



Los Alamos Study Group

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How Will LANL Staff and Contractors Get to Work?

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Among other challenges, plutonium warhead core “pit” production at Los Alamos National Laboratory (LANL) must overcome several regional hurdles which could prevent the project from advancing in a safe, timely, and cost-effective manner. This review centers on the transportation problem.

As of March 4, 2022, LANL’s website reports 13,806 employees with 35% of them living in Los Alamos and the rest in Santa Fe, Rio Arriba, Sandoval, Bernalillo and Taos counties, with a few elsewhere.¹ To meet the statutory pit production deadline of 30 pits per year (ppy) by 2026, LANL seeks to hire 1,500 additional employees each year for the next few years, reaching an estimated 7,054 by 2024, and having already hired some 1,000 – 1,200 annually for the last three to four years.^{2,3} These new hires are partially offset by retirements, averaging about 700 persons per year since 2013.⁴

Nine critical facilities are vital to pit production at LANL; scores of additional and upgraded supporting facilities are also needed.⁵ Pit production success is dependent on regional factors, including new LANL-centric regional transportation options, considerable additional housing for new workers, new off-site workplaces, and the success of a new telecommuting model for working “at” LANL.

In other words, to accommodate industrial pit production, LANL itself must fission. The success of the pit mission will be affected by the success of these other transformations, over which LANL does not have authority. NNSA cannot pay for all the changes required or manage all of them. The costs, especially that of transportation, will be externalized throughout region and will ultimately be paid by workers, local communities, and state agencies.

These regional changes will have large impacts on local communities. Community needs will conflict with those of LANL in many cases, for example in the use of limited road capacity, in the focus of regional educational institutions, and in access to affordable housing. For pit production to succeed, some changes will need to come quickly in a manner that serves LANL’s pit production needs over others.

NNSA and LANL have been visibly struggling with these regional issues affecting pit production since at least 2019.⁶ The following outline raises some obvious questions and concerns about transportation of new employees to and from LANL. Apparently, LANL has by now some kind of transportation plan,⁷ but after even struggling internally with these issues for at least four years, nobody in the surrounding communities has seen it.

First, a Look at the Housing Situation:

Housing additional workers in a complex topographic setting with limited residences and a sparse road network is problematic. As LANL Director Thom Mason said at the Aug. 3, 2021, Exchange Monitor Nuclear Deterrence Summit, “we are at the end of the world’s longest cul-de-sac”. Aside from those who choose not to live in Los Alamos County due to proximity to family and other preferences, a housing crisis has resulted from the limited landscape and an increase in retirees staying in the city.^{8,9}

Consequently, 65% of LANL employees live in the surrounding counties and commute to work.¹⁰ Due to limited housing stock, LANL has predicted that 60-80% of newly hired workers will be commuting from outside the County.¹¹

As reported on the LANL website, 8.6% of employees are currently craft workers and 4.1% are contractors.¹² LANL Deputy Director Kelly Beierschmitt stated at the 2021 Deterrence Summit that, with massive numbers of additional incoming craft workers (Fig. 1), many are “put up in hotels” and discussions with local Pueblos including Nambe and Pojoaque are taking place regarding trailer parks.¹³

He also stated that the construction workforce required will likely be twice as large as the internal craft workforce. Space for laying down construction is even a concern and warehousing materials offsite is being considered.¹⁴

