2014

Beyond Tax Credits: Smarter Tax Policy for a Cleaner, More Democratic Energy Future

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Solar, wind, and other renewable energy technologies have the potential to mitigate climate change, secure America's energy independence, and create millions of green jobs. In the absence of a price on carbon emissions, however, these long-term benefits will not be realized without near-term policy support for renewable energy. This Article assesses the efficiency of federal tax incentives for renewables and proposes policy reform to promote renewable energy more cost-effectively through capital markets and crowdfunding.

Federal support for renewable energy today comes primarily in the form of accelerated depreciation and, critically, tax credits. Empirical evidence reveals that only a fraction of the subsidy value of tax credits may actually go to funding new renewable power projects. Why are tax credits for renewables so inefficient? And where do the remaining tax dollars go?

Qualitative analysis suggests that the answer to both questions hinges on the mismatch between the profitability requirements of tax credits and the revenue profile of renewable energy projects. The value of tax credits lies in their capacity to reduce tax liability and lower tax bills. Most renewable power projects, however, require ten years or more to recover their up-front capital expenditures before they begin to generate taxable profits and, hence, tax liability to reduce. Bringing in investors with tax liability from other sources to monetize a project's tax credits provides only partial relief. Such tax equity investment drives up a project's financing charges and transaction costs, limits investment liquidity, and restricts growth in the renewable energy marketplace.

Federal policymakers should give renewables access to master limited partnerships (MLPs) and real estate investment trusts (REITs)—two tax-privileged investment structures with a proven track record of promoting oil, gas, and other conventional energy infrastructure. Merging the tax benefits of a partnership with the fundraising advantages of a corporation, MLPs and REITs could significantly

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reduce the cost of capital for renewable energy projects, broaden their investor appeal, and move renewables closer to subsidy independence. Most importantly, MLPs and REITs have the potential to deliver these and more benefits to renewable energy at considerably lower cost to taxpayers than the current regime of tax credits.

Introduction

> *"Gentlemen, we have run out of money. It is time to start thinking."*
> —Sir Ernest Rutherford[1]

When Nobel laureate Sir Ernest Rutherford made his famous remarks a century ago, he could not know that they would one day offer an accurate description of the state of American clean energy policy. Billions of dollars in federal subsidies have not managed to raise the share of solar, wind, geothermal, and other low-carbon renewable sources in the nation's electricity mix beyond eleven percent.[2] Current projections forecast that future growth will remain moderate at best, with renewables expected to account for no more than fourteen percent of American electricity generation by 2035.[3] Meanwhile, mounting federal government debt of more than $17 trillion[4] suggests that, if anything, America may want to spend less, not more money on clean energy policy going forward. As the United States becomes ever more strapped for cash, we, indeed, need to start thinking.

Today the nation appears more locked into its fossil fuel addiction than ever. Horizontal drilling and hydraulic fracturing have unlocked vast, previously commercially inaccessible reserves of shale oil and natural gas.[5] This newly found wealth of domestic hydrocarbons has the potential to improve, if not secure American energy independence for years to come.[6] But it does little to alleviate pressing concerns over U.S. greenhouse gas emissions that constitute a major driver of global climate change.[7] To be sure, replacing the country's dated fleet of coal-fired power plants with cleaner, more efficient natural gas-fired units would help reduce the power sector's overall carbon footprint.[8] Burning natural gas to generate electricity, however, still emits too

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1. *See* NORMAN R. AUGUSTINE ET AL., RISING ABOVE THE GATHERING STORM, REVISITED – RAPIDLY APPROACHING CATEGORY 5, at vii (2010).

2. *See* U.S. Energy Info. Admin., *Annual Energy Outlook 2011*, U.S. DEP'T ENERGY 3 (2011), http://www.columbia.edu/cu/alliance/documents/EDF/Wednesday/Heal_material.pdf.

3. *Id.*

4. *See* U.S. DEBT CLOCK, http://www.usdebtclock.org (last visited May 15, 2014). For a discussion of the federal deficit's potential implications for questions of policy sustainability, see DANIEL N. SHAVIRO, TAXES, SPENDING, AND THE U.S. GOVERNMENT'S MARCH TOWARD BANKRUPTCY 86-87 (2007).

5. *See* U.S. Energy Info. Admin., *Technically Recoverable Shale Oil and Shale Gas Resources: An Assessment of 137 Shale Formations in 41 Countries Outside the United States*, U.S. DEP'T ENERGY 10 (EIA 2013) (citing data that ranks the United States first in commercially recoverable shale gas reserves).

6. *Id.*

7. Benjamin K. Sovacool, *Renewable Energy: Economically Sound, Politically Difficult*, 21 ELEC. J. 18, 22 (2008) (comparing the lifecycle greenhouse gas emissions of conventional and renewable power plants).

8. *Id.*

much greenhouse gas to limit global warming to two degrees Celsius as compared to pre-industrialization levels.[9] Scientists consider this two-degree scenario vital to avoiding massive and irreversible damage to the global ecosystem.[10] Moreover, electricity from natural gas may be less carbon-intensive than coal at the combustion stage, but methane leakage, flaring, excessive water use and pollution, as well as potential seismic disturbances at the extraction stage all present serious threats to local environments and the global climate.[11]

Successful climate change mitigation calls for a timely decarbonization of the American electricity sector, the single largest source of U.S. greenhouse gas emissions.[12] To do so will require concerted efforts from the public and private sectors alike to enhance the efficiency with which we generate, transport, and use energy and to promote the large-scale deployment of renewable power generation technology. Energy efficiency has been identified as the likely least-cost option for greenhouse gas emission abatement in the near term.[13] Accordingly, America's ability to harness energy efficiency for successful climate change mitigation will depend less on financial support than on long-overdue reform of the regulatory business model of electric utilities. Ever since the days of Samuel Insull,[14] the revenue and profit of regulated utilities have been linked to the amount of energy they sell. More sales generally justify greater infrastructure investment and, with it, greater overall returns.[15] Reform of this long-standing regulatory framework presents a major challenge for energy efficiency that warrants further investigation. But neither policymakers nor scholars can afford to focus their efforts solely on energy efficiency. After

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9. For an overview of the necessary pace and scenarios for decarbonization of the global energy economy to meet the two-degree scenario, see *Special Report on Renewable Energy Sources and Climate Change Mitigation*, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 19 (2011), http://srren.ipcc-wg3.de/report/IPCC_SRREN_Full_Report.pdf.

10. For an overview of the numerous peer-reviewed studies and their warnings not to exceed the two-degree scenario, see *Limiting Global Climate Change to 2 Degrees Celsius – The Way Ahead for 2020 and Beyond*, COMM'N OF THE EUROPEAN CMTYS. (COM) (2007) 2 final (Oct. 1, 2007).

11. For an overview of the diverse environmental impacts of natural gas exploration through hydraulic fracturing, see David B. Spence, *Federalism, Regulatory Lags, and the Political Economy of Energy Production*, 161 U. PA. L. REV. 431, 440-46 (2013).

12. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2011, ES-21, 2-20*, U.S. ENVTL. PROT. AGENCY (2013), http://www.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2013-Main-Text.pdf.

13. *See, e.g.*, *Pathways to a Low-Carbon Economy*, MCKINSEY & CO. 12 (2009), http://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/sustainability/cost%20curve%20pdfs/pathways_lowcarbon_economy_version2.ashx; *see also* Steven Chu, *Cleaning Up: Energy and Climate Bill Will Boost the Economy*, RICHMOND TIMES-DISPATCH, July 22, 2009, http://www.timesdispatch.com/news/article_e5d2835d-c68e-5249-8cc4-7af214751182.html ("[E]nergy efficiency is not just low-hanging fruit; it is fruit that is lying on the ground.").

14. *See* PETER FOX-PENNER, SMART POWER: CLIMATE CHANGE, THE SMART GRID, AND THE FUTURE OF ELECTRIC UTILITIES 2 (2010) (describing Samuel Insull as the visionary founder of the electricity industry's structure and business model).

15. *See, e.g.*, Duquesne Light Co. v. Barasch, 488 U.S. 299, 309 (1989) ("The utilities . . . are limited to a standard rate of return on the actual amount of money reasonably invested.").

all, energy efficiency can only reduce, but never completely eliminate, our nation's appetite for energy.

It is crucial, therefore, that sustained efforts to promote energy efficiency be accompanied by support for greater deployment of low-carbon renewable power generation technologies. Economists are in near-universal consensus that putting a price on greenhouse gas emissions is, in theory, the most efficient policy to promote abatement technologies, including those for the generation of electricity from renewable resources.[16] Political and economic pressures to keep electricity affordable and domestic industries globally competitive, however, continue to impede the widespread adoption of emission pricing policies that capture the full cost to society and the environment of greenhouse gas emissions.[17] Encouraging developments such as California's introduction of a cap-and-trade regime[18] are met with setbacks such as Australia's plans to abolish its carbon tax to reduce the cost of living for its citizens.[19] Without a realistic price on carbon, renewables continue to fight an uphill battle as they compete with deeply entrenched fossil fuel incumbents. The ability to externalize most of their societal and environmental costs allows coal, gas, and other fossil power plants to produce and sell electricity at lower prices than most renewable power plants.[20] As a result, renewable energy requires not only regulatory reform but also financial support to compete on a level playing field.

Federal deployment support for renewables comes primarily in the form of tax incentives, such as accelerated depreciation rates and tax credits.[21]

16. *See, e.g.*, NICHOLAS STERN, THE ECONOMICS OF CLIMATE CHANGE: THE STERN REVIEW 35 (2007); *id.* at 348 ("In the absence of any other market failures, introducing a fully credible carbon price path for applying over the whole time horizon relevant for investment would theoretically be enough to encourage suitable technologies to develop."); Dominique Finon, *Pros and Cons of Alternative Policies Aimed at Promoting Renewables*, 12 EIB PAPERS 110, 112 (2007); Carolyn Fischer & Richard G. Newell, *Environmental and Technology Policies for Climate Mitigation*, 55 J. ENVTL. ECON. & MGMT. 142, 143 (2008); Adam B. Jaffe et al., *A Tale of Two Market Failures: Technology and Environmental Policy*, 54 ECOLOGICAL ECON. 164, 165, 169 (2005); Atanas Kolev & Armin Riess, *Environmental and Technology Externalities: Policy and Investment Implications*, 12 EIB PAPERS 134, 140 (2007).

17. *See* Felix Mormann, *Requirements for a Renewables Revolution*, 38 ECOLOGY L.Q. 901, 930 (2011).

18. *See Cap-and-Trade Program*, CAL. ENVTL. PROTECTION AGENCY AIR RES. BOARD, http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm (last visited May 15, 2014).

19. *See Repealing the Carbon Tax*, DEP'T ENV'T (Austl.), http://www.environment.gov.au/topics/cleaner-environment/clean-air/repealing-carbon-tax (last visited May 15, 2014).

20. *See, e.g.*, *Levelized Cost of Energy Analysis–Version 5.0*, LAZARD (2011), http://votesolar.org/wp-content/uploads/2012/07/Lazard-June-11-Levelized-Cost-of-Energy-and-proj-to-2020-copy.pdf; INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *supra* note 9, at 10 (comparing the generation costs of various renewable energy technologies to the cost of electricity from non-renewable resources).

21. *See, e.g.*, Steve Corneli, *Clean Energy and Tax Reform: How Tax Policy Can Help Renewable Energy Contribute to Economic Growth, Energy Security and a Balanced Budget*, U.S. PARTNERSHIP FOR RENEWABLE ENERGY FIN. 15 (2012), http://uspref.org/wp-content/uploads/2012/06/Clean-Energy-and-Tax-Reform-White-Paper.pdf ("The most important federal policies for driving scale deployment are tax benefits, such as production or investment tax credits, and accelerated depreciation

Investment tax credits (ITC) reward investors for funding solar and select other renewable power plants.[22] Production tax credits (PTC) reward the generation of electricity from wind and select other renewable sources of energy.[23]

Over 65 gigawatts (GW)—the equivalent of 65 nuclear power plants[24]—of newly-installed, mostly tax credit-funded renewable power generation capacity from 2003 through 2012[25] have earned tax credits a reputation as effective drivers of renewable energy deployment.[26] But many politicians, taxpayers, and scholars appear to be unaware of the inefficiencies that the federal tax credit regime infuses into the deployment of renewable energy technologies.[27] Empirical evidence suggests that the recent deployment success was bought at an inflated price, with tax credits delivering only half as much renewable energy deployment per tax dollar spent as cash grants.[28] Why are tax credits so relatively inefficient? And where do the tax dollars behind federal tax credits go if not to fund renewable energy? This Article posits that the answer to both questions hinges on the mismatch between the profitability requirements of tax credits and the revenue profile of renewable energy projects.

To reap the value of tax credits, accelerated depreciation rates, and other tax incentives requires sufficient tax liability to offset, usually in the form of taxable income.[29] Renewable energy projects can take ten or more years before they recover their high up-front capital expenditures and begin to generate taxable profits.[30] Without current tax liability from other sources, project developers could carry forward their tax incentives for future use but the lost

for new renewable energy investments."); *see also* Mark Bolinger et al., *PTC, ITC, or Cash Grant? An Analysis of the Choice Facing Renewable Power Projects in the United States*, NAT'L RENEWABLE ENERGY LABORATORY 1 (2009), http://www.nrel.gov/docs/fy09osti/45359.pdf; Ethan Zindler & Tyler Tringas, *Cash is King: Shortcomings of US Tax Credits in Subsidizing Renewables*, BLOOMBERG NEW ENERGY FIN. 1 (2009), http://www.novoco.com/energy/resource_files/advocacy/ncoep_testimony_0427 10.pdf; *Reassessing Renewable Energy Subsidies–Issue Brief*, BIPARTISAN POL'Y CENTER 3 (2011), http://bipartisanpolicy.org/sites/default/files/BPC_RE%20Issue%20Brief_3-22.pdf ("[A] few federal tax policies have been responsible for most of the financing directed to renewable energy projects.").

22. *See* 26 U.S.C. § 48 (2012) and *infra* Subsection I.B.2.

23. *See* 26 U.S.C. § 45 and *infra* Subsection I.B.1.

24. The figure is based on average nameplate generation capacity of 1,000 MW for nuclear reactors. *See, e.g.*, Katie Fehrenbacher, *Nuclear Power By the Numbers*, GIGAOM (Feb. 19, 2010, 9:25 AM), http://gigaom.com/2010/02/19/nuclear-power-by-the-numbers.

25. *See* Rachel Gelman, *2012 Renewable Energy Data Book*, U.S. DEP'T ENERGY 19 (2013), http://www.nrel.gov/docs/fy14osti/60197.pdf.

26. *See infra* Section II.A.

27. *See, e.g.*, Patrick Dowdall, *Using REITs for Renewable Energy Projects*, 137 TAX NOTES 1409, 1422 (2012) ("There is no doubt that energy tax credits have been critical to the development of renewable energy projects.").

28. *See infra* Section II.B.

29. *See* Alvin C. Warren & Alan J. Auerbach, *Transferability of Tax Incentives and the Fiction of Safe Harbor Leasing*, 95 HARV. L. REV. 1752, 1758 (1982).

30. *See infra* notes 85-88 and accompanying text.

time value would impose a significant discount.[31] Meanwhile, the tax code's general prohibition of trafficking in tax attributes precludes the developer from simply selling off her tax benefits.[32] The industry response to this dilemma has been for developers to bring in an outside investor with sufficient tax liability from other sources to monetize the project's tax credits.[33] While such "tax equity" investment allows for the timely monetization of otherwise carried forward tax incentives, the pool of tax equity investors is limited to a few large banks and highly profitable corporations. Many interested investors, such as tax-exempt pension funds, sovereign wealth funds, and retail investors do not have big enough tax bills to exploit federal tax incentives for renewables. With most of the investment community sidelined,[34] renewable energy projects struggle to raise direly needed capital at reasonable cost. Sir Ernest Rutherford's introductory quote thus speaks not only to the waning availability of federal funds to support renewable energy but also to the critical dearth of private capital to finance renewable energy projects.

The need for scarcely available tax equity capital drives up a project's financing charges and transaction costs, limits investment liquidity, and restricts growth in the renewable energy marketplace.[35] Regardless of whether developers choose to carry their tax benefits forward into the future or monetize them by bringing in a tax equity investor, in the end, only a fraction of the subsidy value of federal tax incentives actually ends up funding renewable energy deployment.

These inefficiencies urge reconsideration of America's reliance on federal tax credits to drive the transition to a low-carbon, renewables-based energy economy. Three approaches have dominated the potpourri of policy proposals on Capitol Hill for more cost-effective promotion of renewable energy deployment. A federal cap-and-trade regime would limit the overall amount of greenhouse gas emissions and, through the gradual reduction of this limit, foster the development of abatement technologies, such as solar, wind, and other renewable energy technologies.[36] A federal renewable portfolio standard (RPS), also known as quota obligation, would require the nation's load-serving electric utilities to source a certain share of the electricity they sell from

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31. For example, assuming an internal rate of return (r) of ten percent, a tax credit with a face value (FV) of $100 that cannot be used for the first 10 years of a project's lifetime has a net present value (NPV) of only $38.55, where NPV = FV / $(1+r)^{10}$. *See also* Lily L. Batchelder et al., *Efficiency and Tax Incentives: The Case for Refundable Tax Credits*, 59 STAN. L. REV. 23 (2006) (arguing that refundability could avoid the losses associated with carrying tax credits forward).

32. *See infra* note 183 and accompanying text.

33. *See infra* Section III.A.

34. Institutional investors, private wealth, and sovereign investment funds held over $100 trillion in global assets under management in 2011, but have traditionally not invested in U.S. renewable energy projects. *See* Michael Mendelsohn & David Feldman, *Financing U.S. Renewable Energy Projects Through Public Capital Vehicles: Qualitative and Quantitative Benefits*, NAT'L RENEWABLE ENERGY LABORATORY 5 (2013), http://www.nrel.gov/docs/fy13osti/58315.pdf.

35. *See infra* Section III.B.

36. *See supra* note 16 and accompanying text.

renewables.[37] Coupled with renewable energy certificates (RECs), an RPS allows renewable power generators to sell both their electricity and the corresponding certificates to earn more than the market rate for electricity alone.[38] A federal feed-in tariff, sometimes referred to as a CLEAN contract,[39] would offer producers of electricity from renewable sources guaranteed grid access and subsidized, long-term rates for their power output.[40] Notwithstanding the relative strengths of each of the aforementioned policies, none has managed to garner sufficient political support on Capitol Hill, as evidenced by over thirty failed legislative proposals.[41] In contrast, federal tax credits for renewables have been subject to periodic expirations but these lapses have been followed by eventual renewals.[42] This Article suggests that the political economy of renewable energy policy at the federal level systemically favors tax policy over non-tax policy options to promote renewables.[43] Meanwhile, tax credits have proven resistant to reform proposals that could render them more efficient and equitable, e.g., by making tax credits refundable or tradable.

Against this background, this Article explores alternative options for federal tax policy to more cost-effectively promote renewable energy deployment than under the current regime of tax credits. Two tax-privileged investment structures—master limited partnerships (MLPs) and real estate investment trusts (REITs)—could prove to be game changers. Combining the tax benefits of a partnership with the fundraising advantages of a corporation, MLPs and REITs have a track record of cost-effectively promoting oil, gas, and other conventional energy infrastructure.[44] Publicly traded like corporations,

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37. For details, see Reinhard Haas et al., *A Historical Review of Promotion Strategies for Electricity from Renewable Energy Sources in EU Countries*, 15 RENEWABLE & SUSTAINABLE ENERGY REVS. 1003, 1014 (2011).

38. Early adopters of certificate trading regimes include Belgium (Flanders), Sweden, and the United Kingdom. *See* Anna Bergek & Staffan Jacobsson, *Are Tradable Green Certificates a Cost-Efficient Policy Driving Technical Change or a Rent-Generating Machine? Lessons from Sweden 2003-2008*, 38 ENERGY POL'Y 1255, 1256 (2010).

39. *See, e.g.*, Richard W. Caperton et al., *CLEAN Contracts: Making Clean Local Energy Accessible Now*, CLEAN COALITION (2011), http://www.clean-coalition.org/site/wp-content/uploads/2012/11/CLEAN-report.pdf.

40. For details, see MIGUEL MENDONÇA ET AL., POWERING THE GREEN ECONOMY: THE FEED-IN TARIFF HANDBOOK 15 (2009); and Wilson H. Rickerson et al., *If the Shoe FITs: Using Feed-in Tariffs to Meet U.S. Renewable Electricity Targets*, 20 ELEC. J. 73, 73 (2007). The first nations to establish feed-in tariffs were Portugal (1988), Germany (1990), Denmark (1992), and Spain (1994). *See* MENDONÇA ET AL., *supra*, at 77.

