Greenline Insights

C2ES CENTER FOR CLIMATE AND ENERGY SOLUTIONS

ISSUE BRIEF

Economic Stakes of Removing Federal Tax Credit Support for Nuclear Uprates

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Executive Summary

Nuclear uprates, which entail retrofitting existing nuclear plants with advanced equipment to improve their output, are an important strategy to improve the nation's energy dominance and reliability. We find that completing uprates on the remaining U.S. nuclear fleet would mobilize an estimated **$38 billion in capital investments** and, in doing so, create:

- **390,000 jobs**[1]
- **$31 billion in labor income**
- **$49 billion in national GDP**
- **$10.5 billion in federal, state, and local tax revenue**

Yet these benefits are currently at risk, as they hinge on the continued availability of federal tax incentives, particularly the tech-neutral production and investment credits (45Y and 48E) and nuclear fleet credit (45U). Curtailing or repealing these provisions puts the future of nuclear uprates – and their economy-wide benefits – at risk.

Introduction

The United States is entering a decade in which electricity demand is projected to surge – driven by electrification, artificial intelligence data centers, and industrial reshoring – raising the need for more abundant and reliable sources of energy. Nuclear uprates, which boost a reactor's capacity by as much as 15% through advanced component retrofits, offer a near-term, cost-effective means of adding dispatchable capacity to the grid.

Nuclear uprates avoid the lengthy siting and licensing challenges that accompany brand-new nuclear construction. The Electric Power Research Institute estimates between 5 and 7 gigawatts of additional capacity could be unlocked by completing all remaining uprates on the existing nuclear fleet. Just in the near term, approximately 3 gigawatts of planned uprates were reported in The Future of Nuclear Power 2024 Survey by the Nuclear Energy Institute.

[1] Jobs are measured in job-years, or one job for one year.

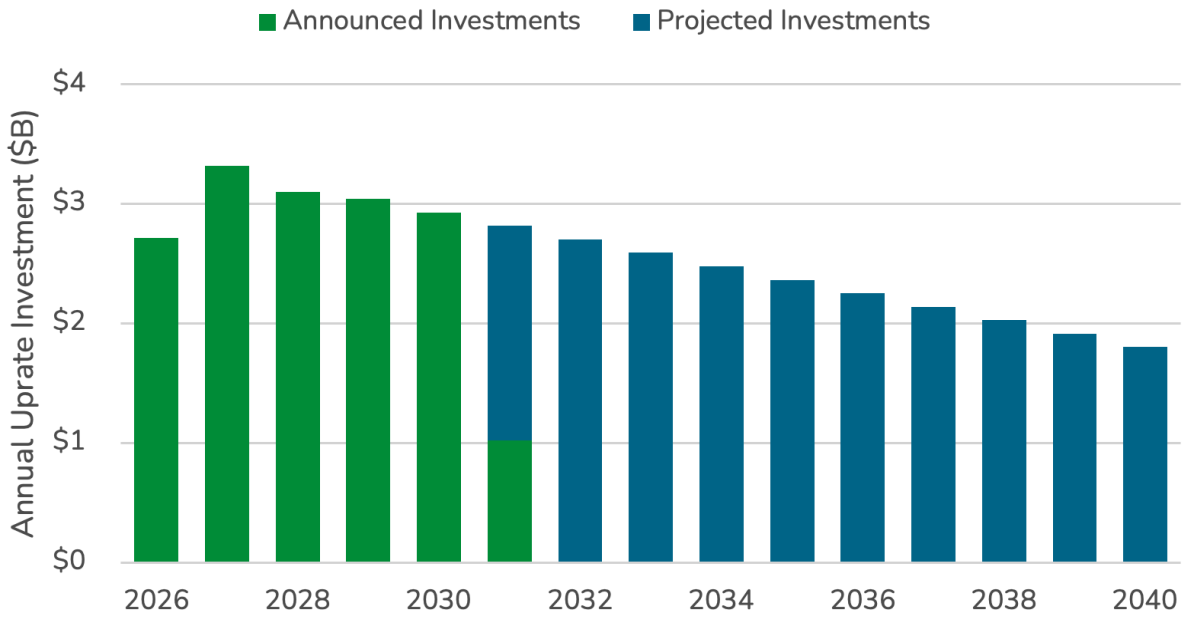
However, remaining uprate opportunities are capital-intensive. Tech-neutral tax credits (Sections 45Y and 48E) and nuclear-specific tax credits (Section 45U) provide important financial support to these planned projects, and signal the federal government's support for nuclear expansion. Removing or otherwise hampering these credits puts future nuclear uprates at financial risk, which presents potential economic losses throughout the economy.