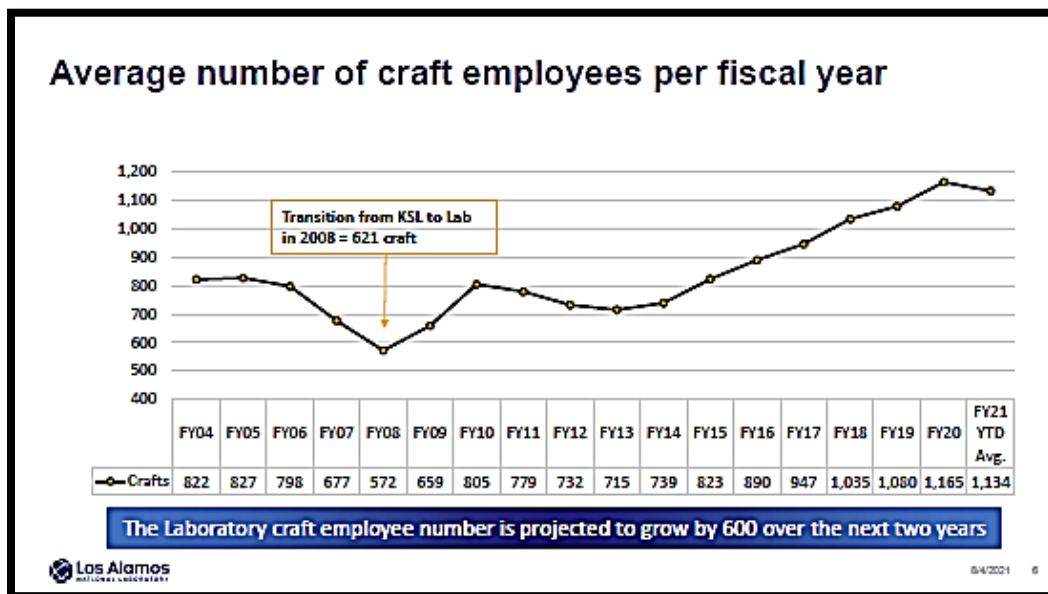


Figure 1: Los Alamos National Laboratory data for the average number of craft employees per fiscal year.

Non-enduring staff required at LANL include subcontractors for engineering, fabrication, and quality control inspection. Trade workers such as pipefitters, electricians, laborers and carpenters are also needed. For upgrading the LANL supply chain, Nuclear Quality Assurance (NQA-1) vendors are necessary.¹⁵ LANL has estimated number of non-enduring subcontractor workers for TA-55 through October 2025, with about 50 workers for infrastructure phase 1, roughly 500 for phase 2, and over 600 for phase 3.¹⁶

The number of subcontractors needed for projects outside of TA-55 has not been shared publicly, nor a detailed plan to house and transport these workers. Apparently, trailer parks on Pueblo lands are considered a quick fix for these non-enduring employees.

But there is also a housing shortage in Santa Fe, a popular destination for LANL employees who cannot find residence in Los Alamos County.^{17,18} Recently, 5,000 apartments have been built or are in the development stages in Santa Fe, with 30-40% of completed units going to Los Alamos-related employees.¹⁹ The starting rent for these apartments is \$1,700 - \$1,800, and the average cost of rent in the city has risen from \$850/month in 2015 to \$1400-1600/month in 2022.^{20,21} The cost of buying and renting are skyrocketing with the addition of more apartments largely built for high-salaried LANL employees and those from other states.²²

Many important Santa Fe workers, including teachers, nurses, and police officers struggle to live in the city with rising costs.²³ Local residents are stressed over resource consumption increases and are acutely aware of the current shortage of affordable housing, water availability, and access to basic services in Santa Fe.²⁴

A climatologist from the University of New Mexico, David Gutzler, told members of the Water and Natural Resources Committee in July of 2021 that in New Mexico “we have one hell of a water challenge. And we better plan for it”, adding that the 2020-21 rain season was the fourth driest on record. And Rolf Schmidt-Petersen, director of the New Mexico Interstate Stream Commission, said “even with rains, our reservoirs are empty”.²⁵

Yet housing developments continue, and Santa Fe’s population increased by 18,260 from 2014 to 2020.²⁶

To assist LANL in housing additional workers throughout the region, John Rizzo has proposed “Innovation Villages” across Los Alamos, Santa Fe, and Albuquerque.²⁷ But he has been silent in recent months and has not been maintaining the one piece of property he does currently own, the hazardous former Hilltop House Hotel, which has been ordered by Los Alamos Fire Marshal Wendy Survey to be secured on two separate occasions.^{28,29}

In planning the proposal, Rizzo said, “why don’t we build a tech economy, so I have something to do?” highlighting his detachment from local issues of affordable housing and resource limitations in the region, which won’t be solved by building more housing.³⁰

Additionally, there are 2021 Master Plan documents for Los Alamos Downtown³¹ and White Rock Town Center³² to build more housing units in Los Alamos County. These plans propose zoning changes that include multi-unit and multi-story apartments and mixed-use residential buildings, with allowances to increase the maximum building heights. No work has begun on these projects.