41. *See infra* note 249 and accompanying text.

42. For a discussion of the many boom-and-bust cycles evidenced in U.S. federal support for renewable energy, see MENDONÇA ET AL., *supra* note 40, at 172-74; Bent Ole Gram Mortenson, *International Experiences of Wind Energy*, 2 ENVTL. & ENERGY L. & POL'Y J. 179, 183 (2008); *Deploying Renewables: Principles for Effective Policies*, INT'L ENERGY AGENCY 108 (2008), http://www.iea.org/publications/freepublications/publication/DeployingRenewables2008.pdf [hereinafter INT'L ENERGY AGENCY 2008]; and Jesse Jenkins et al., *Beyond Boom & Bust: Putting Clean Tech on a Path to Subsidy Independence* (2012), http://thebreakthrough.org/blog/Beyond_Boom_and_Bust.pdf.

43. *See infra* Part IV.

44. *See infra* Sections V.A-B.

MLPs and REITs can raise capital at competitive rates on capital markets, while offering investors the same single-layer taxation as closely held, illiquid partnerships.[45] If federal policymakers give renewable energy access to these structures, it would allow developers to reduce their financing charges, broaden the investor appeal of renewables, and move them closer to subsidy independence.[46] Remarkably, MLPs and REITs have the potential to deliver these and more benefits to renewable energy at significantly lower (if any) cost to taxpayers than the current regime of tax credits.[47]

Part I of this Article introduces the present regime of federal tax incentives to promote the deployment of solar, wind and other renewable energy technologies. Part II surveys the mixed track record of federal tax credits to assess their efficacy and efficiency. Part III identifies and explains the inefficiencies that the federal tax credit regime infuses into the deployment of renewable energy. Part IV posits that the political economy of federal policy for renewable energy systemically favors tax policy over non-tax policy options. Part V makes the case for opening MLPs and REITs up to renewable energy investment in order to more cost-effectively promote renewable power generation through federal tax policy.

I. Federal Tax Incentives for Renewable Energy

For more than two decades, tax incentives have been the federal policy of choice to promote the deployment of renewable energy technologies.[48] These tax incentives come primarily in the form of two distinct instruments: accelerated depreciation rates[49] and tax credits.[50] Accelerated depreciation rates are not specific to renewable energy facilities but, rather, available for a wide range of capital assets to spur economic growth broadly. In contrast, the current regime of federal tax credits for renewables is specific to the promotion of solar, wind and other renewable power generation. From an economic perspective, tax credits tend to be of relatively greater importance to renewable energy deployment than accelerated depreciation.[51] Accordingly, this Article

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45. *See infra* Section V.A.

46. *See infra* Section V.C.

47. *See infra* Section V.D.

48. *See* Mark Bolinger et al., *Preliminary Evaluation of the Section 1603 Treasury Grant Program for Renewable Power Projects in the United States*, 38 ENERGY POL'Y 6804, 6804 (2010).

49. The accelerated depreciation rates that renewable energy assets enjoy today were first established by the Tax Reform Act of 1986, Pub. L. No. 99-514, 100 Stat. 2085.

50. Federal tax credits for renewable energy were first created for wind power by the Energy Policy Act of 1992, Pub. L. No. 102-486, 106 Stat. 2776.

51. *See State of the Tax Equity Market*, CHADBOURNE & PARKE LLP: PROJECT FIN. NEWSWIRE 28-29 (2012), http://www.chadbourne.com/files/Publication/33595324-e9f9-4c78-b284-993c23e71709/Presentation/PublicationAttachment/d6849213-1c27-49c4-a263-9a6393d3a2a1/project_finance_nw_may12.pdf. In fact, one industry insider has stated that "[m]any tax equity investors have turned their noses up at the bonus [depreciation]." *Id.* at 33 (quoting Keith Martin).

includes a brief discussion of accelerated depreciation for the sake of completeness[52] but places greater emphasis on the present regime of federal tax credits for renewable energy.[53]

A. Accelerated Depreciation Rates for Renewable Energy

The federal tax code generally allows for the annual depreciation of capital investments over the useful life of the respective asset.[54] Every year, these depreciation allowances enable the asset's owner to deduct the prorated share of the investment cost from her income. The longer the useful life of an asset, the smaller the annual depreciation allowance will be relative to the original investment. Conversely, a shorter useful life enables the taxpayer to deduct a greater portion of the original investment from her income. Assuming that a taxpayer has enough taxable income to offset, a shorter depreciation schedule will generally be of greater net present value to her.

The federal tax code's Modified Accelerated Cost Recovery System (MACRS) classifies wind, solar, and a range of other renewable power generation assets as five-year property.[55] The current generation of wind turbines and solar photovoltaic equipment has a useful life of twenty or more years, often backed by corresponding manufacturer warranties.[56] Without favorable MACRS treatment, these renewable power assets would need to be depreciated over relatively long periods of twenty or more years. MACRS allows taxpayers to deduct the entire depreciation allowance of their renewable power asset over the course of only five years, thereby providing a tax incentive to invest in renewable energy.[57]

During the 2008-2009 recession, the Emergency Economic Stabilization Act of 2008[58] sought to provide temporary relief to the struggling renewable energy market by offering a fifty percent first-year bonus depreciation for eligible investments. Taxpayers were allowed to deduct half of their qualifying renewables investments from their income in the first year and the remainder

52. *See infra* Section I.A.

53. *See infra* Section I.B.

54. 26 U.S.C. § 167 (2012). For a general discussion, see PHILIP BROWN & MOLLY F. SHERLOCK, CONG. RES. SERV., R41635, ARRA SECTION 1603 GRANTS IN LIEU OF TAX CREDITS FOR RENEWABLE ENERGY: OVERVIEW, ANALYSIS, AND POLICY OPTIONS 4 (2011). *See also* INTERNAL REVENUE SERVICE, PUBL'N 946, HOW TO DEPRECIATE PROPERTY 9 (2013).

55. 26 U.S.C. § 168(e)(3)(B)(vi)(I).

56. *See, e.g.*, Paul Schwabe et al., *Mobilizing Public Markets to Finance Renewable Energy Projects: Insights from Expert Stakeholders*, NAT'L RENEWABLE ENERGY LABORATORY 4 (2012), http://www.nrel.gov/docs/fy12osti/55021.pdf.

57. This accelerated depreciation incentive is not unique to renewable power generation but also available to a wide range of other assets, including cars, qualified technological equipment, eligible farming machinery, and other assets. For details, see 26 U.S.C. § 168(e)(3)(B). For a broader discussion of accelerated depreciation as an incentive to stimulate economic growth, see THOMAS L. HUNGERFORD & JANE G. GRAVELLE, CONG. RES. SERV., R41034, BUSINESS INVESTMENT AND EMPLOYMENT TAX INCENTIVES TO STIMULATE THE ECONOMY (2010).

58. Pub. L. No. 110-343, 122 Stat. 3765.

over the following four years. The American Recovery and Reinvestment Act of 2009[59] and the Small Business Jobs Act of 2010[60] extended the first-year bonus depreciation through 2010. Under the Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010[61] first-year bonus depreciation was expanded to one hundred percent for qualifying renewables facilities placed in service through 2011 and extended for facilities placed in service through 2012 at the previous fifty percent bonus depreciation rate for the first year. The American Taxpayer Relief Act of 2012[62] extended the fifty percent first-year bonus depreciation for qualifying renewable energy assets through 2013.

B. Tax Credits for Renewable Energy

Federal tax credits seek to promote the deployment of renewable energy technologies by rewarding either the generation of electricity from renewables[63] or the investment in equipment for renewable power generation.[64] When the 2008-2009 recession stalled renewable energy deployment and threatened to put thousands of American workers in planning, manufacturing, construction, maintenance and other segments of the renewables industry out of work, Congress created the section 1603 cash grant as a temporary alternative to the federal tax credit regime.[65]

1. The Production Tax Credit

The Energy Policy Act of 1992[66] established production tax credits as the primary federal incentive for wind energy.[67] Today, the federal tax code offers production tax credits to a range of renewable power generation technologies, including wind, biomass, geothermal, landfill gas, municipal solid waste, qualified hydropower as well as marine and hydrokinetic facilities.[68] Eligible facilities receive tax credits in proportion to the quantity of electricity they produce. The inflation-indexed credit presently amounts to $23 for every megawatt-hour (MWh) of electricity produced from wind, geothermal, and closed-loop biomass while other eligible technologies receive credit in the

59. Pub. L. No. 111-5, 123 Stat. 115.
60. Pub. L. No. 111-240, 124 Stat. 2504.
61. Pub. L. No. 111-312, 124 Stat. 3296.
62. Pub. L. No. 112-240, 126 Stat. 2313.
63. *See infra* Subsection I.B.1.
64. *See infra* Subsection I.B.2.
65. *See infra* Subsection I.B.3.
66. Pub. L. No. 102-486, 106 Stat. 2776.
67. *See* Bolinger et al., *supra* note 21, at 1. For details regarding the legislative history of the production tax credit, see CONG. RES. SERV., 109TH CONG., TAX EXPENDITURES: COMPENDIUM OF BACKGROUND MATERIAL ON INDIVIDUAL PROVISIONS (2006) (Comm. Print 109-072), http://www.gpo.gov/fdsys/pkg/CPRT-109SPRT31188/pdf/CPRT-109SPRT31188.pdf.
68. *See* 26 U.S.C. § 45 (2012).

amount of $11 per MWh.[69] In addition to the market price for electricity, a qualifying renewable energy project therefore earns $23 or $11 in tax credits per MWh of electricity produced and sold to the grid.[70]

Production tax credits are available for a total of ten years as long as certain requirements are met. For instance, generated power must be sold to an unrelated party.[71] In addition, renewable power generators are limited in their ability to combine production tax credits with other public policy incentives, such as grants, tax-exempt bonds, and other federal tax credits.[72] Finally, the production of renewable electricity must be attributable to the taxpayer by virtue of and in proportion to its ownership interest in the renewable energy facility and its gross sales.[73] Since its inception, the production tax credit has been subject to frequent, generally short-term extensions and occasional lapses.[74] Following its latest extension through the American Taxpayer Relief Act of 2012,[75] the production tax credit expired at the end of 2013. Whether it ought to be renewed has been hotly contested.[76]

2. The Investment Tax Credit

Investment tax credits for renewables were first established by the Energy Tax Act of 1978.[77] Today the federal tax code provides investment tax credits for a variety of renewable energy technologies, including solar, combined heat and power, fuel cells, microturbines, geothermal, and small wind projects.[78] In contrast to the production tax credit, the investment tax credit does not reward the actual generation of electricity from eligible renewable technologies but, rather, investment in the equipment required to generate renewable power. Solar, fuel cells, and small wind projects receive tax credits equal to thirty

69. *See* Credit for Renewable Electricity Production, Refined Coal Production, and Indian Coal Production, and Publication of Inflation Adjustment Factors and Reference Prices for Calendar Year 2013, 78 Fed. Reg. 20,177 (Apr. 3, 2013) (showing the latest inflation adjustment as of April 2013 in accordance with 26 U.S.C. § 45(e)(2)).

70. The project's overall revenue will likely be further increased by proceeds from the sale of its renewable energy certificates, see *supra* note 38 and accompanying text.

71. 26 U.S.C. § 45(a)(2)(B).

72. 26 U.S.C. § 45(b)(3); *see also* Bolinger et al., *supra* note 21, at 1.

73. 26 U.S.C. § 45(e)(3).

74. BROWN & SHERLOCK, *supra* note 54, at 4.

75. Pub. L. No. 112-240, 126 Stat. 2313.

76. *See, e.g.*, *Oversight of the Wind Energy Production Tax Credit: Hearing Before the Subcomm. on Energy Pol'y, Health Care, & Entitlements of the H. Comm. on Oversight and Gov't Reform*, 113th Cong. 3, 8 (2013) (statement of Dan W. Reicher, Professor, Stanford Law School), http://oversight.house.gov/wp-content/uploads/2013/10/Reicher.pdf (arguing for renewal with gradual phase-down); Diana Furchtgott-Roth, *Subsidizing the Green Theology of Wind Energy Tax Credits*, 141 TAX NOTES 767, 769 (2013) (arguing against renewal).

77. Pub. L. No 95-618, 92 Stat. 3174. For details regarding the legislative history of federal investment tax credits for renewable energy, see TAX EXPENDITURES, *supra* note 67, at 185-90.

78. 26 U.S.C. § 48.

percent of the project's qualifying investment costs, whereas all other eligible technologies receive tax credits worth ten percent of their qualifying costs.[79]

While the investment tax credit is realized in full the same year a project begins commercial operation, the credit vests linearly over a period of five years.[80] As a result, any transfer of ownership before the end of this period leads to recapture of the unvested portion of the credit under the Internal Revenue Code.[81] Thus, if a project owner sells her assets after two years, she will need to pay back sixty percent of the investment tax credit she received when the project was placed in service. After January 1, 2017 the investment tax credit will phase down to ten percent of qualifying costs for all eligible renewable energy technologies to anticipate and encourage the industry's continuous technology learning and cost improvements.[82]

3. The Section 1603 Cash Grant

The 2008-2009 recession presented a serious challenge for renewable energy project developers who were already struggling to raise capital for new projects. Many developers do not have tax bills that are high enough to reap the full and immediate benefits of tax credits for renewable energy.[83] While renewable power plants do not incur the same fuel costs as their fossil fuel counterparts, they require greater up-front capital expenditures for planning, construction, and equipment.[84] As a result, it typically takes ten or more years before a renewable power project has recovered these expenditures and begins to generate the necessary profits and tax liability to use its tax credits.[85] In the case of a standalone wind project, for example, this lack of tax liabilities means that the developer may realize only one third of the value of her project's tax benefits.[86] Except for the rare instance where a project developer happens to

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79. 26 U.S.C. § 48(a)(2)(A).

80. 26 U.S.C. § 50(a)(1)(B).

81. 26 U.S.C. § 50(a)(1)(A).

82. 26 U.S.C. § 48(a)(2)(A)(ii).

83. *See* Bolinger et al., *supra* note 48, at 6804; Corneli, *supra* note 21, at 13; BIPARTISAN POL'Y CENTER, *supra* note 21, at 9; *Renewable Energy Project Finance in the U.S.: 2010-2013 Overview and Future Outlook*, MINTZ LEVIN & GTM RES. 25 (2012), http://www.mintz.com/DesktopModules/Bring2mind/DMX/Download.aspx?EntryId=231&PortalId=0&DownloadMethod=attachment; *see also* John P. Harper et al., *Wind Project Financing Structures: A Review & Comparative Analysis*, LAWRENCE BERKELEY NAT'L LABORATORY 2, 7, 38 (2007), http://emp.lbl.gov/sites/all/files/REPORT%20lbnl%20-%2063434.pdf (noting that only a handful of large developers are able to make use of the federal tax credits).

84. *See* Harper et al., *supra* note 83, at i (comparing up-front capital expenditures relative to generation capacity).

85. *See* BROWN & SHERLOCK, *supra* note 54, at 8. For a wind project, for example, it takes approximately twelve years to fully work through net operating losses from depreciation deductions before the project even begins to generate the taxable income required to be able to self-monetize available tax credits. *See* Bolinger et al., *supra* note 48, at 6811.

86. *See* Uday Varadarajan et al., *Supporting Renewables While Saving Taxpayers Money*, CLIMATE POL'Y INITIATIVE 4 (2012), http://climatepolicyinitiative.org/wp-content/uploads/2012/09/Supporting-Renewables-while-Saving-Taxpayers-Money.pdf.

have enough tax liability from other sources to offset, the developer will need to bring in an outside investor with enough tax liability from other income. The outside investor's participation, commonly referred to as tax equity investment, enables the developer to monetize the project's tax credits in a timely fashion.[87] Such tax equity investment effectively allows a renewable energy project to sell the tax credits that the project itself cannot presently monetize against its own income to the tax equity investor.[88]

Historically, fewer than two dozen highly profitable and sophisticated entities—mostly large banks, insurance companies, and other financial firms—have been willing and able to support renewable energy projects through their tax equity investments.[89] It was these financial firms that were hit particularly hard by the 2008-2009 financial crisis, leading many to pare back their tax equity investment activities or leave the tax equity market altogether, in some cases permanently.[90] As a result, the number of tax equity investors dropped from twenty to eleven investors between 2007 and 2009, while the available tax equity volume for renewable energy investment shrank by over eighty percent from $6.1 billion in 2007 to $1.2 billion in 2009.[91]

In response to these challenges, the American Recovery and Reinvestment Act of 2009[92] created the section 1603 cash grant to "temporarily fill the gap created by the diminished investor demand for tax credits" and to achieve the near-term goal of "creating and retaining jobs . . . as well as . . . expanding the use of clean and renewable energy and decreasing our dependency on non-renewable energy sources."[93] The section 1603 cash grant gave eligible renewable energy developers the option to receive a cash grant from the Department of Treasury for up to thirty percent of their qualifying costs in lieu of their traditional production or investment tax credits.[94] Following extension through the Tax Relief, Unemployment Insurance Reauthorization, and Job

87. *See, e.g.*, Zindler & Tringas, *supra* note 21, at 2. Carrying forward tax credits for use against a project's future tax liability significantly reduces the credits' net present value to renewable power developers. *See supra* note 31.

88. For more details on the mechanics of tax equity investment in renewable energy projects, see *infra* notes 153-155 and accompanying text. *See also* BROWN & SHERLOCK, *supra* note 54, at 17.

89. *See* BIPARTISAN POL'Y CENTER, *supra* note 21, at 10.

90. *See* Bolinger et al., *supra* note 48, at 6804.

91. *See* Scott Fisher et al., *Tax Credits, Tax Equity and Alternatives to Spur Clean Energy Financing*, U.S. PARTNERSHIP FOR RENEWABLE ENERGY FIN. 2 (2011), http://uspref.org/wp-content/uploads/2011/09/Tax-Credits-Tax-Equity-for-Clean-Energy-Financing.pdf.

92. Pub. L. No. 111-5, 123 Stat. 115.

93. *Payments for Specified Energy Property in Lieu of Tax Credits Under the American Recovery and Reinvestment Act of 2009*, U.S. DEP'T TREASURY 3 (2011), http://www.treasury.gov/initiatives/recovery/Documents/GUIDANCE.pdf; *see also* Staff of Subcomm. on Oversight & Investigations, *Where Are the Jobs?–The Elusiveness of Job Creation Under the Section 1603 Grant Program for Renewable Energy*, COMMITTEE ON ENERGY & COM. 3 (2012), http://energycommerce.house.gov/sites/republicans.energycommerce.house.gov/files/analysis/20120618greenjobs.pdf.

94. U.S. DEP'T TREASURY, *supra* note 93, at 2.

Creation Act of 2010,[95] the section 1603 cash grant was available to qualifying projects that were placed in service or started construction from 2009 through 2011.[96]

While the section 1603 cash grant has expired, its legacy lives on.[97] The grant provides a powerful counterfactual against which to evaluate the efficacy and efficiency of federal tax credits for the promotion of renewable energy. The following sections of this Article will draw on the Department of Treasury's real-life experimentation with the alternative availability of tax credits and cash grants to explore which of the two Petri dishes in the energy policy lab yielded better results.

II. Taking Stock of the Efficacy and Efficiency of Tax Credits

The jury appears to be hung in its attempt to reach a verdict on the past success and future fate of tax credits for renewable energy. Support comes mostly from within the industry. Speaking for over 1200 member companies, the American Wind Energy Association praises the production tax credit as "an effective tool to keep electricity rates low and encourage development of proven renewable energy projects" adding that "it is crucial that it be extended."[98] Representing roughly 1000 member companies, the Solar Energy Industries Association hails the investment tax credit as "the cornerstone of continued growth of solar energy in the United States"[99] and "one of the most important federal policy mechanisms to support the deployment of solar energy in the United States."[100]

Policy and financial analysts paint a less favorable picture of federal tax credit support for renewable energy. Analysts with Bloomberg New Energy Finance find that a cash subsidy in lieu of tax credits "offers US taxpayers a better bang for their buck."[101] Comparing the section 1603 cash grant to the production tax credit, researchers at Lawrence Berkeley National Laboratory reach a similar conclusion, highlighting the cash grant's greater value to project

95. Pub. L. No. 111-312, 124 Stat. 3296.

96. For developer strategies to ensure section 1603 cash grant eligibility by buying equipment ahead of time, see CHADBOURNE & PARKE LLP, *supra* note 51, at 35.

97. For an overview of grant allocations across various renewable energy technologies and projects, see MINTZ LEVIN & GTM RES., *supra* note 83, at 33. For a critical discussion of the section 1603 grant's impact on job creation, see Staff of Subcomm. on Oversight & Investigations, *supra* note 93, at 7.