Methodology

Our analysis employs IMPLAN, a widely used input-output economic model that traces how direct spending circulates throughout businesses, institutions, and households across the U.S. Each dollar invested in IMPLAN ripples throughout the national economy, measuring resulting changes to employment, labor income, GDP, fiscal impacts, and other measures. We model a representative portfolio of 6.5 gigawatts – the middle bound of the Electric Power Research Institute's estimate – at an average capital cost of approximately $5,900 per kilowatt of capacity expansion. This estimate is derived from real project data and studies from the past 10 years, which range between $4,200 and $7,400 per kilowatt of uprate capacity.[2]

With these data sources, we project **$38 billion in total investment potential to implement remaining nuclear uprates through 2040**. Using survey data from the Nuclear Energy Institute, we project a 15-year time horizon for implementing these uprates, with individual capacity implemented each year between 2026 and 2040. Each year of investment was individually modeled in IMPLAN, with final results expressed as 2025 real US dollars.

Figure 1. Announced & Projected Nuclear Uprate Investments by Year



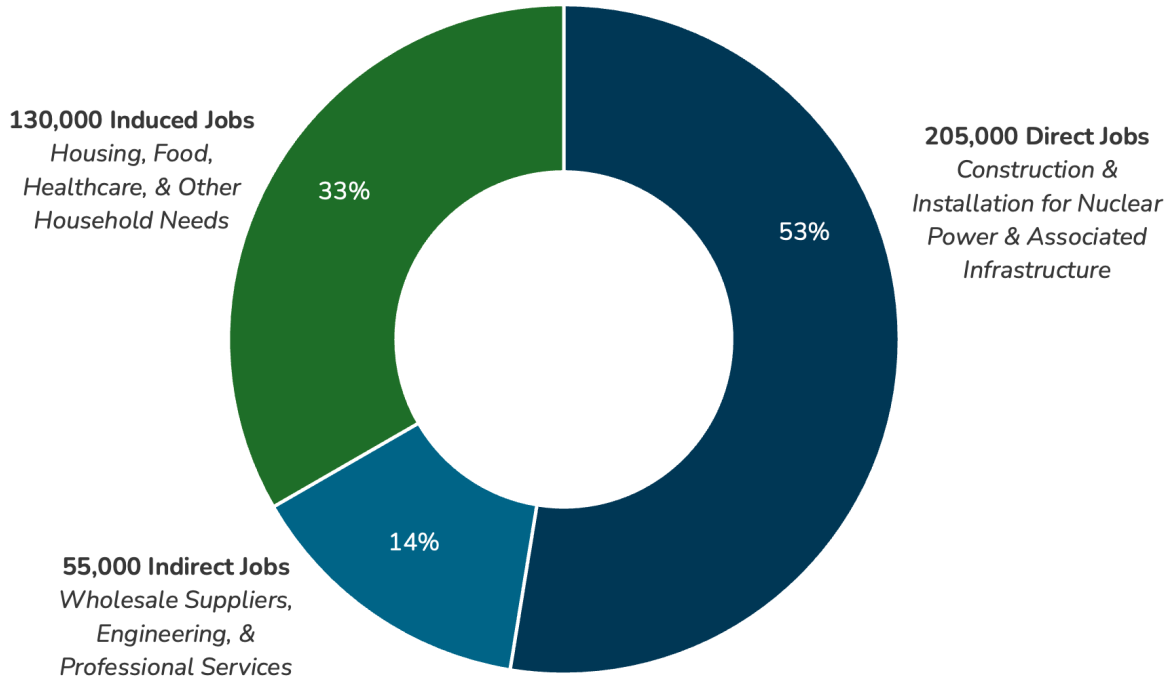
[2] All dollars are converted to 2025 real USD. See the appendix for further detail on sources.

This analysis reflects only the economic impacts of capital investments required to complete uprates on the remaining U.S. nuclear fleet. It does not account for broader economic benefits that may arise from increased energy supply, such as potential reductions in electricity prices, improved grid reliability, or increased nuclear operational expenditures. Additionally, this modeling does not include other forms of nuclear expansion, such as constructing new nuclear facilities or restarting previously shuttered plants. As such, the findings represent a conservative estimate of the full economic potential associated with preserving a supportive federal policy environment for nuclear energy.

Findings

Performing uprates on remaining eligible nuclear reactors in the U.S. fleet would generate significant nationwide economic benefits, driven by direct construction and installation, supply chain demand, and household spending. In total, the modeled scenario would support **390,000 jobs**, deliver **$31 billion in labor income**, contribute **$49 billion to GDP**, and generate **$10.5 billion in public tax revenue** across federal, state, and local levels.

