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Pathways to Keep Financing Flowing into Clean Electricity Sectors

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The American Council on Renewable Energy (ACORE), Duke University's Nicholas Institute for Energy, Environment & Sustainability, the EFI Foundation, and the World Resources Institute (WRI) recently convened technology developers, finance providers, large-load customers, and legal and policy experts to explore how to keep finance flowing toward clean electricity sectors. The following brief summarizes some key findings from the closed-door roundtable.

SUMMARY

The US power sector faces surging electricity demand—driven largely by data centers—amid high interest rates, supply chain insecurity, and policy uncertainty. Grid operators are warning of power shortages and considering new capacity, yet clean electricity sources remain the most viable pathway to maintain affordability and meet demand. A recent cross-sector roundtable convened by ACORE, Duke University's Nicholas Institute, EFI Foundation, and WRI worked to identify ways clean energy development could alleviate near- and mid-term pressure on the power sector. Participants defined three central challenges to keeping capital flowing into these projects: (1) inflationary pressure and the rapid increase in electricity demand; (2) regulatory and policy uncertainty around tax credits and permitting; and (3) financing barriers for first-of-a-kind (FOAK) clean firm power projects such as geothermal, nuclear, carbon capture and sequestration (CCS), and long-duration storage.

For the United States to meet the growing need for power, participants emphasized near-term scaling of existing energy resources alongside investments in the commercialization of clean firm technologies, which can provide medium- to long-term capacity. This will require coordinated public-private risk sharing, more predictable federal guidance, and reforms to speed interconnection and permitting. Absent such actions, financing could stall, project pipelines could narrow, and the United States will struggle to meet demand growth while maintaining affordable and clean energy.

Key Takeaways

1. **Stabilize Policy and Regulatory Conditions**
    - Clarify Foreign Entity of Concern (FEOC) and material assistance guidance to provide developers and investors with compliance certainty and prevent a near-term chilling effect in energy project financing.
    - Safeguard tax credit transferability markets by maintaining market confidence for buyers and sellers of credits through near-term and clear FEOC guidance.
    - Enhance the certainty of federal permitting processes to minimize political risk and broader economic impacts.
2. **Address Market Distortions from Hyperscaler Load Growth**
    - Accelerate deployment of energy, clean firm technologies, and storage to relieve upward price pressures caused by growing data center power demand.
    - Encourage coordinated planning among utilities, state regulators, and hyperscalers to ensure equal access to energy infrastructure and avoid crowding out other users.
3. **Expand Financing Tools for FOAK Clean Firm Projects**
    - Use public-private risk-sharing mechanisms combining public guarantees such as the US Department of Energy's Office of Energy Dominance Finance (formerly known as the Loan Programs Office) with private capital to bridge

the "missing middle" between research and development and commercial deployment.
    - Encourage strategic partnerships between startups, oil and gas majors, original equipment manufacturers, and offtakers to help with fundraising, build broad-based support, and provide technology expertise or validation.
    - Promote innovative offtake structures to provide stable revenue support. Examples could include multi-buyer aggregation or capital-providing power purchase agreements in which offtakers provide some or all of the upfront capital necessary to develop the project.

4. **Build Institutional and Workforce Capacity**
    - Leverage existing fossil fuel–sector skills and infrastructure (especially in drilling and plant operations) for geothermal and CCS projects.
    - Invest in workforce readiness programs through trade schools and unions, the costs of which can be recovered in electricity offtake structures.

5. **Enhance Valuation and Cost Recovery for Clean Firm Power**
    - Recognize clean firm resources in utility planning and tariffs for their grid reliability and ancillary services value.
    - Implement mechanisms to protect ratepayers from FOAK cost overruns through public backstops or tariff smoothing (in which a higher proportion of costs are allocated to later users).

INTRODUCTION

Demand for both established and emerging energy technologies is rapidly expanding in the US electricity sector, while policy uncertainty, supply chain constraints, and high interest rates place risks on the ability to deploy this capacity. Grid operators are issuing warnings of imminent power shortages, with analysis showing the need for 166 GW of new peak power capacity by 2030 to meet rising load growth (Wilson et al. 2025).