98. *See Federal Production Tax Credit*, AM. WIND ENERGY ASS'N (2012), http://aweablog.org/uploads/files/FederalPTCforWindEnergy.pdf.

99. *See Solar Investment Tax* Credit, SOLAR ENERGY INDUSTRIES ASS'N, http://www.seia.org/policy/finance-tax/solar-investment-tax-credit (last visited May 15, 2014).

100. *Id.*

101. *See* Zindler & Tringas, *supra* note 21, at 1.

developers.[102] Even the Congressional Research Service notes that "[s]ection 1603 grants may be a more economically efficient mechanism than tax credits for delivering benefits to the renewable energy sector."[103] Similarly, the Bipartisan Policy Center finds that "while the tax-based incentive system has been enormously supportive for the renewable energy industry, it is also a sub-optimal tool and will likely be unsustainable as the industry matures."[104] The terminology employed by both sides suggests that the differing views may be the result of different foci—one on the efficacy,[105] the other on the efficiency[106]—of tax credits for renewable energy.

A. The Efficacy of Tax Credits for Renewable Energy

To accurately measure the efficacy of a particular policy to promote the deployment of renewable energy is no simple task. A wide range of factors require careful consideration, from resource endowment to market conditions to the interplay with other, complementary policies.[107] In the United States, for instance, federal tax credits are complemented by accelerated depreciation rates[108] as well as a variety of state policies to promote the deployment of renewable energy, from renewable portfolio standards[109] to, more recently, feed-in tariffs.[110] To develop and execute a methodology to accurately quantify the efficacy of federal tax credits for renewable energy is beyond the scope of this Article. Instead, historical data on the deployment of renewable energy capacity shall serve as a proxy for policy efficacy, using solar and wind as representative technologies.[111]

Since the Energy Policy Act of 2005[112] established the solar investment tax credit in its current form, annual solar photovoltaic capacity additions in the United States have steadily risen from 79 megawatts (MW) in 2005 to 160 MW in 2007, 435 MW in 2009, 1887 MW in 2011, and to a record 3313 MW of

102. *See* Bolinger et al., *supra* note 48, at 6818 ("[F]or an average wind power project, the value of self-sheltering the [section 1603] grant rather than the PTC comes to around eight percent of installed project costs.").

103. *See* BROWN & SHERLOCK, *supra* note 54, at 30.

104. *See* BIPARTISAN POL'Y CENTER, *supra* note 21, at 13.

105. *See infra* Section II.A.

106. *See infra* Section II.B.

107. For an introduction to the complexity and challenges of measuring and comparing renewable energy policy efficacy, see INT'L ENERGY AGENCY 2008, *supra* note 42, at 87; *see also Deploying Renewables: Best and Future Policy Practice*, INT'L ENERGY AGENCY 108 (2011), http://www.iea.org/publications/freepublications/publication/Deploying_Renewables2011.pdf [hereinafter INT'L ENERGY AGENCY 2011].

108. *See supra* Section I.A.

109. *See supra* note 37 and accompanying text.

110. *See supra* note 40 and accompanying text.

111. Together, solar and wind account for more than ninety percent of U.S. renewable power generation capacity additions between 2000 and 2012. *See* Gelman, *supra* note 25.

112. Pub. L. No. 109-58, 119 Stat. 594.

new capacity additions in 2012.[113] Wind power, meanwhile, has had a more varied deployment record since the Energy Policy Act of 1992 created the production tax credit for wind.[114] Repeated expirations of the tax credit, followed by eventual renewals, led to a series of boom-and-bust cycles in new capacity installations in the late 1990s and early 2000s.[115] Since 2005, annual wind capacity additions have risen from 2374 MW in 2005 to 5252 MW in 2007 and 10,003 MW in 2009 before dropping to 5215 MW in 2010 and then rising again to 6647 MW in 2011 and a record 13,077 MW of wind capacity additions in 2012.[116]

The deployment data for both wind and solar power generation capacity suggest that tax credits have indeed been effective at promoting the deployment of renewable energy in the United States. Perhaps the strongest evidence of the tax credits' efficacy flows from the boom-and-bust cycles that have followed the periodic lapses and renewals of the production tax credit for wind. As control events, these cycles confirm the production tax credit's importance for the wind industry and, hence, its efficacy in promoting the deployment of wind energy in the United States. The solar and wind industry associations' highly positive views of federal tax credits for renewable energy, therefore, appear to reflect both associations' business-oriented focus on the efficacy rather than efficiency of tax credits.

B. The Efficiency of Tax Credits for Renewable Energy

Policy and financial analysts tend to ask not only how much steel tax credits and other renewable energy policies manage to put in the ground but, critically, at what cost. Every year, the Joint Committee on Taxation examines the cost of tax credits for renewable energy in its tax expenditure report for the House Committee on Ways and Means and the Senate Committee on Finance.[117] For fiscal years 2013-2017, federal tax expenditures associated with the investment and production tax credits for renewable energy are estimated at $2.9 billion and $9.7 billion respectively.[118] Accounting for $2.4 billion over the five-year period, solar projects are the main beneficiaries of the investment

113. *See U.S. Solar Market Insight 2012 Year in Review*, SOLAR ENERGY INDUS. ASS'N 5 (2013).

114. Pub. L. No. 102-486, 106 Stat. 2776.

115. The production tax credit was allowed to expire at the end of 1999, 2001, and 2003, respectively. *See* BIPARTISAN POL'Y CENTER, *supra* note 21, at 8.

116. Calculations based on *AWEA U.S. Wind Industry Annual Market Report 2012: Rankings*, AM. WIND ENERGY ASS'N (2013), http://awea.files.cms-plus.com/FileDownloads/pdfs/AWEA%20U%20S%20%20Wind%20Industry%20Annual%20Market%20Rankings%202012.pdf.

117. *See* STAFF OF THE JOINT COMM. ON TAXATION, 113TH CONG., ESTIMATES OF FEDERAL TAX EXPENDITURES FOR FISCAL YEARS 2012-2017 (Joint Comm. Print 2013), http://www.jct.gov/publications.html?func=download&id=4503&chk=4503&no_html.

118. *Id.* at 31.

tax credit, while wind projects weigh in at $7.7 billion, receiving more production tax credits than all other renewable energy technologies together.[119]

In combination with past deployment data and future projections, the estimated federal expenditures associated with tax credits allow for an approximation of how much it costs American taxpayers to deploy a megawatt of new wind, solar, or other renewable power generation capacity. But to judge whether the resulting cost-per-capacity estimate is efficient or not tends to be rather difficult without knowing the counterfactual. Traditionally, international cross-country policy comparisons have had to serve as the counterfactual against which to assess the relative cost efficiency of competing renewable energy policies.[120] Renewable energy markets, however, vary considerably at national, regional, and even local levels regarding, for example, the ease of project development, resource endowment, cost of capital, and other critical market conditions.[121] The more two countries differ in these aspects, the more difficult it becomes to compare the cost efficiency of their respective renewable energy policies. Replacing the comparative international counterfactual with an intertemporal national counterfactual promises little more accuracy. As experiential policy learning leads countries to change their policies to promote renewable energy, so do technology cost and performance, macro-economic development, environmental regulation, and other key parameters of renewable markets change over time.[122] Without the ability to control for these changes, the intertemporal efficiency comparison of two or more renewable energy policies may well yield misleading results.

Fortunately for the United States, the section 1603 cash grant has created the rare situation of a counterfactual to renewable energy tax credits that not only applies to the same geographic market but also, critically, at the same time.[123] At the request of the bipartisan National Commission on Energy Policy, Bloomberg New Energy Finance has used the section 1603 experience to examine and compare the relative cost efficiency of federal tax credits and cash grants for the promotion of renewable energy deployment.[124] In particular, Bloomberg's analysts were asked to assess "how efficiently [tax credits] put taxpayer resources to work" and whether "cash deployed in place of the credits

119. *Id.*

120. *See, e.g.*, INT'L ENERGY AGENCY 2008, *supra* note 42, at 90; INT'L ENERGY AGENCY 2011, *supra* note 107, at 111.

121. *See* INT'L ENERGY AGENCY 2008, *supra* note 42, at 91 (noting that even a sophisticated comparison of renewable power remuneration levels should only serve as an indication of actual remuneration levels); INT'L ENERGY AGENCY 2011, *supra* note 107, at 113.

122. For an overview of renewable policy shifts, see INT'L ENERGY AGENCY, *supra* note 42, at 94; and INT'L ENERGY AGENCY, *supra* note 107, at 147.

123. As pointed out earlier, the section 1603 cash grant gave renewable energy developers a choice between conventional tax credits and the newly established cash grants. *See* Bolinger et al., *supra* note 21, at 1.

124. *See* Zindler & Tringas, *supra* note 21; *see also* BIPARTISAN POL'Y CENTER, *supra* note 21.

[could] have a greater impact."[125] Following further guidance from the expert members of the National Commission on Energy Policy, Bloomberg focused its analysis on a comparison between the production tax credit for wind and a cash grant such as that offered under section 1603.[126]

Bloomberg began its analysis by calculating the total liability that the federal government incurred through its production tax credit support for new wind capacity added from 2005 through 2008.[127] Assuming an average capacity factor of thirty-three percent,[128] Bloomberg concluded that, over the ten-year period of a project's eligibility for production tax credits,[129] the total federal liability for the roughly 19 GW of new wind capacity amounted to over $10 billion.[130] To estimate how much it would have cost the federal government to deploy the same amount of wind power capacity using the section 1603 cash grant, Bloomberg proceeded with a bottom-up analysis that compared the financing costs of two industry-typical but hypothetical wind farms. Both farms have a 100 MW nameplate capacity, but one receives federal subsidies in the form production tax credits and MACRS accelerated depreciation while the other receives only a cash grant akin to that offered under section 1603.[131] The two subsidy scenarios allow for different financing structures, eliminating among other things the need for tax equity in the cash grant scenario.[132] Using standard industry yields for the various types of project capital,[133] Bloomberg found that the cash grant option would allow developers and investors to meet their respective return requirements at approximately half the cost to the federal government of the tax credit scenario.[134] Applying these findings to the 19 GW of new wind capacity installed from 2005 through 2008, Bloomberg's analysis concluded that the use of cash grants instead of tax incentives would have allowed the federal government to achieve the same deployment success at a cost of $5 billion in cash grants as opposed to over

125. Zindler & Tringas, *supra* note 21, at 1.

126. *Id.* at 3.

127. *Id.* at 4.

128. For wind turbines and other power generation facilities, the capacity factor is used to measure how often and how long a generator runs delivering how much of its nameplate maximum capacity. *See* *Frequently Asked Questions*, U.S. ENERGY INFO. ADMIN., http://www.eia.gov/tools/faqs/faq.cfm?id=187&t=3 (last visited May 15, 2014). Based on historical performance data, Bloomberg's capacity factor assumptions imply that a wind turbine with a nameplate capacity, i.e., a maximum output capacity of 2 MW, will, on average, generate 5780 MWh of electricity per year. This annual output represents thirty-three percent of the turbine's theoretical maximum output capacity of 17,520 MWh if it were to run at full capacity (2 MW) for all 8,760 hours of the year.

129. *See supra* Subsection I.B.1.

130. Zindler & Tringas, *supra* note 21, at 4.

131. *Id.*

132. For the necessity to include tax equity investment to benefit from federal tax incentives, see *supra* Subsection I.B.3.

133. In the Bloomberg study, these included sponsor equity, tax equity, and project-level debt. *See* Zindler & Tringas, *supra* note 21, at 5.

134. *Id.*

$10 billion of federal liability in tax incentives.[135] As Bloomberg's analysts put it: "One dollar in cash has, on average, gone twice as far as one dollar of tax credits in subsidizing wind."[136]

Bloomberg's analysis offers a powerful illustration of the sizeable efficiency differential between production tax credits and cash incentives for renewable energy but the study sheds only limited light on the underlying reasons. The different medium (cash vs. tax credit) through which federal support for renewables is delivered likely represents but one of several factors that, together, create the observed efficiency delta. Another, critical factor is the extent to which the value of federal subsidies depends on project performance—in other words, whether the subsidy assigns a project's performance risk to the developer and its investors or to the government and its taxpayers. The production tax credit on the one hand, and the investment tax credit and section 1603 cash grant on the other hand, vary distinctly in their allocation of project performance risk. The overall dollar value of a wind project's production tax credits depends on how much power the project generates, with each kilowatt-hour of electricity earning the project or, rather, its tax equity investor, 2.3 cents of tax credit. With her tax credit earning prospects inseparably linked to the project's electricity output, the tax equity investor effectively assumes part of the project's performance risk. Following basic investment intuition that higher risk requires higher returns, industry practice has shown that tax equity investors in wind power projects exact higher premiums to compensate for their assumption of project performance risk.[137]

By comparison, the overall dollar value of a solar project's investment tax credit depends not on the project's output performance but, instead, on the value of its up-front expenditures, earning tax equity investors tax credits worth thirty percent of these expenditures. Even if the project were to break down one week after it is put into service, the tax equity investor could still claim her investment tax credit. With the tax equity investor's earning prospects largely decoupled from the project's performance, developers of solar and other renewable power projects financed with federal investment tax credits pay less of a performance risk premium for tax equity. The section 1603 grant resembles the investment tax credit insofar as it, too, attaches to a project's up-front expenditures, paying cash support in the amount of thirty percent of these expenditures—regardless of the project's eventual performance. These differences in performance risk allocation across the production tax credit, the investment tax credit, and the section 1603 grant suggest that the Bloomberg study's observed efficiency differential between the production tax credit and the section 1603 cash grant was partly prompted by the cash grant's

135. *Id.* at 1.

136. *Id.*

137. *See* Bolinger et al., *supra* note 21, at 11.

independence from project performance, reducing the overall exposure of developers and investors to performance risk. To measure what share of the cash grant's comparative efficiency advantages over the production tax credit is attributable to risk allocation and how much to the subsidy medium (cash vs. tax credit) would require adding an investment tax credit scenario to Bloomberg's analysis. Comparing the existing production tax credit scenario and the new investment tax credit scenario could offer some measure of the efficiency differential attributable to the two tax incentives' respective performance risk allocations. Meanwhile, a direct comparison between the investment tax credit scenario and the cash grant scenario could help to reveal what measure of efficiency gains is attributable to the substitution of cash for tax credit subsidies.

Bloomberg's analysis may not offer the aforementioned, desired level of granularity, but the study's findings receive strong empirical support from the renewable industry's response to the section 1603 cash grant. Given the choice between the production tax credit, the investment tax credit and the cash grant, renewable energy developers overwhelmingly opted for cash instead of credits.[138] Together with Bloomberg's data, this trend suggests that, at the same face value as the corresponding investment tax credit, the section 1603 cash grant may have offered windfall benefits to renewable energy project developers.[139] At the very least, the analytical and empirical experiences with the section 1603 cash grant's counterfactual to tax credits cast serious doubt on the relative cost efficiency of federal tax credit support for renewable energy deployment.

It is crucial for federal budgeting to ensure that taxpayers receive the greatest possible bang for their buck, whether it be in the context of tax expenditures for health care, national security, or renewable energy.[140] To validate whether federal tax credits for renewable energy are, indeed, as inefficient and ripe for reform as the section 1603 counterfactual suggests, the

138. *See* Bolinger et al., *supra* note 48, at 6806 (noting that nearly two thirds of all wind capacity additions in 2009 chose the cash grant over the tax credit option); *see also* MINTZ LEVIN & GTM RES., *supra* note 83, at 8 (pointing to industry estimates that sixty-five percent to eighty-five percent of utility-scale wind projects opted to elect the cash grant over tax credits). The industry's strong preference for cash in lieu of both production and investment tax credits suggests that the respective subsidies' linkage to performance risk are, in fact, less of a factor than the medium of subsidy support (cash vs. tax credit).

139. Average lead times of two or more years for large-scale project development suggest that some share of the projects that eventually opted for the section 1603 cash grant had originally budgeted based on federal tax credit support for their renewable power deployment. For an overview of the wind project development timeline, see Wayne Walker, *An Overview of the Wind Power Project Development Process and Financial Performance of Wind Energy Projects*, WAYNE WALKER CONSERVATION CONSULTING LLC 21 (2008), http://www.fws.gov/habitatconservation/windpower/past_meeting_presentations/walker.pdf.

140. *See, e.g.*, Batchelder et al., *supra* note 31, at 46 (arguing that a Pigouvian "subsidy should be targeted in such a way that society gets the most 'bang for its buck'").

following section will explore and assess the potential shortcomings of tax credit support for renewables.

III. Deciphering the Deficits of Tax Credits for Renewables

The section 1603 cash grant experience reveals that tax credits deliver a significantly lower level of support to renewable energy developers than a cash grant subsidy of equal face value. This observation should give pause not only to the renewables industry but, critically, to the federal government and its taxpayers. From the government's perspective, the efficiency of a subsidy can also be measured based on the proportion of the subsidy that actually reaches and supports the targeted activity or industry.[141] In the case of tax credits for renewables, it appears as though only a fraction of the subsidy value actually finds its way into the pockets of the developers who drive the large-scale deployment of new renewable power capacity. But where does the remainder of the subsidy value go? In other words, if taxpayers get so much less bang, i.e., so much less renewables deployment, for their buck from tax credits than from cash grants, where do their tax dollars go?

The answer to these questions hinges on the mismatch between the inherent profitability requirements of non-refundable tax credits and the revenue profile of the renewable energy projects they are intended to promote. This mismatch requires renewable energy developers to bring in outside investors whose hefty tax bills allow them to monetize the federal tax credits.[142] But these tax equity investors are few and far between—and they exploit their exclusivity status to charge a premium for their involvement.[143] The tax equity market's cyclical nature further reduces the value of tax credits when developers need them most.[144] To make matters worse, the tax code renders tax equity for renewable energy a highly illiquid investment thereby hindering the formation of secondary markets that could help developers refinance their projects in the near to mid-term.[145] In addition, participation of a tax equity investor in renewable power projects requires complex and costly deal structures that drive up transaction costs.[146] The need to bring in a tax equity investor, finally, limits a developer's ability to raise project capital from other, more cost-efficient sources.[147]

141. *See* BROWN & SHERLOCK, *supra* note 54, at 22.
142. *See infra* Section III.A.
143. *See infra* Section III.B.
144. *See infra* Section III.C.
145. *See infra* Section III.D.
146. *See infra* Section III.E.
147. *See infra* Section III.F.

A. Tax Credits Require Taxable Profits—or Tax Equity

Federal tax credits were used to stimulate economic development long before renewable energy entered the scene in the wake of the 1970s energy crisis.[148] It may have seemed logical to federal policymakers, therefore, to use the same tried-and-true tool to promote the development of renewable energy when they established today's regime of tax credits for wind, solar, and other renewables.[149] In doing so, however, policymakers were willing to overlook the fact that renewable energy developers and their projects tend to lack the quintessential requirement to benefit from tax credits—a high enough tax bill to offset with these credits.[150]

For most of the 1990s, a renewable energy developer's best way out of this lack-of-taxable-income dilemma was to develop a project to the point of construction and then sell it to a bigger entity that not only enjoyed access to the capital necessary for construction to proceed but also had a tax bill large enough to use the project's tax credits.[151] More recently, developers who are unwilling to give up ownership or management of their projects but lack the taxable income to use the tax credits themselves have turned to third-party investors for tax equity capital.[152]

Tax equity is a hybrid investment position that combines characteristics of conventional debt and equity stakes.[153] Like traditional equity, tax equity bears the ultimate performance risk of a project. Like debt, tax equity receives preferential treatment regarding project cash flows. These include positive cash flows such as payments under a power purchase agreement with a local utility or other off-taker and, most importantly, negative cash flows in the form of tax credits and other benefits that the tax equity investor can use to offset her tax liabilities outside of the project.[154] In essence, the tax equity investor's capital contribution buys her the rights to the project's tax benefits—and helps the developer finance the project's high up-front capital expenditures. Bringing in a

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148. In 1962, investment tax credits were introduced as a permanent subsidy, later to be used as a counter-cyclical measure. *See* HUNGERFORD & GRAVELLE, *supra* note 57, at 7.

149. For a discussion of the evolution of today's renewable energy tax credits, see *supra* Subsection I.B.1.

150. *See* Fisher et al., *supra* note 91, at 1; Harper et al., *supra* note 83; *supra* notes 85-88 and accompanying text. Challenges related to tax credits' inherent profitability requirements are not unique to renewable energy deployment. Start-up companies and other economic ventures with high upfront capital expenditures and modest revenue flows over a long period of time will struggle to use tax incentives, such as accelerated depreciation and tax credits, in a timely fashion. *See* Warren & Auerbach, *supra* note 29, at 1758-61; *see also* Batchelder et al., *supra* note 31, at 55 ("[T]he value of a tax incentive generally should not vary by the size of one's lifetime earnings, whether one earns more earlier or later in the life cycle, or whether one's earnings are more smooth or more volatile over time.").

