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Title:	LANL Institutional Decision Support By Process Modeling and Analysis Group (AET-2)
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LANL Institutional Decision Support
By Process Modeling and Analysis Group (AET-2)

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Summary

AET-2 has expertise in process modeling, economics, business case analysis, risk assessment, Lean/Six Sigma tools, and decision analysis to provide timely decision support to LANS leading to continuous improvement. This capability is critical during the current tight budgetary environment as LANS pushes to identify potential areas of cost savings and efficiencies. An important arena is business systems and operations, where processes can impact most or all laboratory employees. Lab-wide efforts are needed to identify and eliminate inefficiencies to accomplish Director McMillan's charge of "doing more with less." LANS faces many critical and potentially expensive choices that require sound decision support to ensure success. AET-2 is available to provide this analysis support to expedite the decisions at hand.

Background

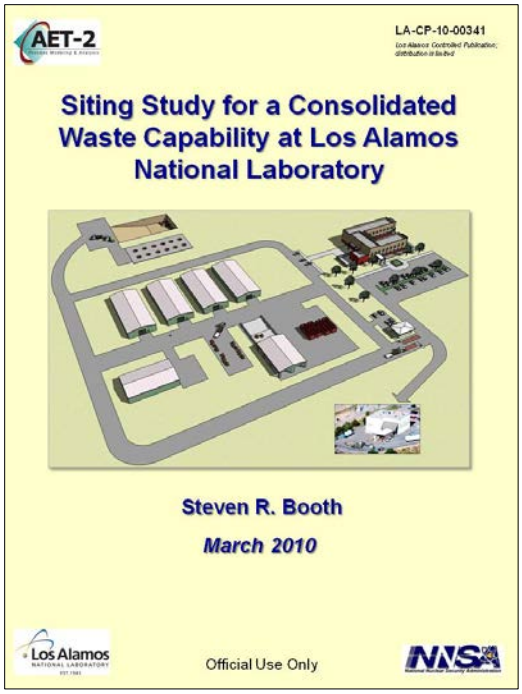
LANS is considering many alternative processes and policies at the institutional level to increase efficiency and decrease operating costs at LANL. To be successful, these decisions must be based on rational, risk-based, business case analyses. Two types of AET-2 support studies are envisioned. The first would support Lab-wide *policy* decisions. Topics of this nature include how to increase the productivity of an aging workforce as attrition and retirement rates change, working with NNSA to improve governing policies and orders, modifying LANL procedures to reduce self-imposed inefficiencies, and optimizing the use of existing facilities via repurposing or consolidation combined with building new infrastructure. The second would provide analyses to improve LANS *processes* such as environmental compliance and clean-up, the manufacture and disassembly of nuclear weapon triggers, and safety incident response. The breadth of institutional topics for consideration is wide, including the areas of business systems, NNSA governance, facility line item construction, facility management and consolidation, security, compliance, and safety.

Applicable AET-2 Tools

- Process modeling (flow sheets, process simulation)
- Business case analysis (ROI, cost/benefit, cost effectiveness, cost avoidance)
- Risk assessment
- Trade studies and decision analysis to weigh competing alternatives
- Systems Engineering
- Lean/Six Sigma (Yellow Belt- and Black Belt-certified staff)

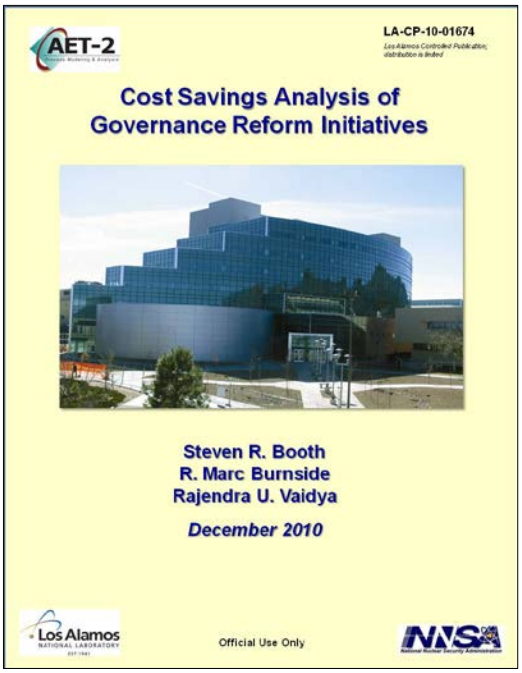
Example studies for institutional support are briefly described below.