This moment requires maximizing near-term, viable energy generation technologies while accelerating the commercialization of clean firm power options (e.g., advanced geothermal, nuclear, long-duration energy storage, and natural gas with carbon capture and sequestration [CCS]). This brief draws upon perspectives shared during the roundtable to examine the critical policy, market, and technological challenges that must be addressed to increase financial flows toward electricity technologies, meet immediate demand needs, and ensure affordable electricity prices for ratepayers.

Theme 1: The Load Growth Challenge and Inflationary Pressures

Increased demand for electricity, driven largely by data centers, will exert upward pressure on electricity prices for consumers absent at-scale deployment of new capacity onto the grid.

Hyperscaler Demand and Natural Gas Allocation

The energy demands of hyperscalers are fundamentally altering the US energy market as they develop advanced technologies like artificial intelligence. Speed-to-market drives

energy procurement decisions, with a focus on technologies that can be available fastest to power hyperscalers' needs. Gas turbines are now being ordered as far out as 2030, with turbines from leading manufacturers sold out through at least 2027 and 2028 (Stapczynski et al. 2025).

New natural gas generation—with the exception of small units to service data center needs—has therefore been impeded as a source of electricity for other uses in the near term. Wind, solar, and battery deployment are best positioned to meet demand growth needs and help lower electricity prices in the near term. Clean firm resources can also complement the near-term value of wind, solar, and batteries, although clean firm technologies are at various stages of commercial maturity.

Theme 2: Policy and Regulatory Uncertainty in Energy Project Finance

Policy uncertainty poses challenges for energy investors in solar and wind, particularly concerning tax credit implementation and federal permitting risks.

Ambiguity in Tax Credit Compliance (Foreign Entities of Concern and Material Assistance)

The One Big Beautiful Bill Act (OBBBA) modified several clean energy tax credits, notably by creating earlier phaseouts for the solar and wind tax credits and creating new foreign entity of concern (FEOC) rules across all energy credits, denying their access to "prohibited foreign entities" (PFEs). Generally speaking, PFEs are the governments or citizens of China, Russia, North Korea, or Iran and entities organized in those nations or directly controlled by, or determined to be substantially influenced by, those governments or citizens. Credits are also denied for facilities and the manufacturing of items that exceed the calculated cost ratio thresholds for "material assistance from a prohibited foreign entity."

The statutory FEOC provisions are vague and ambiguous in many respects, creating uncertainty for project participants who must perform extensive diligence to ensure no PFEs exist in the supply chain or are otherwise determined to "influence" their companies. This is contributing to a rush to take advantage of credits before these rules are implemented in 2026. The Department of the Treasury and Internal Revenue Service will be issuing guidance for the FEOC rules that could clarify some of these uncertainties, although the exact timing and content of the guidance is still unclear. (Generally, OBBBA requires certain FEOC guidance to be released no later than December 31, 2026.)

The penalties for noncompliance are significant, with FEOC provisions including a 100% recapture of tax credits over a 10-year period, disallowance of credits, and substantial underpayment penalties (Davis et al. 2025). While substantial capital is ready to finance new projects, delayed or restrictive guidance could affect confidence for financing for clean firm power, challenging longer-term development.

Uncertainty in the Tax Credit Investment Market

The tax equity and tax credit transfer markets remain active as investors seek to take advantage of the wind and solar credits while they are still available. However, the passage of OBBBA creates uncertainty within the market that could impact the willingness of tax

credit investors to fund new projects. If corporate demand for clean energy tax credits changes due to increased project complexity from FEOC compliance or other uncertainties, it could impact the ability of project developers to leverage tax equity to finance future energy projects.

Political Risk and Permitting Headwinds

Tax equity investors, lenders, and other equity investors are also cautious about absorbing significant political and permitting risks and rely on the federal government for policy stability when making long-term infrastructure investments. The Department of the Interior and other federal agencies have taken actions this year to delay or deny the permitting of wind and solar projects and have issued stop work orders on substantially complete offshore wind projects. If such actions continue, they could affect how investors view the reliability of the federal permitting process, which could have far reaching impacts for investor confidence in energy infrastructure investments beyond just wind and solar.