151. *See* Harper et al., *supra* note 83, at 2, 6.

152. *See* BROWN & SHERLOCK, *supra* note 54, at 8; MINTZ LEVIN & GTM RES., *supra* note 83, at 13.

153. *See* BROWN & SHERLOCK, *supra* note 54, at 17.

154. *See id.*; Corneli, *supra* note 21, at 13; BIPARTISAN POL'Y CENTER, *supra* note 21, at 9.

tax equity investor enables a renewable power project to monetize its otherwise useless tax credits, albeit at a discount.[155]

B. Tax Equity is Scarce and Expensive

The need for renewable energy developers to partner with tax equity investors in order to reap the benefits of their project's tax credits might pose less of a challenge if such tax equity capital were readily available. Only a tiny fraction of the investment community, however, meets the profitability requirements to use its own tax bills to monetize a renewable project's tax credits.[156] Tax equity investment is a niche market that appeals only to the largest and most sophisticated financial firms, such as investment banks and insurance companies whose exclusive status gives them a strong financial but little if any strategic interest in renewables deployment.[157] Meanwhile, billions of dollars of institutional capital from pension funds, sovereign wealth funds, and other potential investors are sidelined by the tax code.[158] And even those few eligible financial firms do not always have the necessary profits or tax appetite to invest in tax equity for renewables, as evidenced by the 2008-2009 economic downturn. Between 2007 and 2009, the pool of tax equity investors shrank from twenty to eleven investors, as the available tax equity for renewable energy plummeted by over eighty percent from $6.1 billion in 2007 to only $1.2 billion in 2009.[159]

More recent trends and projections suggest little improvement in the availability of tax equity for renewable energy, notwithstanding the recent market entry of non-traditional tax investors such as Google.[160] Despite an overall deal volume of $6 billion for solar and wind tax equity in 2011, the market counted little more than twenty active tax equity investors.[161] Even with continuing economic recovery, the tax equity market is unlikely to grow significantly beyond its current size given the highly specialized nature of tax equity investment.[162] Among other qualifications, investors must have

155. *See* BROWN & SHERLOCK, *supra* note 54, at 8, 17. The discount stems from the premium that tax equity investors charge for their participation in renewable energy projects. For more details, see *infra* Section III.B.

156. *See* Bolinger et al., *supra* note 21, at 10; Corneli, *supra* note 21, at 13; Fisher et al., *supra* note 91, at 1; BIPARTISAN POL'Y CENTER, *supra* note 21, at 9, 11; MINTZ LEVIN & GTM RES., *supra* note 83, at 18.

157. Harper et al., *supra* note 83, at 25; MINTZ LEVIN & GTM RES., *supra* note 83, at 14, 19.

158. *See* Felix Mormann & Dan Reicher, Op-Ed., *How to Make Renewable Energy Competitive*, N.Y. TIMES, June 1, 2012, http://www.nytimes.com/2012/06/02/opinion/how-to-make-renewable-energy-competitive.html.

159. *See* Fisher et al., *supra* note 91, at 2; BIPARTISAN POL'Y CENTER, *supra* note 21, at 10.

160. *See* MINTZ LEVIN & GTM RES., *supra* note 83, at 7, 19.

161. *See* CHADBOURNE & PARKE LLP, *supra* note 51, at 29.

162. *See* Mendelsohn & Feldman, *supra* note 34, at 2.

substantial current and future tax liability, the financial acumen to participate in a complex project structure, and the willingness to invest in illiquid assets that tie up cash and cannot easily be resold.[163] A comparative glance at Europe's renewable energy investment scene reveals just how high a barrier to entry the federal tax credit regime has erected for America's renewable energy investment market: thanks to feed-in tariffs and other deployment incentives that do not hinge on tax equity, more than 140 project financers compete for a stake in the similarly sized European market for renewable power projects.[164] With only a fraction of the investment community in play, project developers in the United States find themselves in fierce competition with one another over the constrained supply of coveted tax equity.[165] In the words of one major tax equity investor: "[T]he tax equity investors hold all the cards."[166]

Competition among developers for a spot at the tax equity trough is not necessarily a bad thing. In fact, some credit competitive pressure with serving as a catalyst for the development of higher quality renewable power projects with more thorough due diligence and better risk management.[167] The members of the elite club of tax equity investors, however, exploit their exclusivity not only to improve the quality of renewable energy projects but also to exact a sizeable premium for their participation.[168] While long-term project debt and conventional equity capital are readily available at modest yield rates of five to six percent and seven to eight percent respectively, tax equity investors demand up to fifteen percent or more for their involvement in renewable power projects.[169] According to Rhone Resch, head of the Solar Energy Industries Association, the premium yield rates demanded by tax equity investors require developers to sell their tax credits at a loss of 30 to 50 cents on the dollar.[170] More conservative analyses conclude that the need to bring in a tax equity investor adds up to 800 basis points, or 8 percentage points, to a project's financing costs when compared to the typical cost of project finance debt.[171]

163. *Id.* To make matters worse, from a developer's perspective, not every one of these tax equity investors will be interested in every renewable power project since many investors have what industry experts describe as "esoteric requirements, specific needs, or quirks." CHADBOURNE & PARKE LLP, *supra* note 51, at 29.

164. *See* BIPARTISAN POL'Y CENTER, *supra* note 21, at 11.

165. *See* BROWN & SHERLOCK, *supra* note 54, at 13; Fisher et al., *supra* note 91, at 1; MINTZ LEVIN & GTM RES., *supra* note 83, at 8.

166. CHADBOURNE & PARKE LLP, *supra* note 51, at 37.

167. *Id.* ("No one closes over mistakes any more. No one closes over anything any more. Sponsors must fix everything.").

168. *See* BROWN & SHERLOCK, *supra* note 54, at 18; Harper et al., *supra* note 83, at v; MINTZ LEVIN & GTM RES., *supra* note 83, at 8.

169. *See* Fisher et al., *supra* note 91, at 2 (based on pre-tax yield rates); *see also* Harper et al., *supra* note 83, at v; MINTZ LEVIN & GTM RES., *supra* note 83, at 11, 18; Zindler & Tringas, *supra* note 21, at 5 (discussing the spread of tax equity investors' yield demands).

170. *See* Matthew L. Wald, *Sunset for a Solar Subsidy?*, N.Y. TIMES: GREEN (Nov. 16, 2010, 3:53 PM), http://green.blogs.nytimes.com/2010/11/16/sunset-for-a-solar-subsidy.

171. *See* BIPARTISAN POL'Y CENTER, *supra* note 21, at 11; MINTZ LEVIN & GTM RES., *supra* note 83, at 8.

With every 100 basis points estimated to add $2.50 to $5.00 per MWh of renewable power output,[172] the steep cost of tax equity imposes a sizeable burden on the renewable energy industry as it struggles to become cost-competitive with coal, gas, and other fossil fuel incumbents. For American taxpayers, the premium yields for tax equity divert up to half of their tax dollars away from the wind farms and solar installations they were intended to subsidize and into the pockets of Wall Street banks and other high-profit corporations.

C. Tax Credits Fail When Needed Most

The cyclical nature of tax equity poses a separate, similarly grave problem for renewable energy developers, the federal government, and its taxpayers. The 2008-2009 economic downturn offers ample evidence of just how much the availability and, with it, the price, of tax equity fluctuate with the overall state of the economy.[173] More specifically, "[m]acro-trends in tax equity financing . . . are highly correlated to the financial health of a limited number of large financial institutions."[174] This cyclicality challenge is compounded for the ten-year production tax credit as it requires potential tax equity investors to forecast their tax appetite, i.e., their ability to use a project's tax credits ten years into the future.[175] Even the very largest and most profitable financial institutions cannot ensure sufficient levels of profitability through an economic crisis, as evidenced by the 2008 departures of Citigroup, American International Group, and others from the tax equity market.[176]

As a general matter, a slow economy will require renewable energy developers to pay an even higher premium for tax equity, effectively selling their tax credits at an even greater discount than usual. As a result, federal tax incentives deliver less subsidy value to developers when the economy is slow. The tax system is generally credited as an automatic stabilizer since proportional and, especially, progressive taxes attenuate macroeconomic shocks without the need for government intervention.[177] With the availability and price of tax equity heavily dependent on macroeconomic factors, however, tax credits for renewables appear to have a downright "destabilizing" effect.

The section 1603 cash grant experience suggests that direct cash subsidies for renewables are better suited than tax credits to smooth macroeconomic shocks and fluctuations. True to its Congressional purpose, the section 1603

172. *See* BIPARTISAN POL'Y CENTER, *supra* note 21, at 11 n.8.

173. *See, e.g., id.* at 10.

174. MINTZ LEVIN & GTM RES., *supra* note 83, at 3.

175. *See* Bolinger et al., *supra* note 21, at 11.

176. *See* BIPARTISAN POL'Y CENTER, *supra* note 21, at 10.

177. *See* Alan J. Auerbach & Daniel Feenberg, *The Significance of Federal Taxes as Automatic Stabilizers*, 14 J. ECON. PERSP. 37 (2000); Thomas J. Kniesner & James P. Ziliak, *Tax Reform and Automatic Stabilization*, 92 AM. ECON. REV. 590 (2002).

grant helped developers "temporarily fill the gap created by the diminished investor demand for tax credits."[178] Amidst one of the worst recessions in recent history, the grant program enabled sustained deployment of wind energy at pre-2008 levels and record deployment of solar energy between 2009 and 2011.[179] No longer reliant on tax equity from financial institutions whose profits and, hence, ability to absorb tax credits had been slashed by the recession, renewable energy developers were free to raise project capital from other sources, including sponsor equity and, critically, debt.[180] The strong deployment record suggests that these sources were less affected by the recession, allowing them to stabilize economic activity in a fledgling industry.

In contrast, the destabilization effect of tax credits exacerbates the renewable energy industry's existing struggles to become cost-competitive with conventional sources of energy. After all, tax credits are designed to cover only part of the cost of generating power from renewables, with the wholesale power price and state incentives intended to bridge the remaining gap. A slow economy, however, leads to an oversupply of electricity and thereby drives down wholesale power prices, which, in turn, makes it harder for renewable power generators to break even, let alone make a profit.[181] Tax credits, therefore, fail renewable energy developers when they need them most to bridge the widening gap between depressed wholesale power prices and their generation costs.[182] Ultimately, the cyclical nature of tax equity makes tax credits for renewables a poor stimulus measure to promote the large-scale deployment of renewable energy, much less strengthen or revive a struggling economy.

D. Tax Credits Limit Investment Liquidity

The cyclicality challenges of tax equity are exacerbated by the tax code's restrictions for the sale and transfer of tax equity stakes in renewable energy projects.[183] The investment tax credit for solar and other renewable projects, for instance, becomes available in full in the year that the facility is placed into service.[184] But the credit actually takes five years to linearly vest in its entirety.[185] In other words, the tax equity investor must hold on to her stake in

178. U.S. DEP'T TREASURY, *supra* note 93, at 3.

179. *See supra* notes 113, 116 and accompanying text.

180. *See infra* Section III.F.

181. *See* Zindler & Tringas, *supra* note 21, at 6.

182. Existing projects may have locked in a higher price with a long-term power purchase agreement. But the cyclicality challenge is substantial for new projects that need to secure a lucrative power purchase agreement in a depressed wholesale power market. *See id.*

183. The tax code generally restricts the trafficking of tax attributes and incentives. *See, e.g.*, 26 U.S.C. § 382 (2012). For a discussion of the few tradable federal tax credits, see Clinton G. Wallace, Note, *The Case for Tradable Tax Credits*, 8 N.Y.U. J. L. & BUS. 227, 237 (2011).

184. Bolinger et al., *supra* note 21, at 11.

185. *Id.*

the project for at least five years in order to realize the tax credit's full value.[186] If the investor decides to pull out of the project earlier, say after three years, the non-vested portion of her tax credit, in this case forty percent, will be subject to recapture and the associated tax savings will need to be paid back to the Internal Revenue Service (IRS).[187] The really bad news for investors and developers alike is that, once recaptured, the non-vested portion of the tax credit is lost for good and cannot be used to attract new investors for the project.[188] Originally intended to prevent tax shelter abuse, the tax code's recapture provisions severely limit the fungibility of tax equity and thereby impede the formation of a viable secondary market.[189] Indeed, the only evidence of meaningful secondary market transactions dates back to 2009 when tax-advantaged investments were liquidated out of the portfolios of bankrupt tax equity investors such as Lehman Brothers.[190] In the words of an industry insider: "These trades are hard to execute."[191]

In practice, the investment illiquidity that tax equity infuses into renewable energy projects leaves developers with little to no recourse against the cyclicality of tax equity, at least for projects that are subject to the tax code's recapture rules. If a slow economy with an even thinner-than-usual tax equity market forces a developer to pay an unusually high premium for the tax investor's participation, the developer has little hope of mitigating the damage once the economy has recovered by bringing in another tax equity investor at a lower yield rate. Moreover, tax equity investors would likely lower the yield premium they demand if their investments enjoyed greater liquidity allowing them more and better exit options in the case of economic distress, reduced tax appetite, or for strategic purposes.[192]

E. Tax Equity Requires Complex and Costly Deal Structures

Participation of a tax equity investor in a renewable energy project requires highly complicated deal structures. In all of these structures, the tax equity investor's capital contribution effectively buys her the rights to the project's tax benefits so that she may use them to offset her tax liability from other sources. But the tax code's general prohibition of trafficking in tax credits

186. *Id.*

187. *See* 26 U.S.C. § 50(a)(1)(B).

188. *See* Bolinger et al., *supra* note 21, at 11.

189. *See* BIPARTISAN POL'Y CENTER, *supra* note 21, at 11.

190. *See* CHADBOURNE & PARKE LLP, *supra* note 51, at 34.

191. *Id.*

192. *See, e.g.*, Joel Meister, *Sunny Dispositions: Modernizing Investment Tax Credit Recapture Rules for Solar Energy Project Finance After the Stimulus*, GEO. WASH. SOLAR INST. 18 & n.85 (Sept. 2012), http://solar.gwu.edu/resources/sunny-dispositions-modernizing-investment-tax-credit-recapture-rules-solar-energy-project ("'There is option value in being able to sell an asset whenever you want. Frequently this is called the liquidity premium . . . .'") (quoting E-mail from Matthew Meares, Dir. of Project Fin., Amonix, Inc., to author (Aug. 11, 2011, 01:29 EST) (on file with author)).

and other tax attributes[193] rules out a straight-forward sale of these attributes and, instead, requires inventive deal structures in order to legally assign what would otherwise be the developer's tax benefits to the tax equity investor. The three main tax equity structures in use today are the partnership flip, the sale-leaseback, and the inverted lease.[194]

The partnership-flip structure was first used in large-scale transactions in 2003 and has since become the most common tax equity structure.[195] In this structure, the tax equity investor's capital contribution to the project makes her the majority equity partner during the early years of the project partnership when she receives most of the cash flows from power purchase payments and, most importantly, the tax credits and other tax benefits.[196] Once all or most of the project's tax benefits have been realized and the tax equity investor's capital stake has reached a pre-negotiated yield target, the tax investor's share in the partnership "flips" to a minority position and the developer takes over in terms of both equity and cash flows.[197] After the flip, the tax equity investor typically retains a nominal equity interest in the project partnership as required by the tax code.[198] In essence, the partnership-flip structure allows the developer to bring in a tax equity investor to serve as an "accommodation" partner who receives a shorter maturity (and higher yield) on her investment in exchange for the ability to monetize a project's tax benefits.[199]

In a sale-leaseback structure, the developer develops the project but sells the tax credit earning equipment at fair market value to a tax equity investor within 90 days of the project's being placed in service.[200] After the sale is

193. *See* 26 U.S.C. § 382 (2012).

194. *See* Dipa Sharif et al., *The Return—and Returns—of Tax Equity for U.S. Renewable Projects*, BLOOMBERG NEW ENERGY FIN. 11, 16 (2011) (offering a concise comparison across all three tax equity structures); MINTZ LEVIN & GTM RES., *supra* note 83, at 10; CHADBOURNE & PARKE LLP, *supra* note 51, at 30. In 1981, Congress created "safe harbor leasing" which allowed for the transfer of tax benefits under certain leasing conditions, but this officially endorsed structure was short-lived. Public backlash against the allegedly abusive transfer of tax incentives between corporations led Congress to repeal the safe harbor leasing provisions in 1982. *See* WALLACE, *supra* note 183, at 244-46. For a detailed analysis of the benefits of safe harbor leasing, see Warren & Auerbach, *supra* note 29, at 762.

195. *See* Harper et al., *supra* note 83, at 8, 25; CHADBOURNE & PARKE LLP, *supra* note 51, at 35.

196. *See* BIPARTISAN POL'Y CENTER, *supra* note 21, at 9; MINTZ LEVIN & GTM RES., *supra* note 83, at 16; *see also* Sharif et al., *supra* note 194, at 12 (demonstrating a more balanced allocation of positive project cash flows between the developer and tax equity investor).

197. *See* Harper et al., *supra* note 83, at 23 (noting that after the flip typically around ninety percent of cash flows goes to the developer); BIPARTISAN POL'Y CENTER, *supra* note 21, at 9. At this point, cash flows consist primarily if not exclusively of payments for electricity under the project's power purchase agreement.

198. *See* Harper et al., *supra* note 83, at 19 (reporting on industry practice to leave five percent of equity with the tax investor to avoid potential challenges from the IRS regarding the allocation of tax benefits); MINTZ LEVIN & GTM RES., *supra* note 83, at 16.

199. *See* BIPARTISAN POL'Y CENTER, *supra* note 21, at 9.

200. *See* MINTZ LEVIN & GTM RES., *supra* note 83, at 15. With the exception of biomass facilities, the tax code's owner-operator requirement prohibits the use of sale-leaseback and

executed, the tax equity investor who now owns the equipment leases it back to the developer at a fixed cost[201] for the term of the project's power purchase agreement or longer.[202] Title to the equipment allows the tax equity investor to claim the project's tax credits and other tax benefits while the equipment-leasing developer continues to operate the project and receives all payments under the power purchase agreement with the off-taker of the project's electricity output.[203] Upon expiration of the lease, the tax equity investor usually has the option to retain ownership of the project's equipment or to sell it back to the developer at its fair market value.[204] In theory, the sale-leaseback structure enables the developer to raise up to one hundred percent of the project capital through the sale of its equipment. In practice, however, tax equity investors often use their strong market position to require developers to prepay a portion of their rent, effectively resulting in a discount that amounts to twenty percent of the project cost or more.[205]

The inverted-lease structure, also referred to as a "lease pass-through," appears at first glance to be the exact opposite of the sale-leaseback structure given that here the tax equity investor pays rent to the developer under their lease agreement.[206] In exchange for the lease payments, the developer passes most of the project's tax credits and benefits through to the tax equity investor.[207] To facilitate the pass-through component of the inverted lease the lessee tax investor also holds an equity stake in the project company.[208] From the project's inception, the inverted-lease structure delivers positive cash flows to the developer but, unlike the partnership flip and the sale-leaseback, it requires the developer to invest significant equity capital upfront.[209]

Whatever the subtle differences between the aforementioned tax equity structures, they are all "highly complicated and involve significant fees, restrictions and other costs that divert much of the value of the tax credits away from reducing the cost of the renewable energy project itself."[210] The personnel time and professional fees required to complete these transactions pose a particularly high barrier to tax equity investment for smaller renewable energy

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inverted-lease structures for any power projects that claim production tax credits. *See* CHADBOURNE & PARKE LLP, *supra* note 51, at 30.

201. *See also* Sharif et al., *supra* note 194, at 13 (discussing the option of varying lease payments that fluctuate in correlation with the project's cash flows).

202. MINTZ LEVIN & GTM RES., *supra* note 83, at 15.

203. *Id.*

204. *Id.*; *see also* Sharif et al., *supra* note 194, at 13 (discussing the possibility for the developer and tax equity investor to agree on an early-buyout option for the developer, usually between years seven and twelve of the project).

205. *See* CHADBOURNE & PARKE LLP, *supra* note 51, at 30.

206. *See* Sharif et al., *supra* note 194, at 13.

207. *Id.* at 14.

208. *Id.*

209. *Id.* at 16.