In these Master Plan documents, it has been clearly stated that these changes are intended for new LANL workers:

One major objective of the White Rock Town Center and Los Alamos Downtown Master Plan is to create a framework to accommodate new housing within [Los Alamos County] that appeals to the LANL workforce, allowing them to live in closer proximity to their workplace.

Socioeconomic changes expected for the region of Sandoval County, forecasted by the Mid-Region Council of Governments, indicate increases in population, households, and employment by 2040.³³ This includes Rio Rancho, Bernalillo, and more rural areas such as San Ysidro and Jemez Springs.

Housing Questions:

- How many full-time employees are necessary to meet the statutory deadlines for pit production?
- How many non-enduring workers are required for all necessary infrastructure projects, and where will they be housed
- What will the impact be on local Pueblos, should trailer parks be built on their land for temporary LANL employees?
- What will the impact be on rural northern New Mexico as LANL attempts to house and transfer workers through these areas?
- How will increasing housing prices affect current Santa Fe residents over the next few years?

- What is the plan to ensure local residents aren't pushed out of Santa Fe as Los Alamos employees and others move in with higher salaries?
- Do proposed changes to zoning and maximum building height restrictions affect the cultural aspect of Santa Fe and Los Alamos County? How will local culture be maintained?
- Where will the environmental resources, such as water and electricity come from to support the continuous population growth of these areas?
- How does Rizzo's plan, which requires massive tax breaks, support economic growth in the region?
- What is the quality of the new housing developments and the Innovation Villages expected to be? How long are residents expected to live there?

How Will Staff and Contractors Go to Work at LANL?

At the 2021 Deterrence Summit Beierschmitt stated that the majority of LANL workers commute and he suggested that 2,000 - 3,000 newly hired employees be transported on buses.³⁴ This would mean 30 – 60 buses transporting staff long-distance, piling extra hours onto employee workdays. An increase in commuter traffic leads to greater road congestion. This is costly, and the price will be paid by commuters.

LANL is “not expanding parking by the level of employee growth” and although “most employees are expected to be on site 4-5 days per week,” they have identified that “there is not enough parking or road capacity to accommodate projected levels of growth at LANL if employees continue to drive alone to work at current rates”.³⁵

A LANL commuter survey identified that 71% of employees who commute from outside the County drive alone, while only 8% use public transportation, 16% carpool, and 1% vanpool (Fig. 2).³⁶ In 2020, 19% of the employed population of Santa Fe worked at LANL, 9% of Espanola, and 4% of Albuquerque.³⁷

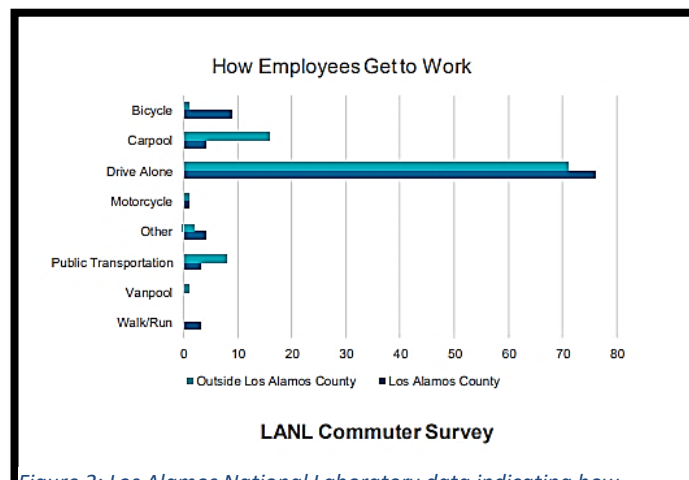


Figure 2: Los Alamos National Laboratory data indicating how employees travel to work.