Theme 3: Financing First-of-a-Kind Clean Firm Power Projects and Scaling Emerging Technologies

There is a strong market demand signal for electricity from clean firm technologies like advanced geothermal, nuclear, long-duration energy storage, and natural gas with CCS. However, these projects are not yet widely commercially deployed. Clean firm technologies are at different stages along the research, development, demonstration, and deployment curve. In response, innovations in project development and financing are beginning to bridge the financing gap (the "missing middle") between early-stage research and development and widespread commercial deployment, where initial projects are too capital-intensive for venture funding yet too risky for institutional lenders.

Stakeholders are exploring multiple strategies to help early-stage companies increase lender confidence and attract financing for first-of-a-kind (FOAK) demonstration- and commercial-scale pilot projects to get from FOAK to scaled deployment. While some strategies are technology-specific, others can be applied across the clean firm spectrum. Deployment risks remain, requiring public-private coordination to address.

Strategies for Developers to Attract Financing for FOAK Clean Firm Projects

The development of clean firm power requires innovative financing and project development structures and partnerships to move technologies from FOAK to scaled deployment.

Employ Strategic Partnerships

Strategic partnerships with established firms can provide early-stage companies with resources and market validation to improve financing outlooks and external engagement. For example:

- Strategic shareholders (e.g., oil and gas firms investing in CCS or geothermal developers) can provide financial, operational and reputational support.
- Industry partners can assist with external fundraising, particularly if they are involved in leading fundraising rounds.

- Some large offtakers have provided development capital to defray the high costs and risks at the pre-final investment decision (pre-FID) stage where capital is often most expensive and limited.
- Large offtakers can be helpful in collaborating with utilities and policymakers on regulatory frameworks and offtake structures that ease burdens on FOAK project developers.

Diversify Capital Stacks

A mix of financing from parent holding companies and project-level capital is used to finance the early-demonstration and commercial-scale projects, often with a preference for project-level capital. An evolution in the types of capital and capital providers is helping some companies raise much-needed resources for FOAK projects. For example:

- Developers are exploring how to integrate offtakers directly into the capital stack to align project incentives.
- Original equipment manufacturers and engineering, procurement, and construction (EPC) firms can use their balance sheets to finance a portion of projects.
- Strategic shareholders like oil and gas firms can help provide equity at the parent holding company or project level.
- Private credit solutions are starting to be used at the project level, although private credit should not be viewed as a replacement for capital with longer-term investment horizons (like capital from the US Department of Energy's [DOE] Office of Energy Dominance Financing [EDF]).
- Tax credit insurance can make tax equity investments more attractive by mitigating the risk that future corporate buyers will not have sufficient appetite for tax credits or that credits will be recaptured.

Leverage Existing Workforce and Infrastructure

Advanced geothermal can leverage skills, expertise, and equipment from the fossil fuel sector. In total, analysts at the Congressional Research Service estimate that 60% of occupations in the oil and gas sector apply to the geothermal industry (Smith 2023). The industry can also use the same drilling rigs, which are currently available as rig counts in the oil and gas industry continue to fall from their 2022 peak (YCharts 2025).

Control Capital Expenditure Costs

For some demonstration projects—where costs are the primary financing challenge—capital expenditures can be reduced by building technical expertise and engineering capacity in-house or hiring smaller, less well-known EPC firms. However, such decisions should not be made at the expense of lender confidence. For other technologies, such as advanced nuclear, the use of traditional EPC firms is likely to be necessary to establish lender confidence. For advanced nuclear projects, achieving project solvency is typically more critical than the technology and engineering lift. It is important to note that the primary capital expense often lies in the secondary systems (turbines, site work, and balance of plant systems), rather than the nuclear island itself.

Ensure Third-Party Technical Validation of Early-Stage Projects

Third-party validation of pilot and demonstration-scale projects strengthens lender confidence, helping developers attract financing.