210. Corneli, *supra* note 21, at 13.

projects,[211] including the distributed-generation projects that are considered vital for the construction of a smarter, more resilient, decentralized power grid.[212] According to industry insiders even large-scale renewable wind projects may see a good share of the developer's profits wiped out by transaction costs and professional fees "running to $3 to $4 million to close a transaction."[213] In addition, the complex, customized nature of these transactions tailored to suit the specific needs of each project and tax equity investor causes costly delays with some deals taking up to ten months to close.[214] Some analysts estimate that the transaction costs associated with tax equity investment increase the financing costs of renewable energy projects by 300 basis points or more,[215] adding $7.50 to $15.00 to the generation cost of each MWh of a project's renewable power output.[216]

The cost and complexity of tax equity structures suggest that not all of the tax dollars that fail to make their way into the hands of renewable energy developers end up in the pockets of Wall Street banks and high-profit corporations. Rather, a sizeable portion of the federal tax credits' subsidy value is used to pay legal fees. While this may be good news for the legal profession, it is terrible news for the renewable energy industry, the federal government, and its taxpayers.

F. Tax Equity Does Not Play Well With Others

The need for tax equity drives up the cost of renewable energy projects not only through the premium yield rates that tax investors exact for their participation and the associated transaction costs but also because tax equity often forestalls less expensive debt financing.[217] Well-developed renewable energy projects can raise debt capital at interest rates that are up to sixty percent lower than the yield rates that developers have to pay for tax equity capital.[218] Debt, in other words, has a considerably lower cost of capital than (tax)

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211. *See* BROWN & SHERLOCK, *supra* note 54, at 12 (warning that high transaction costs "may negate the tax benefits offered by small projects").

212. *See, e.g.*, Melissa Powers, *Small is (Still) Beautiful: Designing U.S. Energy Policies to Increase Localized Renewable Energy Generation*, 30 WIS. INT'L L.J. 595, 623 (2012) (making the case for distributed renewable energy generation).

213. CHADBOURNE & PARKE LLP, *supra* note 51, at 32; *see also* Fisher et al., *supra* note 91, at 1 (lamenting the high transaction costs associated with tax equity financing).

214. *See* CHADBOURNE & PARKE LLP, *supra* note 51, at 32.

215. *See* BIPARTISAN POL'Y CENTER, *supra* note 21, at 11.

216. *See id.* (reporting that every 100 basis points of increase to a project's financing costs adds $2.50-5.00 per MWh to the project's cost of electricity generation).

217. *See* Fisher et al., *supra* note 91, at 4.

218. *See id.* at 2; *see also supra* Section III.B (discussing the high yield rates exacted by tax equity investors); Chris Meehan, *MidAmerican Holdings' Topaz Solar Farm Bonds Prove Wildly Popular*, CLEAN ENERGY AUTH. (Feb. 24, 2010), http://www.cleanenergyauthority.com/solar-energy-news/midamerican-holdings-topaz-solar-farm-bonds-022412 (describing the recent example of the oversubscribed Topaz Solar Farm's $850 million bond offering at a yield rate of 5.75%).

equity.[219] In fact, the cost advantages of debt over equity are significant enough to lead many industries that do not depend on tax credits to forego the tax code's depreciation benefits in favor of debt-dominated leasing and other financing structures.[220] The same math suggests that the more of its capital needs a renewable power project can meet in the form of debt, the lower its levelized cost of electricity will be.[221]

The bad news for developers is that the need to bring in a tax equity investor effectively creates a dual obstacle for greater debt-to-equity ratios in renewable energy projects. First, the aforementioned tax equity structures required to monetize a project's tax benefits preclude pure debt financing structures.[222] Second, tax equity investors are wary of losing their preferred access to project cash flows to lenders.[223] A forbearance or standstill agreement between the lender and the tax equity investor may ensure the latter's entitlement to the project's tax benefits, but the lender's involvement will likely curtail the tax equity investor's rights to the project's positive cash flows from power purchase payments.[224] As a result, tax investors either refuse to participate in a debt-financed project or charge an additional premium—on top of their already high yield rates[225]—if a renewable power developer wants to leverage the project with debt.[226] In practice, tax equity investors add between 300 and 500 basis points to their required yield rates if a developer chooses to finance the project with a mix of equity and debt.[227] In addition to further increasing the cost of tax equity capital, bringing a lender into a renewable power project's capital structure infuses considerable complexity into the deal, which further increases transaction costs and may cause costly delays.[228] Accordingly, only a handful of renewable energy projects have managed to combine the tax equity required to monetize federal tax credits with cost-effective debt financing.[229] Against this background, some analysts have concluded that "[t]he most significant cost of tax equity . . . is that it makes obtaining project level debt more difficult."[230]

219. *See* Harper et al., *supra* note 83, at v.

220. *See* CHADBOURNE & PARKE LLP, *supra* note 51, at 34.

221. *See* Harper et al., *supra* note 83, at v.

222. *See* CHADBOURNE & PARKE LLP, *supra* note 51, at 34 (describing how debt financing would take over if tax credits were replaced with direct cash subsidies).

223. See *supra* Section III.A for a discussion of the debt-equity hybrid character of tax equity with its preferred access to project cash flows.

224. *See* CHADBOURNE & PARKE LLP, *supra* note 51, at 32.

225. *See* Fisher et al., *supra* note 91, at 3.

226. *Id.*

227. *See* MINTZ LEVIN & GTM RES., *supra* note 83, at 17.

228. *See* Fisher et al., *supra* note 91, at 3.

229. *See* CHADBOURNE & PARKE LLP, *supra* note 51, at 32.

230. Fisher et al., *supra* note 91, at 3.

G. Summary

Empirical evidence and qualitative analysis illustrate the remarkable inefficiency of using federal tax credits to promote the deployment of renewable energy technologies. Unless a project developer has sufficient tax liability from other sources, she will not be able to reap the full value of her project's tax benefits. If she chooses to carry these benefits forward until her project breaks even and generates the necessary taxable income and, hence, tax liability to use them, she may be able to realize only a third of their subsidy value.[231] Alternatively, the developer may monetize her tax benefits by bringing in a tax equity investor whose capital contribution effectively buys the right to use the project's tax benefits to reduce the investor's tax liability from other sources. But even with the help of a tax equity investor, renewable energy developers can, at most, realize two-thirds of the value of their project's tax benefits.[232] The required tax equity is scarce and expensive, especially in a slow economy, limits investment liquidity, drives up transaction costs, and precludes other, lower-cost financing options.

The tax expenditure literature has long recognized the broader challenges associated with government use of tax incentives to subsidize socially beneficial activities, especially by start-up companies and other revenue-challenged firms.[233] Tax credits for renewable energy represent a particularly dramatic example of these challenges, for a variety of reasons. However one may feel about the tax system's general suitability for promoting climate change mitigation, technological innovation, and other non-tax policy goals[234] through Pigouvian[235] tax expenditures, a government subsidy becomes

231. *See* Varadarajan et al., *supra* note 86, at 4; *see also supra* note 31 (offering a sample calculation of the net present value of carried-forward tax credits).

232. *See* Varadarajan et al., *supra* note 86, at 4; *see also supra* note 170 and accompanying text (for industry reports that tax equity investors pay developers as little as fifty percent of the face value of their tax credits).

233. *See, e.g.*, STANLEY S. SURREY, PATHWAYS TO TAX REFORM 134 (1973) (discussing the inequities from tax incentives' greater value for high-income than low-income taxpayers); Warren & Auerbach, *supra* note 29, at 1758-59 (describing the difficulties that start-up and loss companies confront in using tax credits and depreciation deductions).

234. Commentators have long debated whether the tax system should be used to implement public spending programs. *See, e.g.*, Edward A. Zelinsky, *James Madison and Public Choice at Gucci Gulch: A Procedural Defense of Tax Expenditures and Tax Institutions*, 102 YALE L.J. 1165, 1175 (1993); Daniel N. Shaviro, *Rethinking Tax Expenditures and Fiscal Language*, 57 TAX L. REV. 187, 206 (2004) (both pointing to the merits of using the tax system to promote non-tax policy objectives); Edward D. Kleinbard, *The Congress Within the Congress: How Tax Expenditures Distort Our Budget and Our Political Process*, 36 OHIO N.U. L. REV. 1, 18 (2010); J. Clifton Fleming Jr. & Robert J. Peroni, *Can Tax Expenditure Analysis Be Divorced From a Normative Tax Base?: A Critique of the "New Paradigm" and its Denouement*, 30 VA. TAX REV. 135, 172 (2010) (both criticizing the tax system's use to promote non-tax policy objectives).

235. Named after economist Arthur C. Pigou, Pigouvian tax measures are used to remedy issues associated with externalities by helping producers internalize the (positive or negative) cost to society of their activity. For an overview of the economics behind Pigouvian tax measures, see Brian Galle, *The Tragedy of the Carrots: Economics and Politics in the Choice of Price Instruments*, 64 STAN. L. REV. 797, 806 (2012).

untenable based purely on efficiency grounds if only one to two thirds of its value actually goes to fund the targeted activity. Moreover, the ability of a small group of high-income entities to divert significant portions of the subsidy into their own pockets raises serious concerns over taxpayer equity. Lastly, the tax credit regime's inefficiencies translate to suboptimal deployment rates that, in turn, impede the timely decarbonization of America's energy economy, as required for effective climate change mitigation.

IV. The Political Economy of Renewable Energy Policy

Fiscal sustainability, taxpayer equity, concerns over climate change, and the quest to secure American leadership in the global clean energy race all suggest that the current regime of federal tax credits make way for a less wasteful, more cost-effective policy to promote renewable energy. Three types of policy proposals—calling for some version of a federal cap-and-trade scheme, RPS, or feed-in tariff—have dominated the debate on Capitol Hill in recent years.

Economists have long suggested that a price on greenhouse gas emissions, in the form of a carbon tax[236] or cap-and-trade regime,[237] is, in theory, the single most efficient policy to mitigate climate change and promote abatement technologies, such as solar, wind, and other low-carbon renewable energy technologies.[238] A price on greenhouse gas emissions would require producers to internalize the cost of their emissions and thereby penalize pollution and encourage abatement. Over time, this direct, static effect would be complemented by an indirect, dynamic effect of encouraging refinement of existing and development of new abatement technologies.[239] From an efficiency perspective, a tax on greenhouse gas emissions or a cap-and-trade scheme would incur lower opportunity costs than direct subsidies for these technologies.[240]

Advocates of a federal RPS tout the policy's track record at the U.S. state level, with twenty-nine states and the District of Columbia using RPS programs to promote renewable power.[241] A nationwide RPS could harmonize previously Balkanized state markets for REC trading to increase market liquidity and reduce price volatility. Similar to a cap-and-trade scheme, a federal RPS is

236. *See, e.g.*, Gilbert E. Metcalf & David Weisbach, *The Design of a Carbon Tax*, 33 HARV. ENVTL. L. REV. 499 (2009).

237. *See, e.g.*, Ann E. Carlson, *Designing Effective Climate Policy: Cap-and-Trade and Complimentary Policies*, 49 HARV. J. ON LEGIS. 207, 212 (2012).

238. *See, e.g.*, STERN, *supra* note 16, at 35, 348; Finon, *supra* note 16, at 112; Jaffe et al., *supra* note 16, at 165, 169; Kolev & Riess, *supra* note 16, at 140.

239. *See* Kolev & Riess, *supra* note 16, at 137 (discussing the impact of environmental policy on technological change).

240. *See* Mormann, *supra* note 17, at 929.

241. *See* DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY, http://www.dsireusa.org/rpsdata/index.cfm (last visited May 15, 2014).

expected to harness the market's competitive forces to promote deployment of the most cost-effective technologies in locations with the best resource quality.[242]

Proponents of a federal feed-in tariff highlight the policy's international deployment record[243] as well as its recent uptake at the U.S. state[244] and municipal[245] levels. At comparable remuneration levels, feed-in tariffs have been shown to enjoy greater support in the investment community,[246] and are expected to leverage more private capital than RPS due to minimizing the market risk exposure of investors.[247] Accordingly, feed-in tariffs are claimed to promote the deployment of renewable energy more cost-effectively.[248]

Notwithstanding the relative strengths of each of these policies, none has managed to gain much traction on Capitol Hill. Over thirty failed proposals for a federal cap-and-trade regime, RPS, or feed-in tariff raise serious doubt as to their political viability.[249] Federal tax incentives for renewable energy,

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242. For an overview of the arguments for a federal RPS, see, for example, Christopher Cooper, *A National Renewable Portfolio Standard: Politically Correct or Just Plain Correct?*, 21 ELEC. J. 9 (2008); Lincoln L. Davies, *Power Forward: The Argument for a National RPS*, 42 CONN. L. REV. 1340 (2010); Joshua P. Fershee, *Moving Power Forward: Creating a Forward-Looking Energy Policy Based on a National RPS*, 42 CONN. L. REV. 1405 (2010); Joshua P. Fershee, *Changing Resources, Changing Market: The Impact of a National Renewable Portfolio Standard on the U.S. Energy Industry*, 29 ENERGY L.J. 49 (2008); Robert J. Lunt, *Recharging U.S. Energy Policy: Advocating for a National Renewable Portfolio Standard*, 25 UCLA J. EVTL. L. & POL'Y 371 (2007); Robert J. Michaels, *National Renewable Portfolio Standard: Smart Policy or Misguided Gesture?*, 29 ENERGY L.J. 79 (2008); Benjamin K. Sovacool & Christopher Cooper, *Congress Got it Wrong: The Case for a National Renewable Portfolio Standard and Implications for Policy*, 3 ENVTL. & ENERGY L. & POL'Y J. 85 (2008); and Benjamin K. Sovacool & Christopher Cooper, *State Efforts to Promote Renewable Energy: Tripping the Horse with the Cart*, 8 SUSTAINABLE DEV. L. & POL'Y 5 (2007).

243. *See, e.g.*, INT'L ENERGY AGENCY 2011, *supra* note 107, at 130.

244. *See Feed-in Tariffs and Similar Programs*, U.S. ENERGY INFO. ADMIN., http://www.eia.gov/electricity/policies/provider_programs.cfm (last visited May 15, 2014).

245. Municipalities with feed-in tariffs include Gainesville (FL), Los Angeles (CA), and Palo Alto (CA). *See About CLEAN Programs*, CLEAN COAL., http://www.clean-coalition.org/unleas hing-clean/about-clean-programs (last visited May 15, 2014).

246. Mary Jean Bürer & Rolf Wüstenhagen, *Which Renewable Energy Policy is a Venture Capitalist's Best Friend? Empirical Evidence from a Survey of International Cleantech Investors*, 37 ENERGY POL'Y 4997 (2009).

247. *See* Felix Mormann, *Enhancing the Investor Appeal of Renewable Energy*, 42 ENVTL. L. 681, 701 (2012).

248. For a discussion of the arguments in favor of a federal feed-in tariff, see, for example, David Bloom et al., *State Feed-in Tariffs: Recent FERC Guidance for How to Make Them FIT Under Federal Law*, 24 ELEC. J. 26 (2011); Pierre Bull et al., *Designing Feed-in Tariff Policies to Scale Clean Distributed Generation in the U.S.*, 24 ELEC. J. 52 (2011); Lincoln L. Davies, *Incentivizing Renewable Energy Deployment: Renewable Portfolio Standards and Feed-in Tariffs*, 1 KLRI J. OF L. AND LEG. 39 (2011); Michael Dorsi, *Clean Energy Pricing and Federalism: Legal Obstacles and Options for Feed-in Tariffs*, 35 ENVIRONS: ENVTL. L. & POL'Y J. 173 (2011-2012); Judith Lipp, *Lessons for Effective Renewable Electricity Policy from Denmark, Germany and the United Kingdom*, 35 ENERGY POL'Y 5481 (2007); Teresa E. Morton & Jeffrey M. Peabody, *Feed-in Tariffs: Misfits in the Federal and State Regulatory Regime?*, 23 ELEC. J. 17 (2010); and Rickerson et al., *supra* note 40.

249. For evidence of the failed campaigns for a federal cap-and-trade regime, see S. 1733, 111th Cong. (2009); and H.R. 2454, 111th Cong. (2009). For reports of the failed campaigns for a federal RPS, see Davies, *supra* note 233, at 1341; and Shelley Welton, *From the States Up: Building a National Renewable Energy Policy*, 17 N.Y.U. ENVTL. L.J. 987, 996 (2009). For evidence of

meanwhile, have managed to garner sufficient political support for periodic extensions and renewals across various Congresses and administrations.[250] Considering the many inefficiencies of tax credits and other tax breaks for renewables, this political success speaks less to their relative efficacy and efficiency compared to competing policies than to the political economy of renewable energy policy. The greater political appeal of "carrots" in the form of tax breaks compared to the "stick" of pricing greenhouse gas emissions confirms common intuition.[251] But why do tax breaks fare so much better on Capitol Hill than other, more cost-effective carrots, such as direct cash subsidies, an RPS, or a feed-in tariff? The answer to this question lies, at least in part, in the preferential treatment of tax expenditures in terms of both budgetary consideration and Congressional process of enactment.

Nearly half a century ago, Stanley Surrey criticized that tax expenditures were not listed among the line items on the expenditure side of the federal budget, and hence, did not automatically come under the close scrutiny of the Congress and the Budget Bureau.[252] The Congressional Budget Act of 1974 has since introduced the mandatory compilation of tax expenditures into the budget process, but tax expenditures still avoid the annual review required for other spending measures.[253] This budgetary treatment has been suggested to lower the political saliency of tax expenditures, often allowing them to fly under the radar of public opinion and, therefore, requiring less political capital to enact than other, more direct spending measures.[254] Moreover, discretionary spending is frequently subject to strict limits, while tax expenditures have rarely been subject to similar controls.[255] Finally, tax credits, depreciation deductions, and other tax expenditures are likely to be more philosophically appealing to those politicians and voters calling for reductions in taxpayers' overall tax burden.

From a procedural perspective, enactment of a discretionary spending program is significantly more complex and lengthier than congressional approval of tax expenditures.[256] Discretionary spending measures generally must survive a two-step process to be enacted, starting with the passage of authorizing legislation following consideration by each chamber's responsible

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the failed campaigns for a federal feed-in tariff, see Renewable Energy Jobs and Security Act, H.R. 6401, 110th Cong. (2008).

250. *See supra* note 115 and accompanying text.

251. *See* Galle, *supra* note 235, at 841 (discussing the "social overproduction of carrots").

252. *See, e.g.*, SURREY, *supra* note 233, at 4.

253. *See* Wallace, *supra* note 183, at 155.

254. *See* Galle, *supra* note 235, at 844; Kleinbard, *supra* note 234, at 18.

255. *See* Wallace, *supra* note 183, at 272.

256. *See, e.g.*, Batchelder et al., *supra* note 31, at 39 (discussing policymakers' growing reliance on the tax code rather than direct government expenditures as the result of incentives within the tax legislative process); Wallace, *supra* note 183, at 271 (discussing the relative ease of enactment of tax expenditures compared to direct spending measures). For a summary of the legislative process for spending measures, see BILL HENIFF JR., CONG. RESEARCH SERV., RS20371, OVERVIEW OF THE AUTHORIZATION-APPROPRIATIONS PROCESS (2012).

subject-specific, legislative committee. Once authorized, the spending program requires appropriation of funds through separate legislation following consideration by each chamber's appropriations committee. Tax expenditures, in contrast, require only a single act of legislation and consideration by two rather than four different committees—the Senate Finance Committee and the House Ways and Means Committee.

The systemic preference for tax expenditures over more direct spending measures suggests that the best way to promote both fiscal sustainability and renewable energy, at least in the near term, may be to fix rather than replace the current regime of federal tax credits for renewables. A number of scholars have argued for the tradability or refundability of tax credits in general.[257] In the context of renewable energy, either approach would go a long way in allowing developers to monetize their tax credits without incurring the efficiency losses associated with the need to bring in a tax equity investor. Notwithstanding the persuasiveness of arguments in favor of tradable tax credits, the tax code's general prohibition of trafficking in tax attributes still stands strong, with only a tiny fraction of all tax credits authorized for trading.[258] Similarly, the tax code reserves the refundability of tax credits for rare exceptions,[259] despite the strong economic and distributional arguments in favor of refundable tax credits.[260] The steadfast opposition to refundable tax credits is based on concerns that refundability would turn the tax system into a welfare system and lead to widespread fraud and abuse.[261]

The political economy of renewable energy policy explains why federal incentives for emerging energy technologies traditionally fall within the domain of tax policy.[262] The systemic bias in favor of tax expenditures, along with the dozens of failed non-tax policy proposals for renewable energy, suggests that federal policy reform will most likely have to come from within the tax system. The bad news is that tax credits themselves have proven largely immune to reform. The good news is that tax policy support for renewable energy does not have to take the form of tax credits.

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257. *See, e.g.*, Batchelder et al., *supra* note 31 (refundability); Wallace, *supra* note 183 (tradability).