With >65% of LANL workers commuting and only two ways in and out of the Lab, road congestion is a major issue. Local highways, including NM 502 and NM 4 are currently subject to high congestion during rush-hour times. Beierschmitt has identified the issue as “Los Angeles style traffic congestion”.³⁸

Commuters through Santa Fe also contribute to highway congestion on NM 285, which was rated eighth among New Mexico's ten most congested corridors in 2020.³⁹

Travel path data show more than 3,000 LANL employees commute using SR 84 and SR 502, another 2,000 – 3,000 commute along SR 30 from Espanola, 1,000 – 2,000 utilize SR 599, and 500 – 1,000 travel on I-25 from Albuquerque, passing through Santa Fe on SR 285 (Fig. 3).⁴⁰

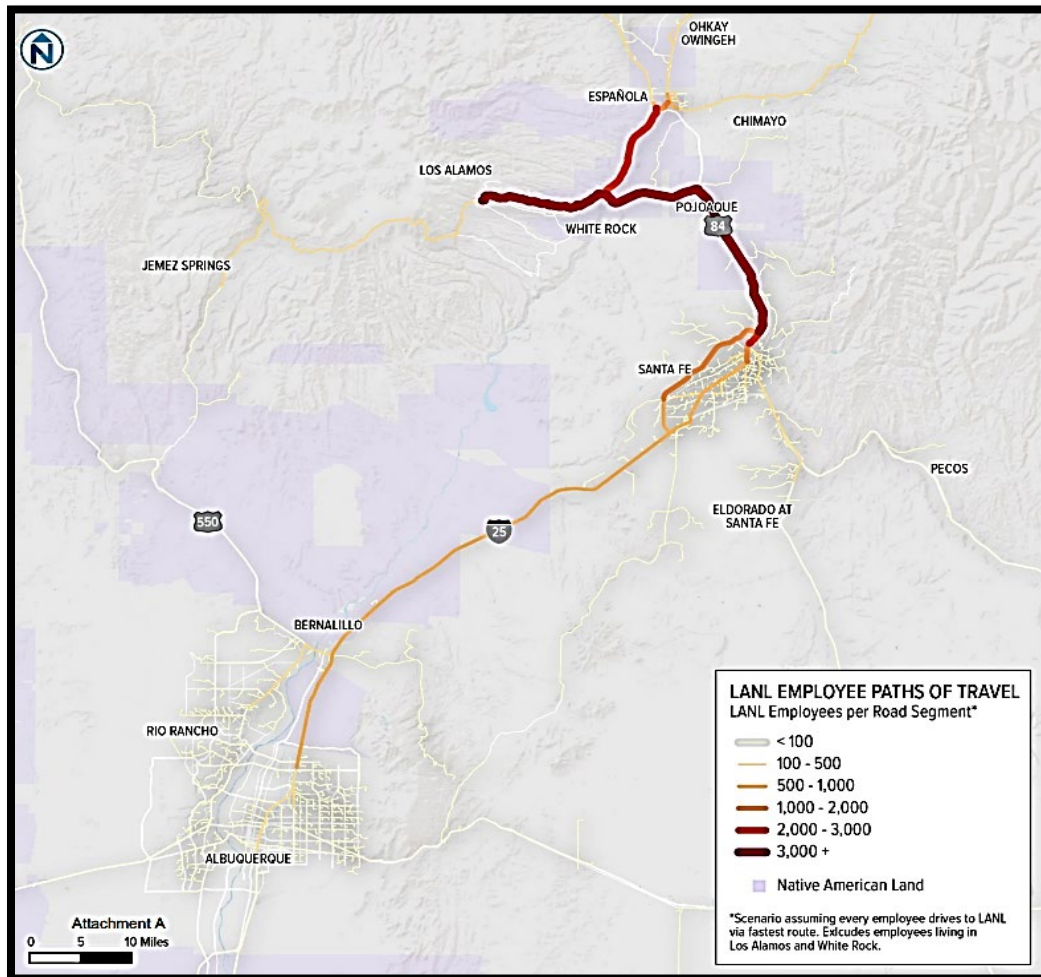


Figure 3: Los Alamos National Laboratory data for paths of travel utilized by employees.

