Clean Energy Technology Innovation
Tax Reform Working Group
Members: Linden Bairey, Sharmila Bellur,
Ben Christopher, and Manfei Wu
Goldman School of Public Policy
University of California, Berkeley
2607 Hearst Avenue
Berkeley, CA 94720

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The Honorable Orrin Hatch
Chairman
United States Senate Committee on Finance

Attn: Business Income Tax Working Group

Sub: Recommendations for Clean Energy Technology Innovation Tax Reform

Dear Senator Hatch:

We, Linden Bairey, Sharmila Bellur, Ben Christopher, and Manfei Wu, are first-year Master of Public Policy Students at UC Berkeley's Goldman School of Public Policy and we are writing to you to propose a comprehensive and well-rounded set of recommendations to encourage clean energy technology innovation in the United States.

Introduction

In the last decade, the federal government has played a significant role in incentivizing private investment in clean energy technology[i] innovation. However, many of the supports, bolstered in the American Recovery and Reinvestment Act, are beginning to phase out. In the face of this declining support and other shocks that have affected the industry and the macro-economy on the whole, private investment in clean energy generation and clean energy technology innovation has plateaued. Without renewed policy support to incentivize investment in future innovation, clean energy will continue to make up only a small part of this country's overall power portfolio. It is imperative that we encourage clean energy technology innovation by attracting private investment to all stages of the innovation chain. This will help create new technologies to develop cost-efficient and scalable means of producing and storing clean energy.

Encouraging energy innovation will take more than direct expenditure on basic science and tax incentives for producers, and the evolving dialogue on tax reform presents

[i] For the purposes of this report, we define "clean energy technology" as any technology related to energy generation from the following sources: wind, solar, geothermal, marine, small irrigation hydropower, biomass, CCS, and energy storage.

us with a unique opportunity. The aim of these policy recommendations is to attract private investment to clean energy innovation using federal taxes as an incentive for private investment and a vehicle for government support. Our policy recommendations address all stages of clean energy innovation—from research and development to demonstration and deployment.

Rationale and Objectives

The federal government has a long history of furthering and encouraging innovation, particularly in military defense, health and pharmaceuticals, agriculture, and information technology. The comparative under-investment in clean energy technology innovation threatens our economic growth, environmental wellbeing, and national security. Without government support, private business will not sufficiently invest in clean energy technology, because the benefits innovation provides to society cannot be fully captured in the market price.

The government can encourage private investment in the innovation process by modifying the federal tax code to help carry some of the investment burden until a specific technology is commercially viable. Given this context, our objectives are to:

1. Implement predictable and long-term tax policies that result in a permanent reduction in the unsubsidized cost of clean energy.
2. Implement tax policies that drive greater investment in all stages of innovation—research, development, demonstration, and deployment, with special attention to the two major "valleys of death" along the innovation chain: development and demonstration.

Recommendations

In keeping with the aforementioned objectives, we recommend the following policies:

For early-stage research and development:

i) Create a clean energy collaborative R&D tax credit.

Collaborative research is research that is undertaken by both business and a university, federal lab, or research consortium. These partnerships allow those involved to share results and reduce the up-front research cost by distributing it among participating parties. They also bring diverse experiences and industry knowledge into contact, enabling knowledge-pooling and the sharing of industry expertise. Eventually the knowledge spillover of R&D benefits becomes internalized in the collaboration and all parties benefit, reducing risk and increasing the likelihood that firms invest in higher-impact R&D.

To encourage this type of collaboration for clean energy, we recommend an amendment to the R&D Tax Credit that includes include a special 40% credit rate for collaborations on clean energy R&D between the private sector and laboratories, universities, or research consortia.

The extension of the energy research tax credit to a 40% credit for clean energy research collaborations will dramatically encourage these cross-sector partnerships and stimulate valuable knowledge-sharing in clean energy innovation. It will inspire greater investment in clean energy R&D, "make good sense" to policymakers and the public, and be simple to design as an extension of the current R&D tax credit and the targeted energy research credit.

ii) Create clean energy convertible bonds

The confluence of decreasing investment in clean energy innovation and rampant failure of early stage R&D efforts makes early-stage R&D an unappealing investment for private companies and organizations. Similarly, the success rate of early-stage innovation and the profitability of R&D make finding funding arduous for private entities. The government can encourage investment in this space by using convertible bonds.

The government can permit the issue of debt-equity convertible bonds by companies that are carrying out early-stage innovation. Debt-equity convertible bonds are hybrid security, a combination of debt and equity, whose value depends on the underlying debt and equity components. The bond can be exchanged for a predetermined number of common shares of the bond's issuer at any point prior to the maturity of the bond. Investors in convertible bonds will receive regular fixed coupon payments and a principal repayment on maturity with an additional option to convert to equity, following specific future events. An investor, therefore, can participate when the equity market rises with limited downside exposure and potentially greater return on capital.