258. *See* Wallace, *supra* note 183, at 237 (citing the examples of the Low-Income Housing Tax Credit and the New Markets Tax Credit).

259. *See* Batchelder et al., *supra* note 31, at 33 (referencing the Earned Income Tax Credit, the Child Tax Credit, and a small health insurance credit as the three principal refundable tax credits).

260. *Id.* at 43.

261. For a summary of the primary arguments against refundability of tax credits, see *id.* at 65-72. Due to the functional parallels between refundability and tradability, these arguments can also be applied against tradable tax credits. *See* WALLACE, *supra* note 183, at 247 (describing the economic equivalence between tradable and refundable tax credits and arguing that "[t]he efficiency of tradable tax credits matches, and in some instances may surpass, that of refundable tax credits").

262. *See* TAX EXPENDITURES, *supra* note 67, at 185-90. For a discussion of the history and importance of tax incentives for the economy broadly, see HUNGERFORD & GRAVELLE, *supra* note 57.

V. Smarter Tax Policy: MLPs and REITs for Renewables

Thinking outside the tax-credit box, policymakers could look to other sectors of the economy for guidance on how to best use tax policy to promote investment and economic growth in renewables. Doing so, they would likely come across MLPs and REITs, two tax-privileged structures with a proven track record of promoting investment in oil, gas, and other conventional energy infrastructure. MLPs and REITs foster investment in eligible assets and activities by granting the same access to capital markets as classic corporations while offering investors the same benefits of single-layer taxation as closely held partnerships.[263] To date, renewable energy developers must choose between capital market access through incorporation or single-layer taxation as a partnership—but lacking access to the MLP and REIT structures they cannot have both.[264] The history of MLPs and REITs reflects a trend toward gradual expansion of the scope of qualifying investments beyond exhaustible natural resources and classic real estate interests.[265] Access to the MLP and REIT structures would allow renewable energy developers and investors to combine the fundraising advantages of a corporation with the tax benefits of partnership. Merging the best of both worlds, MLPs and REITs could significantly reduce the cost of capital for renewable power projects, foster popular support, and create stronger, more transparent markets for renewables.[266] Federal policymakers have a choice between various options how to best open MLPs and REITs up to renewable energy investment.[267] From a budgetary perspective, MLPs and REITs for renewables would impose significantly lower costs (if any) on taxpayers than the existing regime of federal tax credits.[268] Before renewable energy MLPs and REITs can become a reality, however, a number of closely related policy challenges will need to be resolved.[269]

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263. *See infra* Section V.A.

264. In order to monetize their tax benefits by bringing in a tax equity investor, most developers use some form of partnership structure. *See supra* Section III.E. The renewables industry has recently begun to experiment with so-called "yieldcos" that use classic corporate structures to raise low-cost equity capital on public markets. NRG Yield, the first yieldco to go public in July 2013, purports to achieve similar tax efficiencies to MLPs and REITs by putting together a carefully balanced portfolio of income-generating assets and tax benefit-generating assets in order to minimize overall tax liabilities at the entity level. Very few market participants, however, possess the necessary expertise or have sufficiently diversified asset portfolios to replicate this approach, casting serious doubt on the capacity of yieldcos to reduce the cost of capital for renewable energy at the same scale as MLPs or REITs. *See* Joseph Salvatore & Stefan Linder, *Yieldcos, FAITs, and More: Sizing the Market for North American Exit Vehicles*, BLOOMBERG NEW ENERGY FIN. 4 (2013) ("[NRG's] approach is difficult to replicate—many renewable owners do not own these types of assets and thus cannot enjoy this access to the offsetting revenue streams of fossil generation.").

265. *See infra* Section V.B.

266. *See infra* Section V.C.

267. *See infra* Section V.D.

268. *See infra* Section V.E.

269. *See infra* Section V.F.

A. How MLPs and REITs Work

As their name implies, MLPs are limited partnerships, typically formed under the Delaware Revised Uniform Limited Partnership Act, with one or more general partners and thousands of limited partners.[270] The general partners usually hold an ownership stake of approximately two percent and are tasked with the partnership's management.[271] General partners may or may not have incentive distribution rights granting them a preferred share of the MLP's cash distributions that increases with each marginal increase in the partnership's overall cash distributions.[272] The MLP's limited partners, referred to as unitholders, provide capital in exchange for the prospect of quarterly cash distributions similar to a dividend but they have no part in the partnership's operations or management.[273] MLPs typically pay out all available cash to unitholders except for those cash flows that management considers required for "the proper conduct of the business."[274]

Like classic corporations, MLPs can be traded on public exchanges to increase investment liquidity and appeal to a broader range of investors.[275] MLPs typically do not own and operate their assets directly but do so indirectly through a subsidiary operating company.[276] Unlike classic corporations, MLPs are not taxed at both the entity and shareholder levels but, instead, pass all tax items through to their unitholders who then pay tax only at their individual rates.[277] As pass-through entities, MLPs can raise capital at lower cost, allowing them to build and operate low-return assets, such as rate-regulated pipelines while still offering rates of return that are high enough to attract

270. *See* Patrick W. Mattingly, *Master Limited Partnerships*, 28 ENERGY & MIN. L. INST. 118, 119, 125 (2008); *Master Limited Partnerships 101: Understanding MLPs*, NAT'L ASS'N PUBLICLY TRADED PARTNERSHIPS 38, http://www.naptp.org/documentlinks/Investor_Relations/MLP_101.pdf (last updated Oct. 4, 2013). Under state law, MLPs can also be organized as limited liability companies (LLCs) and other unincorporated entities while still maintaining the MLP treatment for federal tax purposes. *See* Mattingly, *supra*, at 119.

271. *See* MOLLY F. SHERLOCK & MARK P. KEIGHTLEY, CONG. RESEARCH SERV., R41893, MASTER LIMITED PARTNERSHIPS: A POLICY OPTION FOR THE RENEWABLE ENERGY INDUSTRY 2 (2011); Michael Blum et al., *MLP Primer Fifth Edition*, WELLS FARGO SEC., LLC: EQUITY RES. DEP'T 18 (2013), http://www.naptp.org/documentlinks/Investor_Relations/WF_MLP_Primer_V.pdf.

272. *See* SHERLOCK & KEIGHTLEY, *supra* note 271, at 2; Blum et al., *supra* note 271, at 24; *Master Limited Partnerships 101: Understanding MLPs*, NAT'L ASS'N PUBLICLY TRADED PARTNERSHIPS, *supra* note 270, at 41, 42.

273. *See* SHERLOCK & KEIGHTLEY, *supra* note 271, at 2; Blum et al., *supra* note 271, at 18; *Master Limited Partnerships 101: Understanding MLPs*, NAT'L ASS'N PUBLICLY TRADED PARTNERSHIPS, *supra* note 270, at 38.

274. *See* Blum et al., *supra* note 271, at 25.

275. *See* MATTINGLY, *supra* note 270, at 123; *Master Limited Partnerships 101: Understanding MLPs*, NAT'L ASS'N PUBLICLY TRADED PARTNERSHIPS, *supra* note 270, at 48.

276. *See* SHERLOCK & KEIGHTLEY, *supra* note 271, at 3.

277. *See* Blum et al., *supra* note 271, at 18; *Master Limited Partnerships 101: Understanding MLPs*, NAT'L ASS'N PUBLICLY TRADED PARTNERSHIPS, *supra* note 270, at 45.

investors on capital markets.[278] These tax privileges, however, come at the price of added complexities to tax reporting for MLP investors and the deterrence of certain investors from MLP investment.[279]

To qualify for the tax code's privileged treatment as a pass-through entity whilst maintaining the liquidity profile of a classic corporation, MLPs must derive at least ninety percent of their income from qualified sources.[280] These sources include dividends, rents, gains from the disposition of real estate and capital assets, certain income and gains from commodities trading, and income and gains from qualifying activities related to minerals and natural resources as well as industrial source carbon dioxide.[281] Qualifying activities range from the exploration, development, and mining to the production, processing, and transporting, to the marketing of minerals, natural resources, and industrial carbon dioxide.[282] But not all minerals and natural resources qualify: the tax code limits MLP eligibility to income from exhaustible minerals and natural resources, i.e., "any product of a character with respect to which a deduction for depletion is allowable under Section 611" of the Code.[283] The only statutory exception in favor of potentially inexhaustible resources allows MLPs to derive qualifying income from the transportation and storage of select renewable and alternative fuels, such as ethanol and biodiesel.[284]

The tax code sets forth a number of organizational requirements for a corporation, trust, or association that would otherwise be taxable as a domestic corporation to claim the tax-privileged status of a REIT.[285] For instance, REITs must be managed by trustees or directors and are required to issue transferable shares or certificates.[286] These shares or certificates cannot be closely held but, rather, must be owned by no fewer than 100 shareholders.[287]

REITs resemble MLPs in their avoidance of double-layer taxation but achieve their status as entities with single-layer taxation in a different manner. Unlike MLPs, REITs are not tax-exempt at the entity level.[288] Instead, a REIT can reduce its taxable income by a deduction in the amount of the qualifying

278. *See Master Limited Partnerships 101: Understanding MLPs*, NAT'L ASS'N PUBLICLY TRADED PARTNERSHIPS, *supra* note 270, at 47.

279. *See* SHERLOCK & KEIGHTLEY, *supra* note 271, at 4; Mattingly, *supra* note 270, at 128; *see also infra* Subsection V.F.3.

280. 26 U.S.C. § 7704(c) (2012); *see* SHERLOCK & KEIGHTLEY, *supra* note 271, at 6.

281. 26 U.S.C. § 7704(d)(1); *see also* Blum et al., *supra* note 271, at 18; Eric M. Conklin, *Master Limited Partnerships Primer–A Guide to Understanding the MLP*, CREDIT SUISSE FIRST BOS. EQUITY RES. 11 (2005).

282. 26 U.S.C. § 7704(d)(1)(E); *see also* Mattingly, *supra* note 270, at 120.

283. 26 U.S.C. § 7704(d)(1).

284. 26 U.S.C. § 7704(d)(1)(E).

285. 26 U.S.C.§ 856(a); *see also* Joshua L. Sturtevant, *The S-REIT: An Investment-Driven Solution to Solar Development Problems*, GEO. WASH. SOLAR INST. 12 (2011), http://www.ourenergypolicy.org/wp-content/uploads/2012/05/Sturtevant_S-REIT.pdf.

286. 26 U.S.C. § 856(a)(1)-(2).

287. 26 U.S.C. § 856(a)(5)-(6).

288. *See* Dowdall, *supra* note 27, at 1410.

dividends that are paid out to its shareholders. These dividends are then taxed only at the shareholder level as part of their gross income.[289] To qualify for the dividend deduction from taxable income, a REIT must distribute at least ninety percent of its annual taxable income to its shareholders.[290] Like MLPs, most REITs are publicly traded, although private REITs whose shares are not traded on public exchanges have recently gained in popularity, especially among tax-exempt institutional and foreign investors.[291]

To qualify for tax-privileged treatment as pass-through entities, the tax code requires REITs to fulfill the requirements of a series of asset and income tests.[292] The most important of a total of six asset tests requires that seventy-five percent of the REIT's assets be composed of real estate interests including mortgages and shares in other REITs, cash and cash items, as well as government securities.[293] Two income tests carry forth the emphasis on real estate. The first test requires ninety-five percent or more of the REIT's gross annual income to come from real estate rents, gains from the disposition of real estate and related mortgages, or investment income, including dividends, interests, and gains from stocks and securities sales.[294] The second test further emphasizes the focus on real estate by mandating that at least seventy-five percent of the REIT's gross annual income be derived from sources specifically related to real property.[295]

B. A Brief History of MLPs and REITs

Apache Petroleum formed the first MLP in 1981,[296] the same year that the Economic Recovery Tax Act of 1981 gave the partnership structure a boost by reducing the top individual marginal tax rate from seventy percent to fifty percent.[297] Five years later, the Tax Reform Act of 1986 further increased the tax attractiveness of partnership business structures by reducing the top marginal income tax rate for individuals to a level below the top marginal tax

289. *See id.*

290. 26 U.S.C. § 857(a)(1)(A); *see also* Dowdall, *supra* note 27, at 1410 (explaining that the minimum distribution requirement does not apply to capital gains income); David F. Levy et al., *Wind REITS: The New Tax Equity*, PUB. UTIL. FORTNIGHTLY, May 2012, at 36, 39, http://www.fortnightly.com/fortnightly/2012/05/wind-reits; Sturtevant, *supra* note 285, at 13.

291. *See* Dowdall, *supra* note 27, at 1410.

292. *See* 26 U.S.C. § 856(c)-(d) (asset and income tests); 26 U.S.C. § 857 (taxation of REITs).

293. 26 U.S.C. § 856(c)(4)(A).

294. 26 U.S.C. § 856(c)(2).

295. 26 U.S.C. § 856(c)(3).

296. *See* STAFF OF THE JOINT COMM. ON TAXATION, 75TH CONG., TAXATION OF MASTER LIMITED PARTNERSHIPS 4 (1987); SHERLOCK & KEIGHTLEY, *supra* note 271, at 5.

297. Pub. L. No. 97-34, 95 Stat. 172; *see also* Jane R. Livingstone & Thomas R. Omer, *Publicly Traded Partnerships, Tax Cost, and Choice of Entity*, 124 TAX NOTES 365, 367 (2009) (describing the historic reasons for the MLP structure's growing popularity in the 1980s).

rate for corporations.[298] The MLP structure was quickly adopted across a wide range of industries, from hotels and restaurants to investment advisors to amusement parks; even the Boston Celtics became an MLP.[299] Fearing that widespread use of the tax-privileged MLP structure in lieu of the classic corporation would erode the corporate tax base, Congress used the Omnibus Budget Reconciliation Act of 1987 to restrict the tax-privileged use of MLPs and other publicly traded partnerships.[300] As a general rule, any partnership whose ownership interests were publicly traded was, for tax purposes, to be treated as a corporation requiring it to pay taxes at both the entity and shareholder levels.[301] The Revenue Act of 1987, however, also established an exemption from corporate taxation for MLPs that derive at least ninety percent of their income from qualified sources, such as interests, dividends, rents, royalties as well as income and gains derived from minerals and natural resources.[302] One year later, the Technical and Miscellaneous Revenue Act of 1988 clarified that only "exhaustible" natural resources were intended to be sources of qualified income for tax-privileged MLPs.[303] The accompanying Senate Report further clarified that "qualifying income does not include, for example, income from . . . hydroelectric, solar, wind, or nuclear power production."[304] Following this initial wave of regulation, the tax code's provisions regarding qualifying income for MLPs remained unchanged for over twenty years.[305] The Emergency Economic Stabilization Act of 2008 added certain renewable and alternative fuels as well as industrial carbon dioxide to the catalog of eligible sources of income for tax-privileged MLPs.[306] Today some 120 MLPs are listed on major stock exchanges with a few more trading over the counter.[307] Seventy-five percent of MLPs are engaged in oil, gas, coal, and other energy-related activities.[308]

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298. Pub. L. No. 99-514, 100 Stat. 2085.

299. *See Master Limited Partnerships 101: Understanding MLPs*, NAT'L ASS'N PUBLICLY TRADED PARTNERSHIPS, *supra* note 270, at 14; John W. Slater, Jr., *Publicly Traded Limited Partnership: An Emerging Financial Alternative to the Public Corporation*, 39 BUS. LAW. 709, 710 (1984).

300. Pub. L. No. 100-203, 101 Stat. 1330; *see also* H.R. REP. NO. 100-391, at 1065 ("To the extent activities that would otherwise be conducted in the corporate form, and earnings that would be subject to two levels of tax (at the corporate and shareholder levels), the growth of publicly traded partnerships engaged in such activities tends to jeopardize the corporate tax base.").

301. 26 U.S.C. § 7704(a) (2012); SHERLOCK & KEIGHTLEY, *supra* note 271, at 6.

302. 26 U.S.C. § 7704(c); SHERLOCK & KEIGHTLEY, *supra* note 271, at 6. For more detail regarding MLP-qualifying income, see *supra* Section V.A.

303. Pub. L. No. 100-647, § 2004(f)(4), 102 Stat. 3342; s*ee also* H.R. REP. NO. 100-1104, at 17 ("The conference agreement follows the Senate amendment; except that . . . minerals from sea, water, the air, or similar inexhaustible sources, shall not be treated as a mineral or natural resource.").

304. S. REP. NO. 100-445, 424; *see also* H.R REP. NO. 100-795, at 400.

305. *See* SHERLOCK & KEIGHTLEY, *supra* note 271, at 7.

306. Pub. L. No. 110-343, 122 Stat. 3765.

307. *See Master Limited Partnerships 101: Understanding MLPs*, NAT'L ASS'N PUBLICLY TRADED PARTNERSHIPS, *supra* note 270, at 25.

308. *See id.* at 31.

The historic roots of REITs can be traced back to the late 1800s when so-called Massachusetts Trusts were used to pool property investments.[309] Following a series of judicial decisions with wide-ranging effects on REITs and their taxation,[310] today's REIT regime was established in 1960 when President Eisenhower signed the REIT Act into law.[311] The Act allowed for the formation of REITs that enjoy essentially the same single-layer taxation privileges as partnerships and other pass-through entities so long as the trust meets the requirements of a series of asset and income tests.[312] The REIT Act's declared purpose was to enable not only large institutional but also smaller individual investors to invest in large diversified portfolios of income-producing properties.[313] The first REITs to form, however, were so-called debt or mortgage REITs that originated construction loans.[314] It was not until after the Tax Reform Act of 1986 allowed REITs to both own and manage their properties that the REIT Act's original promise began to be fulfilled as so-called equity REITs holding actual real estate assets took over.[315] In 1991 the first REIT went public, marking what has been described as "the dawn of the modern REIT era."[316]

Over the past twenty years, a series of legislative and administrative acts have further bolstered the market appeal of REITs. The REIT Simplification Act of 1997 allowed REITs to provide a small amount of non-customary services to its tenants without disqualifying associated rental income from REIT eligibility.[317] The REIT Modernization Act of 1999 enabled REITs to form taxable subsidiaries that may deliver atypical services to REIT tenants and others.[318] The IRS, meanwhile, has issued a number of broadly applicable revenue rulings and fact-specific private letter rulings to clarify and broaden the

309. *See* Jonathan S. Kilpatrick, *REIT 101*, GREENFIELD ADVISORS (2012), http://www.greenfieldadvisors.com/docs/kilpatrick_jonathan/REIT_101_greenfield_advisors.pdf; Sturtevant, *supra* note 285, at 8.

310. *See, e.g.*, Morissey v. Commissioner, 296 U.S. 344 (1935); Crocker v. Malley, 249 U.S. 223 (1918); Eliot v. Freeman, 220 U.S. 178 (1910); Commissioner v. North Am. Bond Trust, 112 F.2d 545 (2d Cir. 1941).

311. The REIT Act was part of the Cigar Excise Tax Extension Act, Pub. L. No. 86-779, 74 Stat. 998 (1960).

312. *See* 26 U.S.C. § 856(c)-(d) (2012) (asset and income tests); 26 U.S.C. § 857 (taxation of REITs).

313. *See* STEFANO SIMONTACCHI & UWE STOSCHEK, GUIDE TO GLOBAL REAL ESTATE INVESTMENT TRUSTS 8 (2012); Sturtevant, *supra* note 285, at 10.

314. *See* Kilpatrick, *supra* note 309, at 2.

315. Pub. L. No. 99-514, 100 Stat. 2085; *see* SIMONTACCHI & STOSCHEK, *supra* note 313, at 9; Kilpatrick, *supra* note 309, at 2.