No changes have been implemented thus far to accommodate increasing levels of external travel to LANL, but employee subsidies for public bus transportation passes, as well as modifications to existing public transit operations and stations for Atomic City Transit (ACT), NMDOT, and NCRTD have been suggested. LANL has also suggested private buses to compliment public transit.^{41,42}

Modifications are necessary because “existing park and rides do not have enough parking to offset the need for additional parking at LANL, estimated at 2,500 spaces needed by 2024 [and] existing transit services do not come often enough”.⁴³ Public transit ridership levels pre-COVID were low, with 300 – 400 individuals utilizing ACT, 100 – 200 on NMDOT Park and Ride, and just 6 riders per weekday utilizing NCRTD to Los Alamos.⁴⁴

The LANL website resource for transportation suggests utilizing public transportation, air travel to the Los Alamos Airport from Taos, Santa Fe, or Albuquerque, or renting a car from one of the two companies partnered with LANL who provide discounts for cars used to travel to the Lab.⁴⁵

Travel Within Los Alamos County

Existing congestion issues on the limited road network through Los Alamos County will be amplified with additional vehicle traffic to and from LANL, including construction vehicles. Modifications will need to be addressed to maintain public safety. Annual crash data from NMDOT reports 136 vehicle crashes in Los Alamos County in 2019, 145 crashes in 2018, and another 135 in 2017.⁴⁶

Local government officials and Los Alamos residents have expressed concern for bicyclist safety and have suggested that additional bike lanes be built concurrent with LANL-centric road changes. Cycling is a popular mode of transportation in the County, with an annual celebration of the “Bike to Work Day” event.⁴⁷

Residents are aware of recent accidents involving cyclists in Los Alamos, including a March 10, 2021 incident involving a hit-and-run with a truck, and another on November 25, 2021 involving a teenager and a bus.^{48,49}

A Los Alamos resident and LANL employee, Jody Benson, presented an affidavit in November 2010 in response to a similar issue involving LANL construction. She stated, “cycling on Pajarito Road, NM 502, NM 4, and possibly other area roads will become dangerous and unenjoyable. Heavy haulage trucks and other construction traffic will physically endanger cyclists with flying debris and dust, exhaust fumes, and potential collisions, and this traffic will detract from the environment and roads we enjoy”.⁵⁰

How Will They Get Around LANL Property?

Internal transit options within LANL are also necessary to transport employees to locations throughout the 40 square mile property.^{51,52} Suggestions to manage this with projected growth have included shuttles to large job sites and implementing bicycle ride sharing on LANL property, but currently “there is not enough infrastructure to support biking and walking to, from, and around LANL”.⁵³

Transportation around LANL property also leads to inefficient time usage. If employees spend 30-minutes travelling on the property during an 8-hour shift, 6% of their time goes to transit. This requires even more workers to make up the percentage of time lost. LANL’s transit options analysis has noted:

Reaching LANL buildings from the Los Alamos Transit Center and getting around LANL without a car may be time consuming, uncomfortable, and indirect [and] public transit vehicles cannot easily travel into TA-3, where nearly one-third of the total jobs in the county are located. Public transit vehicles cannot travel along Pajarito Road, where many jobs are located and how many employees get to work.⁵⁴

Recommendations for employees published on the LANL website include utilizing the labs private Taxi service, “If you don’t want to lose your parking space or walk for 45 minutes to a meeting on the other side of the Lab, use the Lab Taxi Service!” it says.⁵⁵

What’s the Plan?

When directly contacted, a LANL site planner stated on Feb. 16, 2022 that they do not have cost estimates, schedules for implementation of changes, or knowledge of any current plans for transportation, aside from an “all-in, all-of-the-above approach”. Local government officials spoken to directly have also confirmed the absence of a plan for transit modifications within the County to accommodate growth at LANL.

A LANL master plan that would include transportation modifications was requested by Council Members at a Los Alamos County Council Meeting on May 18, 2021, and Beierschmitt responded that LANL did not yet have this document.⁵⁶ When asked by phone call on Feb. 18, 2022, a County Council Member responded that they still had not received this from LANL.

