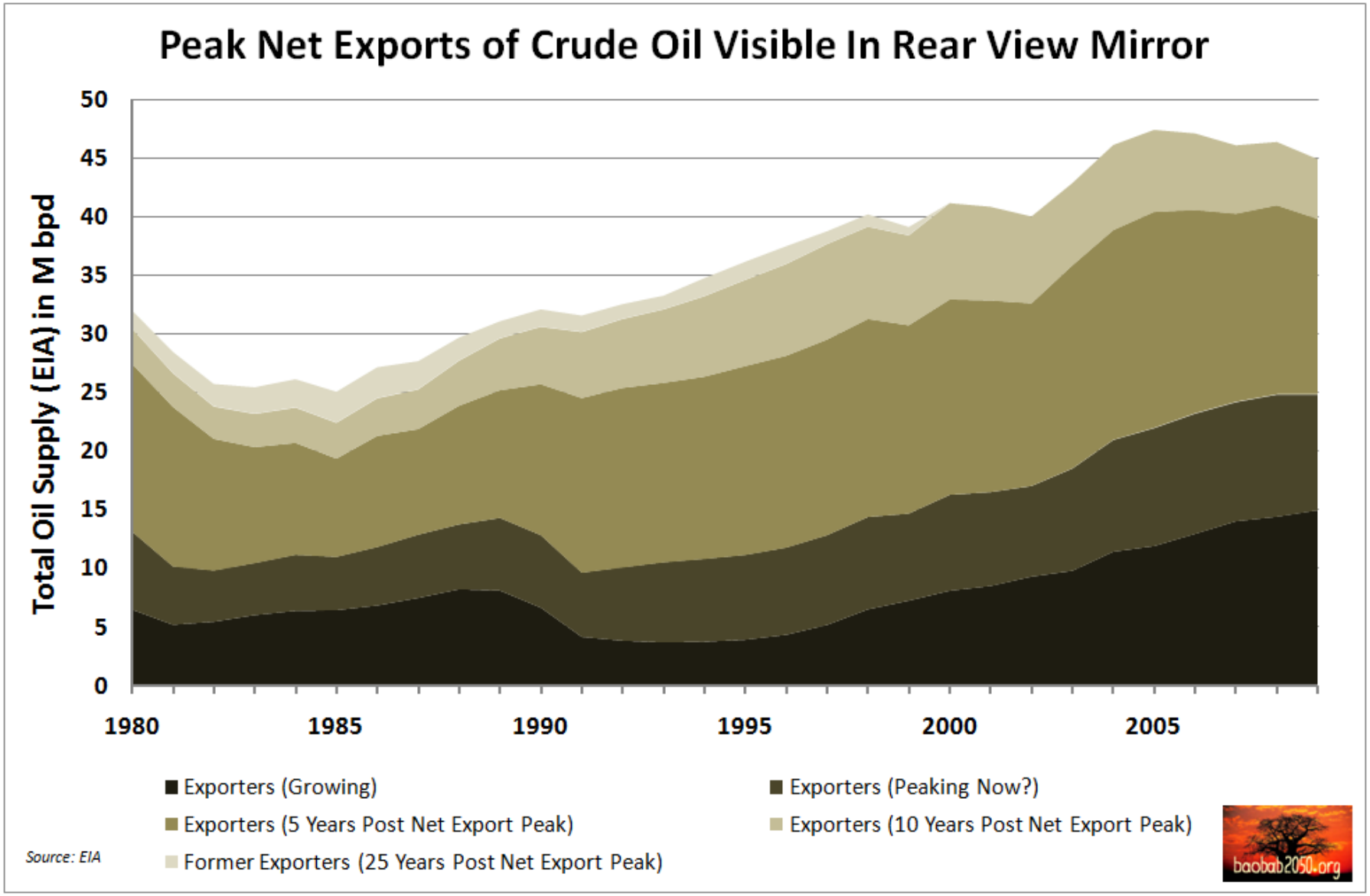


¹ Petroleum products supplied is used as an approximation for consumption.
² Crude oil and natural gas plant liquids production.

Figure 19: Petroleum overview of the United States[83]. When U.S. petroleum production peaked at 11.3 mbpd in 1970, net imports stood at 3.2 mbpd. By 1996, net imports exceeded production. In 2008, production was 6.7 mbpd, and net imports were 11.0 mbpd.

http://www.theoildrum.com/node/7007



13. We have exhausted the neoliberal growth paradigm (offshoring jobs, lowering the cost of imports, disempowering workers and holding down wages, etc.)

14. Growth in the consumer economy is unstable with respect to decreases in consumption. Genuine economic growth has already stopped, according to some (John Williams, Shadow Government Statistics).

15. *Apparent* growth is actually a) debt, b) "asset-based" (i.e. faith-based) bubbles, where underlying assets acquire value only in the context of growth assumptions. Use of (asset-based) debt as a substitute for (production-based) economic growth; mounting debt (household, governmental at all levels, corporate

16. Extremely tight and fast global financial interconnections, high opacity and deception, high debt leverage, intra-firm conflicts of interest, the proliferation of derivatives (financial explosives), the inherent political foundation of markets, and other factors make today's financial markets (and the businesses that depend on them) very unstable.

17. Widespread failures of the social contract (upward extraction of income and wealth to wealthiest members of society)

18. We are engaged in imperial wars which are exhausting our economy, weakening our democracy, and harming U.S. standing in the world. We are now engaged in wars over resources and related geopolitical ends with no apparent end.

19. Thus we do not see our society as capable of reproducing highly-complex, very large-scale, hyper-complex engineering efforts like CMRR-NF and nuclear power plants beyond this decade. We are in a process of decline so rapid it can be called “collapse” on any reasonable historical or indeed personal time scale. The knowledge, skills, social organization, tax base, social contract, cheap energy, abundant materials, stable climate, absence of crises, and so on are disappearing. Like Jane Jacobs and other perceptive parties we see a new dark age dawning, in which fewer people know much. It is a gradual and uneven process, beginning at lower economic levels, but our consumer society is ending, and “the American Century” (Henry Luce) is ending too.

20. So one question is: what (or who) declines first, and how.

21. Under the anticipated circumstances, DoD cannot complete its planned nuclear weapons modernization program and will be forced to retrench, as General Cartwright essentially said last week. Conventional DoD procurement programs will also retrench, both putting heavy pressure on NNSA..

22. Highly-adverse climate change is upon us. 2012 will be a big year for floods and bad weather (because solar radiation will be higher as well as greenhouse gases and water vapor, the latter up 4%), putting continued upward pressure on water programs in Energy and Water no just for one or two years but henceforth.

23. Floods and droughts are very expensive and will put significant downward pressure on our economy and hence tax receipts. They challenge our existing distribution of population and infrastructure investments.

24. Renewable energy will increasingly be correctly seen as having enormous *upside* economic potential and *downside* economic and geopolitical risks if neglected. Our Sputnick moment. These compete with nuclear weapons and CMRR-NF in Energy and Water.

25. **These and other converging crises are not fuzzy future events. They are upon us right now. They up-end all our previous assumptions of what our lives and the lives of our children will be.**

Thank you for your attention.