316. SIMONTACCHI & STOSCHEK, *supra* note 313, at 9.

317. Pub. L. No. 105-34, 111 Stat. 788. The REIT Simplification Act was part of the Taxpayer Relief Act of 1997.

318. Pub. L. No. 106-170, 113 Stat. 1860. The REIT Modernization Act was contained in the Ticket to Work and Work Incentives Improvement Act of 1999. For an example of REIT use of the taxable subsidiary option, see Levy et al., *supra* note 290, at 42.

definition of REIT-eligible assets and income.[319] Today there are approximately 190 publicly listed REITs, most of which trade on the New York Stock Exchange.[320]

C. What MLPs and REITs Can Do for Renewables

MLPs and REITs combine the tax privileges of traditional partnership structures with the fundraising advantages of classic corporations. Merging the best of both worlds, MLPs and REITs for renewables would enable project developers to tap into pools of capital that are wider, deeper, and cheaper than under currently available financing structures.[321] The broad investor appeal of both structures would help promote popular support for renewable energy development.[322] The investment liquidity of publicly traded MLPs and REITs could help create new markets and improve overall market transparency.[323] Standardization could help reduce deal complexity and associated transaction costs.[324]

1. Access to Capital Markets Lowers the Cost of Financing

MLPs and REITs have proven highly effective at raising capital on the New York Stock Exchange and other public capital markets. Despite the tax code's restrictions on eligible investment assets and activities,[325] MLPs boast a current market capitalization exceeding $490 billion with REITs weighing in at over $670 billion.[326] Remarkably, MLPs and REITs have been able to raise these impressive amounts of capital while offering relatively modest annual dividend yields of 6.5% and 4.2% respectively.[327] Comparing these numbers to the yield rates of fifteen percent or more that tax equity investors charge,[328] it

319. *See, e.g.*, Rev. Rul. 75-424, 1975-2 C.B. 269 (microwave transmitting and receiving towers); Rev. Rul. 69-94, 1969-1 C.B. 189 (railroad trackage, roadbed, bridges, and tunnels); I.R.S. Priv. Ltr. Rul. 125828-11 (Oct. 24, 2011) (LED billboards); I.R.S. Priv. Ltr. Rul. 130186-10 (Apr. 6, 2011) (cell towers); I.R.S. Priv. Ltr. Rul. 114933-07 (Dec. 28, 2007) (data centers); I.R.S. Priv. Ltr. Rul. 147229-06 (Mar. 13, 2007) (electricity transmission and distribution systems).

320. *See REITWatch June 2013*, NAT'L ASS'N REAL ESTATE INVESTMENT TR. (2013), http://www.reit.com/sites/default/files/reitwatch/RW1306.pdf.

321. *See infra* Subsection V.C.1.

322. *See infra* Subsection V.C.2.

323. *See infra* Subsection V.C.3.

324. *See infra* Subsection V.C.4.

325. *See supra* Section V.A.

326. *See Master Limited Partnerships 101: Understanding MLPs*, NAT'L ASS'N PUBLICLY TRADED PARTNERSHIPS, *supra* note 270, at 33; NAT'L ASS'N REAL ESTATE INVESTMENT TR., *supra* note 320, at 1.

327. *See* Blum et al., *supra* note 271, at 11; Theodore Durbin et al., *MLP-IFICATION: FOCUS ON ENERGY*, GOLDMAN SACHS EQUITY RES. (2013); NAT'L ASS'N REAL ESTATE INVESTMENT TR., *supra* note 320, at 1.

328. *See supra* Section III.B.

becomes apparent by just how much renewable energy projects could reduce their cost of equity capital given access to MLP and REIT financing.

Moreover, unlike current tax equity structures,[329] both MLPs and REITs lend themselves to a well-balanced financing mix of equity and debt capital.[330] Without a tax equity investor to object to the dilution of her preferred access to cash flows, renewable energy projects can compete for debt capital on their merits. Manufacturer-backed, lifetime warranties reduce technology risk while long-term power purchase agreements with electric utilities minimize market off-take risks, making well-developed projects attractive for debt investors.[331] The capacity to combine low-cost equity capital from public markets with readily available debt at low interest rates puts MLPs and REITs in a prime position to drive down the overall cost of capital for renewable power projects.

At a time when financing charges can drive up a renewable energy project's overall cost of electricity by up to fifty percent,[332] MLPs and REITs could go a long way in cutting the cost of renewable power.

2. Broad Investor Appeal Promotes Popular Support

The capital market success of MLPs and REITs is a testament to both structures' ability to appeal to a broad spectrum of investors, ranging from pension funds, sovereign wealth funds, and other large-scale institutional investors to small-scale retail investors who trade stocks for their personal accounts.[333] MLPs and REITs can be structured to pool otherwise illiquid financial assets, such as solar lease contracts or wind power purchase agreements, into tradable investment products.[334] Such securitization would not only help attract investors who are deterred by the illiquidity of renewable energy investment under the current regime of tax credits.[335] Use of MLPs and

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329. *See supra* Section III.F.

330. *See* Blum et al., *supra* note 271, at 105; NAT'L ASS'N REAL ESTATE INVESTMENT TR., *supra* note 320, at 2.

331. For an introduction to the risk-and-return reasoning of debt and other investors regarding renewable energy projects, see David Feldman & Edward Settle, *Master Limited Partnerships and Real Estate Investment Trusts*, NAT'L RENEWABLE ENERGY LABORATORY 22-23 (2013), http://www.nrel.gov/docs/fy14osti/60413.pdf; Uday Varadarajan et al., *The Impacts of Policy on the Financing of Renewable Projects: A Case Study Analysis*, CLIMATE POL'Y INITIATIVE 3-6 (2011), http://climatepolicyinitiative.org/wp-content/uploads/2011/12/Policy-Impacts-on-Financing-of-Renewables.pdf.

332. *See* Michael Mendelsohn et al., *The Impact of Financial Structure on the Cost of Solar Energy*, NAT'L RENEWABLE ENERGY LABORATORY 21 (2012), http://www.nrel.gov/docs/fy12osti/53086.pdf; Varadarajan et al., *supra* note 331, at 24.

333. *See* W. Bruce Bullock et al., *Leveling the Playing Field: The Case for Master Limited Partnerships for Renewables* 8 (2012), http://www.pressdocs.cox.smu.edu/maguire/AWEA%20final%20report%205-12.pdf; Mormann & Reicher, *supra* note 158. For a more granular discussion of MLPs' and REITs' respective appeal to various investor types, see *infra* Subsection V.F.3.

334. *See* Mendelsohn & Feldman, *supra* note 34, at 5.

335. *Id.* at 6.

REITs as securitization vehicles could also expand access to lower-cost public capital to smaller projects and developers with less financial backing.[336]

The need for either taxable income or tax equity, along with the exclusivity of today's elite circle of tax equity investors, has earned renewable energy tax credits the label of a "rich man's feed-in tariff."[337] In contrast, MLPs and REITs for renewables could usher in a veritable democratization of America's energy future. Just as REITs were originally introduced to encourage small-scale individual investment in large-scale commercial real estate development, so could MLPs and REITs empower individual investors to participate in a renewable energy project and its profits.[338] Publicly traded shares in renewable energy MLPs and REITs would allow millions of Americans to invest in the nation's energy future.

Besides lowering the industry's cost of capital, the democratization effect of crowdfunding for renewables through MLPs and REITs offers another, less salient but similarly important, benefit to renewable energy developers. Recent scholarship has identified local acceptance and other behavioral factors as key determinants of a renewable energy policy's deployment success.[339] When renewable power projects struggle to overcome local not-in-my-backyard reservations, they often suffer from longer lead times and expensive litigation that drive up overall project costs, as evidenced by the fierce opposition to wind power projects in Vermont, Wisconsin, Wyoming, and the Nantucket Sound.[340] Conversely, renewable power projects that enjoy local support proceed more swiftly and more cost-effectively, as illustrated by the deployment success of participatory structures such as wind cooperatives, citizen wind farms, and community solar projects.[341] Simply speaking, greater involvement in renewable energy projects fosters higher levels of local acceptance.[342] With their own stake in America's clean energy future, MLP and REIT investors will likely become more supportive of local renewable energy development, instead of feeling like the victims of an aesthetic assault on their backyards by anonymous, corporate developers exploiting a rich man's policy.[343] Thanks to its favorable impact on zoning, permitting, and other local gate-keeping

336. *Id.*

337. David Toke, *Are Green Electricity Certificates the Way Forward for Renewable Energy? An Evaluation of the United Kingdom's Renewables Obligation in the Context of International Comparisons*, 23 ENV'T & PLANNING C: GOV'T & POL'Y 361, 368 (2005).

338. *See supra* Section V.B.

339. *See* Mormann, *supra* note 17, at 927.

340. For details on local zoning efforts against wind development in Wyoming, the protracted conflict over wind power projects off Cape Cod, and debates over the aesthetics of ridgeline wind projects in Vermont, see Timothy P. Duane, *Greening the Grid: Implementing Climate Change Policy Through Energy Efficiency, Renewable Portfolio Standards, and Strategic Transmission System Investments*, 34 VT. L. REV. 711, 775 (2010); *see also* Michaels, *supra* note 242, at 98 (discussing growing localized hostility to wind project development).

341. *See* Mormann, *supra* note 17, at 963.

342. *Id.*

343. *See* Mormann, *supra* note 247, at 723; Toke, *supra* note 337, at 368.

functions, widespread MLP and REIT investment in renewables has the potential to reduce project lead times and thereby translate to real savings for renewable power developers and, ultimately, electricity ratepayers.

3. Investment Liquidity Creates Markets and Transparency

With publicly traded shares, MLPs and REITs could dramatically improve the liquidity of renewable energy investment. Under the current regime, the tax code's recapture rules penalize the sale and resale of tax equity stakes in renewable power projects.[344] In contrast, renewable energy MLPs and REITs trading on major exchanges would allow investors to time their investment decisions according to their own needs as well as market developments. By promoting greater investment liquidity, MLPs and REITs for renewables could provide three distinct benefits to investors and developers over the useful life of a project. First, the option value of being able to sell shares whenever necessary or convenient would greatly increase the ability of renewable power developers to cost-effectively raise much needed up-front equity capital to finance their projects.[345]

Second, MLPs and REITs would help create a sound secondary market for existing renewable energy projects to (re)finance themselves. This would be especially important in light of the marketplace's current reliance on scarce tax equity. Once a project's eligibility for tax credits and the associated recapture period have lapsed, the project no longer needs to maintain costly tax equity capital. Meanwhile, new projects are constantly searching for tax investors in order to monetize federal tax credits. In the interest of overall market efficiency and growth, therefore, tax equity that is no longer needed for existing projects should be reinvested as quickly as possible in order to finance new renewable power development.[346] Similarly, the developer should be free to pull out and reinvest her own equity capital to develop the next project as soon as possible. In both cases, however, reinvestment first requires a viable exit option. MLPs and REITs can provide that exit option by allowing renewable energy projects to replace developer equity and tax equity with shareholder capital raised on public markets. Remarkably, demand for such exit vehicles will be strong in the foreseeable future even if Congress decides not to renew the production tax credit for wind and the solar investment tax credit is, indeed, phased down at the end of 2016. Whatever the future holds for tax credit support for renewables, thousands of megawatts of recently deployed solar and wind power capacity[347] will exhaust their eligibility for tax credits in the next five to ten

344. *See supra* Section III.D.

345. *See* Meister, *supra* note 192, at 18 (highlighting the premium investors place on investment liquidity).

346. *See* Alex Kovacheva & Michel Di Capua, *Master Limited Partnerships for U.S. Renewables: Panacea or Pie in the Sky?*, BLOOMBERG NEW ENERGY FIN. 8 (2012).

347. *See supra* Section II.A.

years.[348] No longer dependent on tax-equity-driven deal structures,[349] these assets will look to refinance themselves through tax-efficient investment structures with access to low-cost capital. Combining the tax benefits of a partnership with the fundraising perks of a classic corporation, MLPs and REITs represent ideal exit vehicles for mature and no longer tax-credit-eligible renewable power assets.

The third benefit from greater investment liquidity for renewables through publicly traded MLPs and REITs hinges on the role of capital markets as conveyors of information. As demand and supply determine the trading prices of shares, they also provide important information to investors. The trading prices for renewable energy MLP and REIT shares may help investors better assess a project's technological reliability, resource quality, off-take risk, and other critical characteristics. Furthermore, publicly traded MLPs and REITs are subject to the usual capital market reporting requirements, which would further improve the transparency of renewable energy development and investment.[350] Together, the transparency of capital markets and the resulting competitive pressures can be expected to further strengthen the professionalism and quality of renewable power project development.[351]

4. Standardization Reduces Deal Complexity and Cost

Finally, MLPs and REITs for renewables would significantly reduce the complexity of project financing structures and, with it, associated lead times and transaction costs.[352] Tax equity deals require one-off structures that are custom-tailored to meet the specific needs of the individual tax investor. In the few instances that a developer can convince the tax investor to bring in a lender to help finance the project with debt capital, the deal structure is further complicated by the need to negotiate and execute forbearance and standstill agreements between the lender and tax equity investor.[353] In contrast, MLPs and REITs allow for relatively standardized deal structures that can assemble a portfolio of projects under the same ownership entity and thereby help reduce complexity and transaction costs.[354] The larger volume and similarity of pooled

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348. *See supra* Subsections I.B.1 and I.B.2 (discussing the five- and ten-year tax credit eligibility periods for solar, wind, and other renewable energy technologies).

349. *See supra* Section III.E.

350. *See, e.g.*, SIMONTACCHI & STOSCHEK, *supra* note 313, at 20; Mattingly, *supra* note 270, at 126.

351. Market analysts, fund managers, institutional investors, and other participants and observers of capital markets can be expected to assume if not refine the gate-keeping function currently fulfilled by tax equity investors. *See* CHADBOURNE & PARKE LLP, *supra* note 51, at 37 (discussing the impact that competition among developers for scarce tax equity has had on the quality of projects).

352. For a detailed discussion of the cost and complexity of tax equity financing structures for renewable energy, see *supra* Section III.E.

353. *See supra* Section III.F.

354. *See, e.g.*, SIMONTACCHI & STOSCHEK, *supra* note 313, at 14; Mattingly, *supra* note 270, at 126.

assets is expected to lower the per-unit costs of legal, engineering, and environmental due diligence.[355] Moreover, renewable energy developers that use MLPs and REITs to finance and operate their projects need not reinvent the wheel. Instead, they can model their financing and operating structures after one of the many MLPs or the growing number of REITs for conventional energy sources with similar risk-and-return profiles.[356] In the words of the National Renewable Energy Laboratory, an "advantage[] to expanding the eligibility of REITs and MLPs to include solar equipment is that solar development would have access to an entire industry of lawyers, financiers, and investors with the understanding, and experience, to deploy billions of dollars in capital efficiently and effectively through REITs and MLPs."[357]

D. How to Open MLPs and REITs to Renewables

REITs could be opened to renewable energy investment in one of two ways. In a first-best scenario, Congress would amend the pertinent sections of the tax code to add wind turbines, solar panel installations, and other renewable energy facilities as qualifying assets.[358] Additionally, income from the generation and sale of electricity produced with these assets would need to be defined as REIT-eligible income.[359] Alternatively, the IRS could issue new regulations, revenue rulings, or private letter rulings to clarify that renewable energy facilities meet the asset and income test requirements for REIT eligibility. Given their broader reach, regulations or revenue rulings would create greater policy certainty than fact-specific private letter rulings and thereby encourage more investment.[360] Some doubt remains, however, whether the existing statutory language can be interpreted to include all renewable power plants as REIT-eligible assets and sources of income. The statutory construction hinges on the question whether or not a renewable energy installation qualifies as real property under the tax code.[361] Recent scholarship suggests that the pertinent REIT provisions could be construed to justify an IRS ruling that solar photovoltaic systems and wind turbines are REIT eligible, while biomass-burning and geothermal systems would be more difficult to fit under the asset and income rules.[362] Others see greater, albeit not

355. *See* Mendelsohn & Feldman, *supra* note 34, at 2.

356. For an overview of the many energy-related MLPs that could serve as model structures for a renewable energy MLP, see *Master Limited Partnerships 101: Understanding MLPs*, NAT'L ASS'N PUBLICLY TRADED PARTNERSHIPS, *supra* note 270, at 30.

357. Feldman & Settle, *supra* note 331, at 20.

358. *See* 26 U.S.C. § 856(c) (2012).

359. *See* 26 U.S.C. § 856(d).

360. For a detailed discussion of the correlation between policy certainty and renewable energy investment, see Mormann, *supra* note 247, at 705.

361. *See, e.g.*, Dowdall, *supra* note 27, at 1413; David Feldman et al., *The Technical Qualifications for Treating Photovoltaic Assets as Real Property by Real Estate Investment Trusts (REITs)*, NAT'L RENEWABLE ENERGY LABORATORY (2012), http://www.nrel.gov/docs/fy12osti/55396.pdf.

362. *See* Dowdall, *supra* note 27, at 1418; Feldman et al., *supra* note 361, at 10.

insurmountable challenges to applying existing REIT provisions to entire wind turbine installations.[363] To add further complexity, IRS regulations or rulings on the tax treatment of renewable energy installations as REIT-eligible real property could create unwanted inconsistencies between federal and state law that treats some of these installations as tax-exempt personal property.[364] IRS regulations or rulings in favor of renewable energy REITs may appear the more viable path forward from a political economy perspective. The aforementioned challenges, however, suggest a holistic legislative overhaul of the tax code's REIT provisions—in close coordination with state governments—as the better, albeit more politically challenging path forward.[365]

In the case of MLPs, the tax code's express reference to *exhaustible* natural resources leaves little room to construe the statutory language in a way that would justify IRS regulations or rulings in favor of MLP eligibility for renewable energy projects.[366] The legislative materials leave no doubt that Congress intended to exclude wind, solar, and other renewable energy technologies.[367] This restrictive interpretation of the tax code's MLP provisions is further supported by the evident need for Congressional action to add ethanol, biodiesel, and other renewable fuels to the list of qualifying natural resources.[368] Accordingly, the best—and likely only—path forward would require Congress to amend the tax code to expressly include income derived from the generation and sale of electricity from renewable energy among MLP-qualifying sources of income. The Master Limited Partnerships Parity Act that was recently introduced into the 113th Congress with bipartisan co-sponsorship in both the House and Senate provides for such an amendment.[369] In pertinent

363. *See* Levy et al., *supra* note 290, at 39.

364. *See* Feldman et al., *supra* note 361, at 10 (warning that many states treat solar photovoltaic equipment as tax-exempt personal property).

365. As this Article is going to press, the IRS has just proposed new regulations to clarify the definition of real property for the purposes of REIT eligibility, also with an eye toward renewable energy power generation assets. *See* Definition of Real Estate Investment Trust Real Property, 79 Fed. Reg. 27,508 (proposed May 14, 2014) (to be codified at 26 C.F.R. pt. 1). The proposed regulations and their sample application by the IRS to solar power generation assets suggest a Pyrrhic victory for renewables. Based on its proposed rules, the IRS grants REIT eligibility to smaller-scale, commercial and residential solar assets but denies REIT eligibility to utility-scale solar assets. *Id.* at 27,514, 27,515 (Examples 8 & 9). This differential treatment appears to be based, in large part, on the IRS's questionable assumption that solar assets for smaller-scale installations are custom-tailored and, once installed, cannot be removed and reinstalled elsewhere without damage. *Id.* (Example 9(ii)-(iii)). In reality, most of the materials used for solar rooftop and other smaller-scale installations are mass-produced in the same standardized production cycles as utility-scale materials and can be removed and reinstalled without major complications. This is not to suggest, however, that neither utility-scale nor smaller-scale solar assets should be granted REIT eligibility. Rather, for its finalized regulations, the IRS should include solar, wind, and other renewable power generation assets in its safe harbor list of REIT-eligible, inherently permanent structures, to ensure both legal certainty and more cost-effective tax policy support for low-carbon renewables. *Id.* at 27,511 (§ 1.856-10(d)(2)(iii)(B)).

366. *See* 26 U.S.C. § 7704(d)(1) (2012).

367. *See supra* note 304 and accompanying text.

368. *See supra* Section V.B.

369. *See* H.R. 1696, 113th Cong. (2013); S. 795, 113th Cong. (2013) [hereinafter "MLP Parity Act"].

part, the Act proposes to add the following language to the tax code's catalog of MLP-eligible sources of income:

> (ii) RENEWABLE ENERGY- The generation of electric power exclusively utilizing any resource described in section 45(c)(1) or energy property described in section 48 (determined without regard to any termination date), or in the case of a facility described in paragraph (3) or (7) of section 45(d) (determined without regard to any placed in service date or date by which construction of the facility is required to begin), the accepting or processing of such resource.[370]

It remains to be seen whether growing bipartisan support will allow the MLP Parity Act to pass both chambers of Congress and become law. The timing for such an initiative, however, could hardly be better. Tax reform has become a top priority for federal policymakers. One can only hope that they will seize the opportunity to gradually replace wasteful and inefficient tax policy such as the tax credit regime for renewables with smarter tax policy, including MLPs and REITs for renewable energy.