Provide Revenue Support for FOAK Projects

Offtakers and the public sector should ideally bear the higher costs associated with FOAK projects. The cost of readying workforces—including engagement with trade schools and unions—should also be factored into power purchase agreements (PPAs), not transferred to ratepayers in the form of higher retail electricity prices.

To address the current challenges associated with the requirement to post securities for PPAs, companies are exploring innovative partnerships and offtake agreements where partners supply capital upfront, reducing per kilowatt-hour costs.

Utilize Public-Private Risk-Sharing Structures

Within the nuclear sector, an emerging strategy for reducing costs and cost overrun risk is to aggregate long-term commitments among multiple buyers for a standardized reactor design, combined with a publicly backed mechanism for capping cost overrun risk. Doing so can facilitate economies of scale, streamline supply chains, and enhance workforce development, all while boosting investor confidence (NSI 2025).

Policy and Regulatory Considerations to Enable Clean Firm Solutions

Insulate Ratepayers from High FOAK Costs

Utilities (through electricity tariffs) and federal/state governments (through public backstops) can protect ratepayers from the higher risks and costs of promising FOAK projects, including cost overrun and completion risks.

Appropriately Value Clean Firm Power

Ideally, utilities should value front-of-the-meter baseload power in exchange for voltage and regulation services to reduce transmission charges. Additionally, policymakers can create the enabling conditions for offtakers to pay a premium for clean firm power through PPAs. For example, a California mandate requiring utilities to procure a certain amount of clean firm power enabled a geothermal developer to form multiple PPAs with large-load customers (Fervo Energy 2024).

Address Permitting and Interconnection Queues

Addressing permitting timelines—especially for geothermal and CCS—and long interconnection queues can enhance project viability and increase offtaker demand, particularly given the current premium on speed-to-market. For example, participants noted that a single geothermal project can require as many as 10 different permits to drill, complete a well, and build a power plant (Mackenzie 2023).

Accelerate Capital Support to Commercialize Promising Energy Technologies

Sovereign capital is already playing a catalytic role outside the United States in helping regional clean firm projects to reach FID. In the United States, commitments from the DOE

EDF have desirable characteristics, as the EDF's long-term investment view is helpful for financing clean firm projects that can operate for decades. However, the slow speed of federal disbursement presents a challenge.

CONCLUSION

Taken together, the roundtable findings underscore that meeting rising electricity demand while preserving affordability and accelerating decarbonization is fundamentally a coordination challenge. Clean electricity deployment is constrained not by a lack of capital or interest, but by the policy uncertainty, market distortions, and structural financing gaps that limit the pace and scale of investment. Clearing these barriers will determine whether the United States can maintain momentum on meeting growing power demand—which should be inclusive of renewables—while bringing clean firm technologies into the market fast enough to support reliability and keeping prices stable for households and businesses amid unprecedented load growth.

The solutions identified in this brief point to a clear and actionable path forward. By stabilizing regulatory conditions, strengthening valuation and cost-recovery mechanisms, expanding financing channels for FOAK projects, and building an energy workforce equal to the scale of the challenge, public and private actors can unlock the capital needed for a resilient, affordable, and sustainable power system. The stakes are high: without decisive steps to reduce policy and financing frictions, the United States risks missing a narrow window to shape its future electricity mix. With aligned action, however, the country can meet surging demand, support data center-driven economic growth, and accelerate the transition to a secure and modern energy system that is both clean and affordable.

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The American Council on Renewable Energy (ACORE) is a nonpartisan nonprofit organization that promotes American investment in clean energy infrastructure, development, and innovation. In partnership with a broad membership that spans the energy value chain, ACORE develops and advances the public policies, market research, and industry convenings to strengthen the United States as the world leader in clean energy advancement.

ACORE's membership includes clean energy investors, developers, energy buyers, power generators, manufacturers, and energy providers. In 2024, nearly 80% of the booming utility-scale domestic clean energy growth was financed, developed, owned, equipped, or contracted for by ACORE members.

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