Selection of Past Institutional Decision Support Studies



Siting Study for a Consolidated Waste Capability at LANL[1]

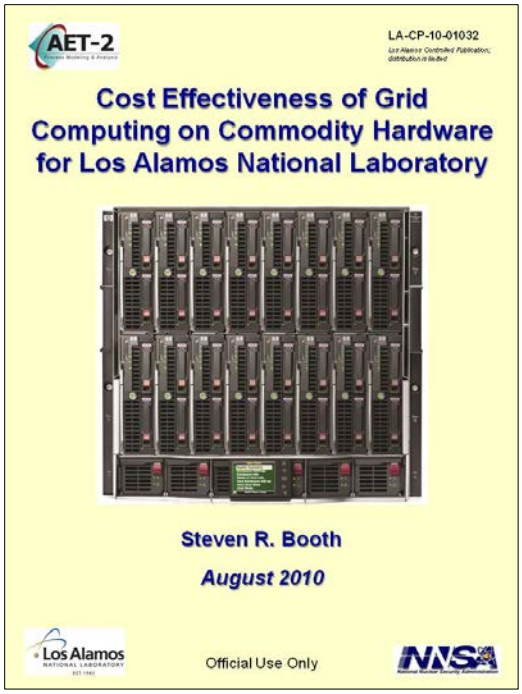
Decision analysis tools were used to rank ten alternative sites for a new Consolidated Waste Capability at LANL to replace current hazardous solid waste operations (hazardous/chemical, mixed low-level, transuranic, and low-level waste) at TA-54 Area G. The first component of the CSC is the TRU Waste Facility (TWF). These sites were assessed using the analytical hierarchy process with five top-level criteria and fifteen sub-criteria. The relative weights of the criteria were varied to reflect differing perspectives of decision makers. A conceptual design for the TWF to be located at the top-ranked site (TA-63) was completed and a PBI was earned.



Cost Savings Analysis of Governance Reform Initiatives[2]

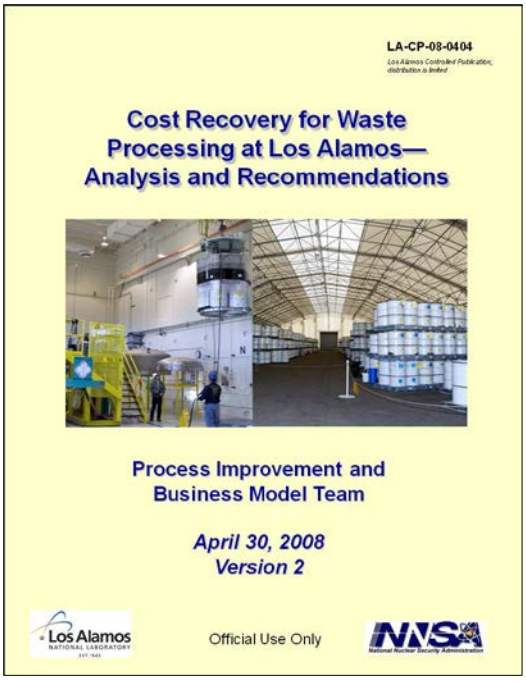
This study considered the potential cost impacts for seventeen NNSA governance reform initiatives proposed by Los Alamos National Laboratory. These proposals were developed by LANL management during early FY11 to identify policy changes that could markedly improve mission performance. They cover a broad range of topics and consider policies controlled at both the local Los Alamos Field Office and NNSA headquarters levels. The potential for cost savings is an important criterion in prioritizing the initiatives.

[1] Booth, Steven R., "Siting Study for a Consolidated Waste Capability at Los Alamos National Laboratory," Official Use Only, LA-CP-11-00341, March 2010.
[2] Booth, Steven R., R. Marc Burnside, Rajendra U. Vaidya, "Cost Savings Analysis of Governance Reform Initiatives," Official Use Only, LA-CP-10-01674, December 2010.



Cost Effectiveness of Grid Computing on Commodity Hardware [3]

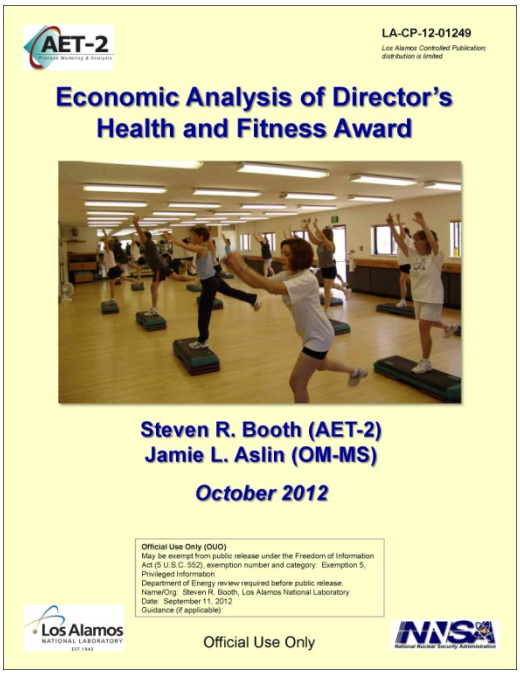
This effort examined the cost effectiveness of two computer hardware options for LANL's business applications and databases including Enterprise Resource Planning (ERP). Based on life-cycle cost analysis and other factors, the adoption of grid computing on commodity servers running Linux was recommended as the future hardware platform over option IBM mainframe-class machines running AIX. Several cost factors favored grid computing. Refresh cost of commodity hardware is only about 30 percent of what new mainframe-class equipment is. Annual maintenance of the AIX software and IBM hardware is also much higher than for grid—$3.3M versus $0.9M, respectively, over eight years. The overall life-cycle present value cost demonstrated a $4M (ten percent) savings in favor of the grid commodity platform.