This instrument will allow private companies and organizations to raise money for early-stage innovation. The debt element will ensure that the fund-receiving organizations are held accountable and that the money is well-used. The convertibility option will incentivize investors to participate in the business activities of the organization when the business becomes profitable, thus creating incentives for investors to keep their investment within these businesses when the R&D looks promising. It will also encourage knowledge-sharing from investors, who are driven not only by the interest on debt but also by the possibility of huge profits if the research is successful and a marketable product results.

The policy option will also be politically palatable as the government expenditure will be to the extent that tax relief is given on interest on the debt component. But this expenditure could be easily offset by the taxes collected from these innovation organizations, when they turn profitable.

For the later stages of the innovation chain:

i) Allow clean energy access to Master Limited Partnerships

The Master Limited Partnership (MLP) is a business structure that is taxed as a partnership, but the ownership of which is traded like corporate stock on an open market.

Whereas profit from publicly-traded C corporations is taxed at both the corporate level and the shareholder level, income from MLPs is taxed only at the shareholder level. Hoewver, the "qualifying income" for the MLP structure excludes the majority of clean energy technologies, including solar and wind. With continuously rising demand for clean energy and the challenges faced by clean energy technology innovation, there has been wide consensus in the industry that the MLP structure should be made available to clean energy-related projects.

The expansion of MLPs to clean energy technologies will bring critical tax benefits to clean energy technology investments in the commercialization stage and directly reduce the cost of clean energy investments and development. As a tax exemption mechanism, the cost reduction magnitude is likely to be quite significant. Most importantly, with increased clean energy projects development and investment, the overall cost of specific clean technologies will be reduced. Moreover, allowing clean energy projects access to MLPs will greatly promote stable clean energy innovation investments in the long term. MLPs are a much more efficient way to grant tax benefits than our current current investment and production tax credits.

While tax credits reduce a certain amount of tax liabilities faced by clean energy project developers and investors, the business conducted under the MLPs structure will be directly exempted from the corporate-level tax, the financial value of which is greater in magnitude than tax credits. Under an MLP framework, the project developers will not need to attract tax equity investments to take advantage of tax benefits. In this respect, the transaction costs and shared benefits will be reduced. As a result, larger incentives will remain for the developers. Moreover, given the bipartisan support for the expansion of MLPs to include clean energy technologies, temporary focus on only several critical clean energy technologies will further reduce the possibility of political resistance.

ii) Make a Modified Advanced Energy Manufacturing Tax Credit available on an annual basis

Building upon the successes of the popular 48(c) Advanced Manufacturing Tax Credit, this policy would reintroduce the 48(c) credit on an annual basis, funded at $500 million per year. Moreover, the credit will be refundable.

This policy is estimated to fund an additional $1.66 billion in domestic manufacturing capacity expansion every year. Moreover, due to the subsidy "leakages" associated with non-refundable credits—whereby anywhere from 30% to 50% of the value of a credit is sacrificed to tax equity investors—it is possible that the same dollar value of federal support could be spread out across 60% to 100% more projects. Indeed, given the financial constraints imposed by the necessity of attracting tax equity investment, a refundable 48(c) would be more accessible to low- or zero-revenue startups. As allocated by the Department of Energy, this would not only be a boon for much-needed technology innovation in the energy sector, but a shot in the arm for the American advanced manufacturing sector in general.

There also may be significant downstream benefits of this policy. All else being equal, providing manufacturers of clean energy inputs with this tax benefit will reduce the cost of clean energy-generated electricity. This is particularly for true for solar, wind, geothermal, and other technologies with high upfront costs and no fuel requirements, as the levelized cost of electricity (LCOE) of those energy sources rises and falls consistently with capital costs.[ii]

Conclusion

Beginning with early-stage research and development, based on our analysis we recommend those alternatives that are the most effective, politically feasible, and feasible to implement. First we recommend the collaborative clean energy R&D tax credit as the most targeted option to encourage the collaborative clean energy research through the tax credit, based on its high effectiveness and relative political feasibility. Further, we recommend the clean energy convertible bonds that will facilitate investment and support knowledge-pooling in early-stage innovation.

In the later stages of the innovation chain, we recommend granting clean energy projects access to the Master Limited Partnership corporate structure and reintroducing a modified Advanced Energy Manufacturing Tax Credit. Taken together, these policies can be expected to increase aggregate investment in and deployment of advanced clean energy projects, to reduce both clean energy input and electricity costs, and to provide a more predictable environment for clean energy investment. These two policies are also considered to be both politically and administratively feasible.

Clean energy innovation is one of the single most important aspects of this country's economic, environmental, and energy future, yet it is also one of the most overlooked. In providing the above policy suggestions, we hope the Committee will use this rare opportunity for comprehensive and bipartisan reform to tackle this important issue.

Warm regards,

Linden Bairey, Sharmila Bellur, Ben Christopher, and Manfei Wu
Clean Energy Technology Innovation Tax Reform Working Group

Masters of Public Policy candidates, 2016
Goldman School of Public Policy
University of California, Berkeley

[ii] EIA Levelized Cost 2014.