E. Budget Implications of MLPs and REITs for Renewables

The most commonly voiced concerns over opening MLPs and REITs to renewable energy investment revolve around fears that extending the structures' tax privileges to renewables "could narrow the corporate tax base, which is one of the reasons access to this structure was limited in the first place."[371] In the interest of fiscal sustainability, some analysts and politicians suggest that, rather than expand MLP and REIT eligibility beyond oil, gas, and other conventional energy infrastructure, the two structures and their respective tax privileges should be abolished altogether.[372] Similarly, the End Polluter Welfare Act, introduced in both chambers of the 112th Congress in 2012, called for the elimination of virtually all tax privileges for fossil fuels, including their eligibility for MLP investment.[373] To be sure, elimination of the panoply of tax subsidies for oil, gas, coal, and other conventional energy would go a long way in cutting federal tax expenditures. To do so at the expense of access to similar incentives for emerging low-carbon renewable energy technologies, however, would further entrench high-carbon energy incumbents. Thanks to decades of federal subsidies these incumbents have reached such strong market positions that emerging renewables struggle to overcome significant marketplace barriers

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370. H.R. 1696, 113th Cong. (2013); S. 795, 113th Cong. (2013). Besides renewable energy, the Master Limited Partnerships Parity Act aims to open MLPs to a range of other sustainable energy investments, including building energy efficiency, combined heat and power, electricity storage, and renewable thermal energy. *Id.*

371. SHERLOCK & KEIGHTLEY, *supra* note 271, at 9.

372. *See, e.g.*, Doug Koplow, *Too Big to Ignore: Subsidies to Fossil Fuel Master Limited Partnerships*, EARTH TRACK (2013), http://priceofoil.org/content/uploads/2013/07/OCI_MLP_2013.pdf (arguing that MLPs should be abandoned altogether).

373. *See* H.R. 5745, 112th Cong. (2012); S. 3060, 112th Cong. (2012).

to entry even when they receive federal (and state) incentives to help them become cost-competitive, let alone without these incentives.[374] Moreover, sweeping elimination of all energy subsidies would raise the cost of energy to industry and consumers which, in turn, would stifle overall economic activity and growth, threatening American leadership and competitiveness in the global economy.[375]

Concern over the budgetary impacts of new tax policy is well warranted. It is important, however, to evaluate these impacts in context. In the case of MLPs and REITs for renewables this context assuages fears that extending both structures to renewable energy investment could erode the corporate tax base. As discussed earlier, the vast majority of renewable energy projects use some version of the classic partnership structure to finance themselves.[376] Given the partnership's character as a pass-through entity, these project companies do not pay income tax at the entity level. In other words, income from renewable energy projects is already not subject to corporate income tax. If these projects are given access to the MLP and REIT structures it is not their tax status that will change but their ability to raise low-cost capital on public markets.[377] With or without access to MLPs and REITs, the income of renewable energy projects does not factor into the corporate tax base. Since the counterfactual to renewable energy MLPs and REITs is, in most instances, not the renewable energy corporation but rather the renewable energy partnership, fears that opening MLPs and REITs to renewables would erode the corporate tax base are unfounded.[378] It is impossible to erode what was never there. In other words, renewable energy MLPs and REITs will not cost taxpayers any more in foregone tax revenue than existing renewable energy partnerships that already enjoy pass-through taxation,

Even the absolute (as opposed to additional) cost to taxpayers of giving renewable energy access to MLPs and REITs is expected to be relatively modest. In its recent scoring of the MLP Parity Act's projected impact on the federal budget, the Joint Committee on Taxation forecast that the Act's implementation would require tax expenditures of $307 million over five years

374. For a detailed discussion of the marketplace barriers to entry for renewable energy technologies, see Mormann, *supra* note 17, at 919.

375. *See* SHERLOCK & KEIGHTLEY, *supra* note 271, at 10; Mormann & Reicher, *supra* note 158.

376. *See supra* Section III.E.

377. *See also Hearing on Clean Energy Financing Before the S. Natural Res. & Energy Comm.*, 113th Cong. 7 (2013) (statement of Richard Kauffman), http://www.energy.senate.gov/public/index.cfm/files/serve?File_id=0488fbd8-d2b9-4fae-962f-04833e7f78d5 ("[T]he benefit in the cost of capital is less about the tax benefits of MLPs and REITs and more about the fact that the cost of equity is less in the stock market than in private equity.").

378. It should be noted that the choice between partnership and corporate structure might be more challenging if the current system of tax credits and the resulting need for tax equity were eliminated.

and $1.3 billion over ten years.[379] These numbers are remarkable for two reasons. First, they suggest a significantly lower cost to taxpayers than the existing regime of federal tax credits for renewables, pegged at a total of $12.6 billion for fiscal years 2013-17.[380] Second, the MLP Parity Act, as analyzed by the Joint Committee on Taxation, would grant MLP access not only to renewable energy but also to a range of other clean energy technologies, including energy efficiency, carbon capture and sequestration, combined heat and power, electricity storage, and renewable fuels.[381] Accordingly, renewable energy MLPs should be expected to cost taxpayers only a fraction of the MLP Parity Act's overall projected cost. Importantly, the MLP Parity Act's relatively low budgetary impact should not be misunderstood as an indication that the Joint Committee on Taxation does not expect the MLP structure to be very popular among clean energy developers and investors. On the contrary, the Committee's budget estimates suggest that clean energy MLPs are, in fact, expected to raise close to $18 billion of equity capital in the first five years and nearly $60 billion over ten years.[382]

F. Making MLPs and REITs for Renewables a Reality

Before MLPs and REITs can become successful drivers of renewable energy investment, a range of challenges will need to be addressed by both policymakers and developers. Naturally, MLPs and REITs should only be opened up to renewables if they, in fact, meet widespread developer and investor needs.[383] Federal policymakers will need to determine the relationship between MLPs and REITs for renewable energy and existing tax incentives.[384] If renewable energy MLPs and REITs are to reduce project financing costs at a meaningful scale, the two structures must be able to leverage private capital from currently sidelined investors.[385] Finally, developers need to understand which of the two structures most appeals to the particular type(s) of investor they want to target.[386]

1. If You Build It Will They Come?

Every policy, no matter how smart in theory, will only be successful in practice if its implementation creates the right behavioral incentives. Publicly

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379. *See* Felix Mormann et al., *Clean Energy Scores a Success with the Master Limited Partnership Act*, BROOKINGS INST. (2013), http://www.brookings.edu/research/opinions/2013/12/19-clean-energy-mormann-reicher-muro.

380. *See* JOINT COMM. ON TAXATION, *supra* note 117, at 31.

381. *See* H.R. 1696, S. 795, 113th Congress (2013).

382. *See* Mormann et al., *supra* note 379.

383. *See infra* Subsection V.F.1.

384. *See infra* Subsection V.F.2.

385. *See infra* Subsection V.F.3.

386. *See infra* Subsection V.F.4.

traded renewable energy MLPs and REITs can only deliver the aforementioned benefits to renewables[387] if they are met with sufficient investor interest to leverage direly needed low-cost capital. While investor behavior is not easy to predict, there is good reason to believe that MLPs and REITs for renewables will appeal to a deep and diverse pool of investors.

Strong historic growth in the market capitalization of MLPs and REITs, despite offering modest dividend payments,[388] suggests that investor demand for both structures exceeds current supply. Existing MLPs and REITs have a track record of leveraging capital from large-scale institutional and small-scale retail investors alike.[389] Renewable energy MLPs and REITs may, in fact, possess an even greater investor appeal. A recent analysis by the National Renewable Energy Laboratory suggests that "a solar MLP or REIT would have a similar, or perhaps lower, risk profile compared to their traditional counterparts,"[390] With similar off-take and other market risks across the renewables industry, the case is likely to be even stronger for projects using more mature and, hence, lower-risk technologies, such as wind or biomass power generation. Already, renewable energy deployment is recognized as a lucrative investment opportunity, as evidenced by the $850 million bond offering for Warren Buffet's Topaz Solar Farm in California, which was oversubscribed by more than $400 million.[391] It is primarily a lack of suitable financial vehicles for equity investment in renewables that has kept trillions of dollars from pension funds and other institutional investors on the sidelines.[392] With risk-and-return profiles that meet or, potentially, exceed the requirements of these investors, MLPs and REITs for renewables have the potential to be game changers and raise billions of lower-cost capital.

2. Resolving the Interplay with Tax Credits for Renewables

There has been some concern whether opening MLPs and REITs up to renewables would create windfall for developers and investors if they are able to combine access to lower-cost public capital with the current regime of tax credits. Under current law, however, the possibility of such double dipping is limited.

In the MLP pass-through structure, both taxable income and associated losses, including any tax credits, pass through to the MLP's unitholders.[393] The

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387. *See supra* Section V.C.

388. *See supra* note 327 and accompanying text.

389. *See* Bullock et al., *supra* note 333, at 8.

390. *See* Feldman & Settle, *supra* note 331, at 22.

391. *See* Mendelsohn & Feldman, *supra* note 34, at 6.

392. *See* Raffaele Della Croce et al., *The Role of Pension Funds in Financing Green Growth Initiatives*, OECD PUBLISHING 22 (2011) http://www.climatebonds.net/wp-content/uploads/2011/09/OECD_Role_of_PFs_in_Financing_GreenGrowth-WP10.pdf; *see also* Mendelsohn & Feldman, *supra* note 34, at 21.

393. *See* SHERLOCK & KEIGHTLEY, *supra* note 271, at 39.

tax code's at-risk and passive-loss rules, however, severely constrain the ability of unitholders to monetize tax credits and depreciation benefits for renewable energy.[394] Introduced in the 1980s to curtail the abuse of partnerships as tax shelters, the at-risk rules limit the losses an investor can claim to the amount of capital she actually stands to lose.[395] For an individual MLP investor in a solar energy project, for example, this means that the maximum amount she can claim from the project's tax benefits to lower her tax bill is capped at the value of her investment. The tax code's passive-loss rules add further restrictions by limiting the taxable income to be offset with tax credits and other losses to passive income, which is defined to exclude salaries, wages, and retirement income as well as gains from stocks and bonds.[396] In fact, an individual investor holding interests in several MLPs cannot even use the losses and tax credits from one MLP to offset taxable income from another MLP.[397] It should be noted that the tax code's passive-loss rules do not apply to unitholders that are publicly traded corporations, which are allowed to use tax credits and other losses from their MLP investment to lower their tax liability from other passive or active income up to the limit imposed by the at-risk rules.[398] For non-corporate MLP investors, however, the passive-loss rules impose significant limitations on their ability to monetize a renewable energy project's tax credits.

Unlike MLPs, REITs do not pass the right to claim tax credits and other losses through to their shareholders.[399] The stranded tax credits, however, offer little value to the REIT at the entity level. After all, a REIT has little use for tax credits given that it can avoid taxation at the entity level altogether by distributing its income to its shareholders.[400] In fact, the tax code requires REITs to pass at least ninety percent of their taxable income through to their shareholders.[401] As a result, renewable energy REITs could use federal tax credits to offset ten percent of their taxable income at most.

In light of the tax code's at-risk and passive-loss rules, analysts have noted that, under current law, "it is almost impossible for single-project MLPs to fully monetize tax credits and depreciation benefits."[402] "Nor do those credits generally provide any significant benefit at the REIT level."[403] In light of these limitations, some have concluded that the extension of MLPs and REITs to

394. *See* 26 U.S.C. §§ 465, 469 (2012).

395. *See* 26 U.S.C. § 465(a)(1)(B); *see also* Kovacheva & Di Capua, *supra* note 346, at 9 (discussing the at-risk rules' implications for renewable energy MLPs).

396. *See* 26 U.S.C. § 469(c).

397. *See* 26 U.S.C. § 469(k).

398. *See* 26 U.S.C. § 469(a)(2); *see also* Kovacheva & Di Capua, *supra* note 346, at 10 (discussing the passive-loss rules' implications for renewable energy MLPs).

399. *See* Dowdall, *supra* note 27, at 1422.

400. *See supra* Section V.A.

401. *See* 26 U.S.C. § 857(a)(1)(A).

402. Kovacheva & Di Capua, *supra* note 346, at 10.

403. Dowdall, *supra* note 27, at 1422.

renewable energy would need to be accompanied by changes to the tax code in order to allow for better compatibility with existing tax credits.[404]

Efficiency considerations, however, suggest that MLPs and REITs be opened for renewable energy investment without changes to the tax code's at-risk and passive-loss rules. Inviting renewable energy developers to combine cost-effective MLP and REIT financing with tax credit support would likely infuse projects with the same inefficiencies that haunt the current regime.[405] In the absence of meaningful reform, such as the authorization of refundability or tradability,[406] tax credits for renewable energy should eventually be replaced by access to MLPs and REITs and other, more cost-effective deployment policies. Sweeping reform that immediately ends tax credit support for renewables would likely prove disruptive to the industry as a whole.[407] Recent scholarship has demonstrated the critical importance of policy stability and certainty to stimulate sustainable investment in renewable energy.[408] Consequently, even a policy as inefficient as the current regime of federal tax credits should not be dismantled from one day to the next but, instead, phased out gradually allowing the industry time to prepare and adjust.[409]

In the interim, giving developers a choice between either traditional tax equity deals using tax credits or MLPs and REITs with access to low-cost capital would enable the market to determine which of the two policy tools offers greater value and to whom. Developers with well-established ties to tax investors may continue to prefer traditional tax equity financing while others, especially new market entrants, may well choose to raise capital on public markets through MLPs and REITs. Besides, market participants are likely in a better position than policymakers to identify and exploit creative deal structures, such as hybrid portfolio MLPs that hold both income-generating fossil and tax benefit-generating renewable power assets. These hybrid MLPs could achieve financial synergies, e.g., by using the income from the portfolio's fossil assets to monetize the renewable assets' tax benefits, as well as physical synergies, e.g., by building wind turbines to run the pumping stations of a natural gas pipeline. Until tax credits are fully phased out, the availability of two alternative financing models would also give developers a stronger

404. *See, e.g.*, SHERLOCK & KEIGHTLEY, *supra* note 271, at 9 ("If passive loss rules are restructured to allow investors to use these tax losses to offset other income, renewable energy investment might become more attractive."); BIPARTISAN POL'Y CENTER, *supra* note 21, at 17 n.24 ("Apart from changing the definitions of eligible activities under these rules, other changes would need to be made to section 469 of the tax code, which governs 'passive activity rules,' and to Section 465, which governs 'at-risk' rules.").

405. *See supra* Part III.

406. *See supra* note 257 and accompanying text.

407. For evidence of the disastrous effects of previous policy interruptions on the U.S. renewables industry, see MENDONÇA ET AL., *supra* note 40, at 173-75.

408. *See* Mormann, *supra* note 247, at 705, 711.

409. *See also* Statement of Dan W. Reicher, *supra* note 76, at 3, 8 (calling for a "smart transition" that gradually phases down tax credits while giving renewable energy access to MLPs and REITs).

bargaining position vis-à-vis tax investors helping them negotiate a lower yield rate for tax equity investments. Driving down the portion of tax credits' subsidy value that tax equity investors can appropriate would leave more tax dollars to directly fund wind turbines, solar installations, and other renewable energy infrastructure. Greater competition both among tax equity investors and, critically, between traditional tax equity structures and innovative MLP and REIT financing structures, could therefore increase the subsidy efficiency of tax credits, i.e., how many tax dollars actually go to fund the deployment of new renewable power capacity. Improvements in the subsidy efficiency would be even greater if Congress made renewable energy tax credits refundable and/or tradable, thereby eliminating the need for tax equity altogether. By diminishing or eliminating the tax equity investor's costly role as middle man, these gains in subsidy efficiency would allow Congress to phase down the face value of tax support for renewables, reducing the burden on taxpayers while still delivering the necessary level of support to ensure sustained deployment.

3. Understanding the Heterogeneity of Investor Needs

In the aggregate, MLPs and REITs appeal to a broad spectrum of investors.[410] Individually, however, each of the two structures exhibits special characteristics that make it more attractive to some investors and less attractive to others. The greater capacity of MLPs to pass tax losses and other benefits through to their investors is one such characteristic that will likely lead corporate investors to prefer renewable energy MLPs to REITs.[411] If MLPs and REITs are to become successful drivers of renewable energy investment, it is crucial that project developers understand which of the two structures to choose in order to appeal to their preferred type of investors.

All else being equal, retail investors who trade stocks for their personal accounts will likely prefer to invest in renewable energy REITs rather than MLPs due to differing tax reporting requirements. Tax reporting for REIT investments is similarly straightforward as tax reporting for a standard savings account. Investors simply use the Form 1099-DIV they receive from the REIT by January 31 to report their dividend income to the IRS.[412] MLP investors, on the other hand, are required to file the considerably more complex Form K-1 to declare their MLP-related income.[413] Given that MLPs are not required to file their partnership tax returns until April 15, investors may need to file for an extension of their own filing date to include Forms K-1 that they receive after April 15.[414] To make matters more complicated, MLP investors may be

410. *See supra* Subsection V.C.2.

411. *See supra* Subsection V.F.2.

412. *See* Levy et al., *supra* note 290, at 38.

413. *See* Durbin et al., *supra* note 327, at 12; *Taxation of Master Limited Partnerships*, WELLS FARGO ADVISORS 2 (2009).

414. *See* WELLS FARGO ADVISORS, *supra* note 413, at 2.

required to file state income returns for every state in which the MLP owns assets or conducts business.[415] While these tax reporting requirements apply to retail and institutional investors alike, they are more relevant to retail investors who are less likely than institutional investors to have a specialized tax advisor to prepare their tax filings.

Institutional investors, too, will likely judge the appeal of REITs and MLPs differently, especially if they are charities, pension funds, individual retirement accounts, foundations, endowments or other entities that are exempt from federal income taxation. For each of these entities, the tax exemption generally applies only to income that is related to the entity's original purpose.[416] Income from MLP investments in excess of $1,000 per year is considered taxable income from unrelated business and, therefore, subject to federal income taxation at the corporate tax rate.[417] The American Jobs Creation Act of 2004 Act has exempted MLP-related income of mutual funds from taxation as unrelated business taxable income.[418] Dividend income from REITs, on the other hand, is never treated as taxable income from unrelated business and, therefore, does not subject otherwise tax-exempt entities to income taxation.[419] As a result, tax-exempt investors will likely prefer renewable energy REITs to MLPs.

Finally, foreign investors will likely find renewable energy projects more attractive if they are structured as REITs rather than MLPs. Depending on the investment circumstances, REITs may allow a foreign investor to pay up to 39 percentage points less federal income tax for operating income distributions and up to 54 percentage points less tax on exit gains than MLPs.[420]

Conclusion

The current regime of federal tax credits for renewable energy reminds us that there is no one-size-fits-all policy to induce investment and economic growth. Tax credits may work well for mature industries that generate steady flows of taxable income to offset. But they are a poor fit for the emerging renewables industry whose high up-front capital intensity prevents projects from generating taxable profits for the first ten or more years of operation. In the absence of taxable income to offset, renewable energy project developers are unable to reap the immediate benefit of their projects' tax credits without the help of a tax equity investor who can monetize the credits by offsetting tax liabilities from other sources. The need for such tax equity, however, drives up

415. *See* Levy et al., *supra* note 290, at 38.

416. *See* SHERLOCK & KEIGHTLEY, *supra* note 271, at 5.

417. *See* Durbin et al., *supra* note 327, at 12; WELLS FARGO ADVISORS, *supra* note 413, at 2.

418. *See* Pub. L. No. 108-357, 118 Stat. 1418.

419. *See* Dowdall, *supra* note 27, at 1410.

420. *See* Levy et al., *supra* note 290, at 38.

a project's financing charges and transaction costs. In the process, a third or more of the tax credits' subsidy value is diverted away from project developers and into the pockets of bankers and lawyers. The resulting inefficiencies are bad news not only for the struggling renewables industry but, critically, for the federal government and its taxpayers.

The political economy of renewable energy favors tax policy over non-tax policy options. As tax credits prove inefficient yet immune to reform proposals to authorize their refundability or tradability, the time has come to phase them out in favor of other, more cost-effective tax policy options. Combining the tax benefits of a partnership with the fundraising advantages of a corporation, MLPs and REITs could dramatically reduce the cost of capital for renewable energy and thereby drive down the price of renewable electricity. With a proven track record for the cost-efficient promotion of oil, gas, and other conventional energy infrastructure, tax-privileged MLPs and REITs for renewables would foster policy parity while moving renewable energy a big step closer to grid parity and subsidy independence. Publicly traded MLPs and REITs would allow renewable energy projects to graduate from the constrained niche market for tax equity to public capital markets that appeal to large-scale institutional investors and smaller-scale individual investors alike. MLPs and REITs would promote popular support for renewables by allowing millions of Americans to invest in the nation's energy future. Most importantly, MLPs and REITs could deliver these and more benefits to renewable energy projects at significantly lower cost to taxpayers than the current regime of tax credits.

With tax reform a top priority for federal policymakers, the time has come for smarter tax policy that promotes renewable energy more effectively and at lower cost to the federal government and its taxpayers. MLPs and REITs prove that tax policy can, indeed, strike a sensible balance among some of the nation's most pressing concerns—from fiscal discipline to technology innovation to economic growth to climate change. We may have run out of money, but we have not run out of ideas. Let's use this intellectual capital to develop smarter tax policy for a cleaner, more democratic energy future.