Cost Recovery for Waste Processing at Los Alamos [4]

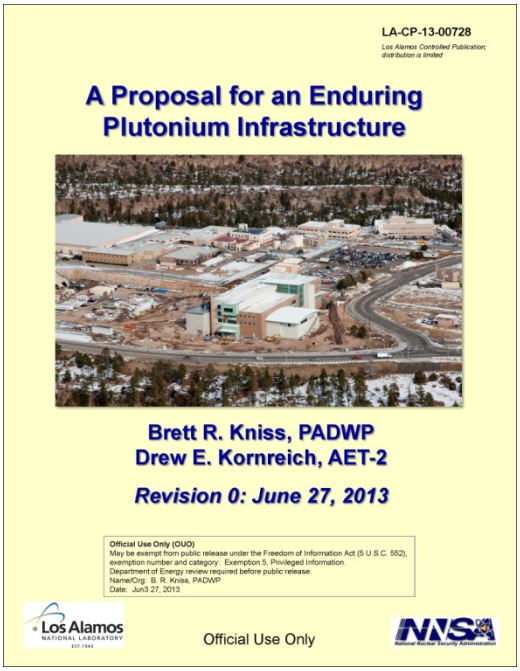
AET-2 led a nine-person team of program managers from PMPP-DO, CFO, ADCLES, ENV-RRO, ADEP, ADTR-NN, and PADWP to solve the problem of how to collect funds from waste generators to cover waste processing costs at Los Alamos. The schedule was extremely aggressive and had an Institutional PBI associated with it. The team produced a unanimously recommended solution and comprehensive analysis document. Associate Director-level Los Alamos managers were briefed on the results. The recommended business model was subsequently endorsed by senior management and was implemented in FY2009.

[3] Booth, Steven R., "Cost Effectiveness of Grid Computing on Commodity Hardware for Los Alamos National Laboratory," Official Use Only, LA-CP-10-01032, August 2010.
[4] Booth, Steven (team lead), Frances Chadwick, Juan C. Corpion, John J. Fawcett, Patricia E. Gallagher, Kenneth M. Hargis, Dennis L. Hjeresen, Steven D. McKee, Kevin B. Ramsey, "Cost Recovery for Waste Processing at Los Alamos--Analysis and Recommendations," LA-CP-08-0404, April 30, 2008. (OUO)



Economic Analysis of Incentivized Wellness Programs[5]

A benefit-cost model focused on tabulating improved health of the inactive LANL population with respect to seven diseases and precursor conditions that are nationally prevalent. Three scenarios were used to estimate savings and costs of a range of typical wellness programs, including purely voluntary and incentivized programs. The Virgin Pulse HealthMiles program was predicted to impact some 1700 inactive employees with net savings of about $18M over three years or four percent of current Laboratory health care costs. The wellness program was implemented in 2014.



Plutonium Strategy Analysis[6]

Planning for the plutonium infrastructure at Los Alamos has continued since the May 2012 release of the 60-day study issued after the CMRR Nuclear Facility (CMRR-NF) deferral was announced. This document summarizes refinements related to strategic plutonium facility planning developed over the past year. Major facility scope elements associated with the Plutonium Strategy are categorized into a "1-2-3" facility approach:

1. Maximizing use of the CMRR-RLUOB (and its logistical connection to PF-4);
2. Repurposing laboratory space in PF-4; and
3. Constructing modular additions to the PF-4 network.

Facility modifications tied to the approach are discussed.

[5] Booth, Steven R.; Aslin, Jamie L., "Economic Analysis of Director's Health and Fitness Award," Official Use Only, LA-CP-12-01249, October 2012.
[6] Kniss, Brett R.; Kornreich, Drew E., "A Proposal for an Enduring Plutonium Infrastructure, Official Use Only, LA-CP-13-00728, June 2013.