Division Leader of Communications and External Affairs at LANL, Patrick Woehrle, communicated to the Los Alamos Study Group Mar. 1, 2022, that a Campus Master Plan involving transportation goals and plans would be available soon “on the external website after classification review”.

Transportation Questions:

- What is the cost for daily long-distance shuttle transportation to LANL and who will pay for it?
- How much time, on average, will workers be spending to commute long-distance? How will commuting time impact quality of life for workers?
- How will recruitment be affected by bus transportation? Will prospective employees be deterred by daily mass transit, especially when LANL studies show current employees prefer to drive alone?
- Will shuttles be privately owned by LANL, contracted, or otherwise?
- Will they operate on LANL property, or will a separate system be implemented?
- How will transportation within LANL be managed and paid for?
- How will staggered shifts impact commuter traffic in the region, the County, and on LANL property?
- With an increase in vehicle traffic, how will bicyclist safety be ensured within LANL property and throughout Los Alamos County?
- What are the plans to expand current public transit options such as NCRTD and NM Park and Ride; what is the cost and who will fund this?
- How much of the Bipartisan Infrastructure Act will be required for these LANL-centric transportation modifications?
- How will traffic increases affect quality of life for Los Alamos County residents?
- Will students utilizing public transit be affected by an increase in LANL employees utilizing public transit systems?
- Has LANL quantified the environmental cost of present resource consumption for transportation and how will this change with modifications for growth?

What About Telecommuting?

Telecommuting options may lessen the impact of transit complications but may also impact quality of life for workers. Travelling to and from work provides opportunities to run errands, access childcare, and to socialize outside the home. Telework was described by Thom Mason as “not for employee benefit” and would only be utilized in cases where effectiveness is improved, and it provides “value to the government”.⁵⁷

He mentioned that, despite high rates of COVID-induced telecommuting, some employees will no longer have the option to telework, and other employees who prefer to be on site may no longer have an office.

A February 2022 GAO Telework Study included recent reports from DOE stating there were “issues with training and mentoring newly hired engineers in a virtual environment” as well as “work-life balance challenges faced by employees [where] the boundaries between work and home life became blurred, often resulting in employees working longer hours and extended workweeks”.⁵⁸

The FY 2021 LANL Site Sustainability Plan states:

To achieve the mission’s targets, LANL management is planning to increase the LANL workforce. LANL does not have sufficient space to bring on all these new hires, nor have federal funds been earmarked for enough new facilities. The telework strategy thus appears the approach going forward. Shifting a significant number of staff to work off-site will open up office space. In FY 2020, LANL conducted a telework pilot project with 1,336 staff to gauge telework feasibility. For FY 2021, telework will be utilized in a combined strategy to reduce COVID-19 spread at LANL and to increase the workforce.⁵⁹

LANL is Also Adding Additional Leased Facilities:

Several new leases in Santa Fe have been obtained by LANL, including properties on Pacheco Street and St. Michael’s Drive, on N. Guadalupe and West Alameda Streets, and the Dorothy McKibbin Conference Center.^{60,61} Together, these spaces offer 105,856 square feet.

Additionally, a request for information was issued by LANL on May 7, 2021, to “entities leasing up to 100,000 square feet of light laboratory space within a 50-mile driving radius”.⁶² These leases resulted because “office space in and around ‘the Hill’ has increased population density to over 100 percent”.⁶³

The type and extent of work to be performed at these locations has been outlined by LANL as “a hub for educational partnerships, workforce development initiatives, media relations, government affairs, and technology transfer.”⁶⁴ However, obtaining leases for off-campus work creates a fragmentation of lab activities spread out over the region, which may ultimately limit effectiveness of operations.