Figure 2. Direct, Indirect, and Induced Job Creation



Within the total jobs created, **205,000 jobs (53%) are "direct" jobs**, meaning they occur within industries that are directly involved in the construction and installation of nuclear uprates and their associated infrastructure. An additional **55,000 jobs (14%) are "indirect" jobs**, meaning they occur within industries that provide goods and services to these projects, including

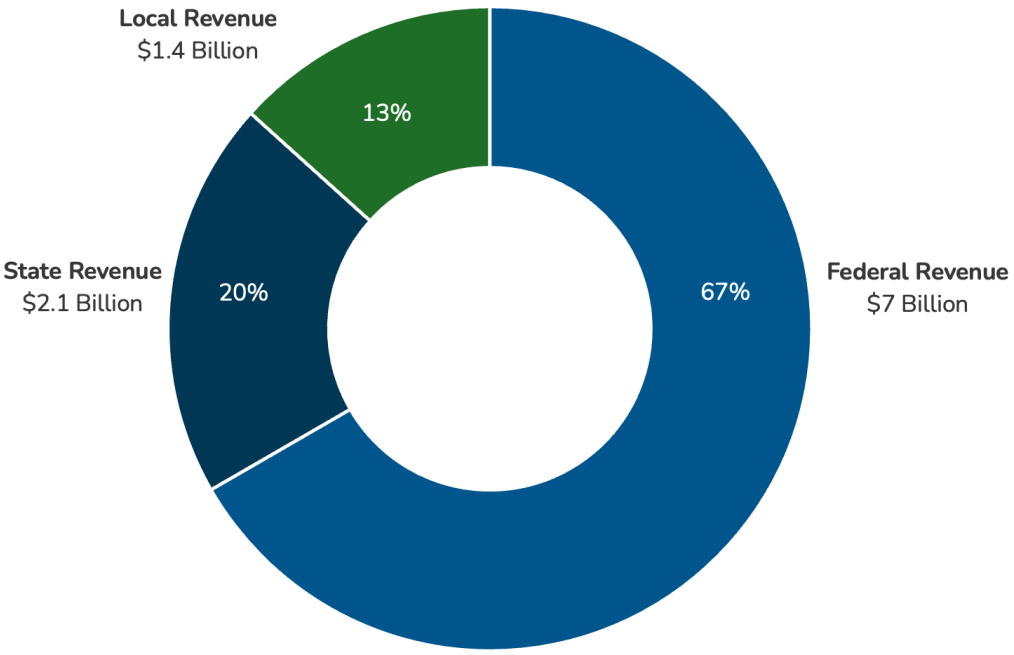
wholesale trade, engineering services, and professional support. Lastly, **130,000 jobs (33%) are "induced" jobs**, meaning they occur as a result of an increase in spending power for households in the state, who spend money on a variety of local goods and services such as food, health care, real estate, and other living costs.

Completing new uprates also generates **$31 billion in new labor income**, over half ($16 billion) of which is created within industries responsible for nuclear construction and installation of associated infrastructure. This translates to an **average annual income of $78,770** per job created, which is 13% higher than the national median of $69,818.

GDP increases are substantial, totaling **$49 billion in cumulative gains** over 15 years. Of that, **$23.5 billion is generated directly** within the nuclear construction industry, with the remaining impact including **$9 billion in indirect GDP contributions** from related businesses and **$16.5 billion in induced GDP gains** across household-dependent sectors. In total, these GDP gains are $11 billion higher than the original $38 billion in capital expenditures, and would be even higher when considering the energy systems benefits of expanded grid capacity.

Public tax revenues would also see meaningful returns. The scenario would produce **$10.5 billion in total public revenue**, including **$7 billion in federal taxes, $2.1 in state taxes, and $1.4 billion in local taxes**. These amounts reflect new tax revenue that would increase government revenue from economic growth, simply from capital investments alone. This does not include increased tax revenues accrued from nuclear facilities at higher capacity.

Figure 3. Federal, State, and Local Tax Revenues



Conclusion

Nuclear uprates represent one of the fastest, most cost-effective avenues for expanding reliable energy in the United States. A number of tax credits – particularly 45Y, 48E, and 45U – are vital to closing the financial gap for these projects. If Congress rescinds or otherwise hampers the effectiveness of these tax credits, many developers would be at risk of shelving or canceling uprate projects. These projects not only represent tens of billions in economic value and hundreds of thousands of jobs, but also reinforce national energy security at a critical juncture of demand growth.

Appendix - Notable Sources

Source
EPRI - *Unlocking the Equivalent of 9 Large Units from the Existing U.S. Nuclear Fleet (Oct 2024)*
Nuclear Energy Institute - *The Future of Nuclear Power 2024 Update Survey (Oct 2024)*
Power Engineering - *Entergy plans for nuclear uprates, potential new reactor (April 2025)*
RTO Insider - *Northwest's Only Nuclear Plant Could Get Uprate (April 2025)*
Nuclear Engineering International - *Vogtle, Hatch power uprates planned (Feb 2025)*
Constellation - *Constellation Making Major Investment in Two Illinois Nuclear Plants to Increase Clean Energy Output (Feb 2023)*

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