Prior to these new leases, LANL was leasing 27 properties in Los Alamos totaling 337,000 sq. ft. as of December 19, 2019 and determined a requirement for 2.4M gross square feet of office space across the enterprise. A LANL Site Planning Presentation identified that “unconstrained, the requirement is met in 2045. With an investment of \$100 million per year, the requirement is met in 2084”.⁶⁵

In this presentation, Program Analyst for NNSA’s Los Alamos Field Office, Paul Holland, is quoted saying: “Factoring in the end-of-life assets and potentially expanded missions, it is not unreasonable that the demand over just this decade is north of 1M square feet”.⁶⁶

Telecommuting & Leasing Questions:

- What is the nature of the work performed in newly sought “light laboratory space”? Does it include teleworking hubs?

- How many workers will be remote and how might this offset commuter traffic concerns?
- How much of the leased space is required for the pit mission?
- How many employees involved with pit production will be telecommuting and how has LANL prepared for the lack of supervision for these workers?
- How will cohesion of the pit mission be maintained with the addition of millions of square feet of off-campus sites throughout the region?
- How will individuals be incentivized to work for LANL if they do not have the opportunity to work directly at the Lab? Will this effect recruitment?

Discussion and Conclusions:

The critical questions remain: what are the costs, the detailed plans, the regional requirements and impacts? How will thousands of new employees be effectively housed and transported to LANL, and throughout the 40 square mile property? How does LANL expect to meet the 2026 deadline without planning and implementation of these regional elements?

The most common complaints from over 1,000 current and former employees of LANL are frustrations with the isolated location, the lack of available housing and as a result, the high cost of housing and the long commutes.

^{67,68}

Do factors such as quality of life for employees and residents, as well as persistent resource limitations, matter in the pursuit of the largest and most complex endeavor the NNSA has ever attempted? Are economic growth and nuclear deterrence sufficient excuses for the consequences this region will face?

Future generations are inheriting the results of this megaproject, and they depend on accountable, informed oversight by governments and leaders. Consideration from all parties is necessary to ensure proper evaluation of the regional affects of the pit mission at LANL.

A relevant Oxford study on megaprojects by Professor and Founding Chair of Major Programme Management, Brent Flyvbjerg, identified the “Break-Fix Model of Megaproject Management”, so frequently observed:

Generally, megaproject planners and managers – and their organizations – do not know how to deliver successful megaprojects, or do not have the incentives to do so, and therefore such projects tend to “break” sooner or later, for instance when reality catches up with optimistic, or manipulated, estimates of schedule, costs, or benefits; and delays, cost overrun, etc. follow. Projects are then often paused and reorganized – sometimes also refinanced – in an attempt to “fix” problems and deliver some version of the initially planned project with a semblance of success.

Flyvbjerg’s Oxford studies on megaprojects conclude:

Delivery is a high-risk, stochastic activity, with overexposure to extreme events with massively negative outcomes. Statistical evidence shows that such complexity and unplanned events are often unaccounted for, leaving budget and time contingencies inadequate. The result is cost overruns, delays, and benefit shortfalls that undermine project viability during project implementation and operations.⁶⁹

How can government officials ensure this project not only avoids failure, but also avoids offloading the pressures of expansion on employees and struggling communities throughout the region? Are officials informed enough to be able to meet this need? Is the pressure to accelerate schedules to meet production deadlines acceptable at the expense of employee quality of life, financial cost to the region, and high risk of project failure?

Perhaps Flyvbjerg's analyses can offer insight and guidance.

In his book "Megaprojects and Risks: An Anatomy of Ambition", Flyvbjerg proposes four basic instruments for megaproject decision making to improve success,⁷⁰ three of which are applicable to LANL's pit mission:

- 1) "Transparency to enforce accountability in the public sector". This crucial element is absent from the pit mission; planning has not been shared with the public or local government officials. Evidence shows that "megaprojects that have tried to get by without publicness and participation have often run into such heavy opposition that the decision-making processes were destabilized and second-best solutions to both procedure and outcome forced upon actors and projects".
- 2) "Establish performance specifications" to be met by the project, especially as they relate to environmental, safety, economic and regional issues. Ideally, these would be identified before project implementation.
- 3) "Explicit formulation of regulatory regime", which applies as crucial standards that must be met. This step includes assessments of cost and risk that should be central to feasibility considerations. Identification of all costs should be considered before decisions are made.

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