

Picking Winners and Losers: A Structural Examination of Tax Subsidies to the Energy Industry

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I. INTRODUCTION

In debates over whether government should continue to subsidize renewable energy, politicians have repeatedly warned that government should not be “picking winners and losers.”¹ This way

1. See Tom Hamburger, *Conservative Groups Seek Limits During Lame Duck on Wind Energy Subsidies*, WASH. POST (Dec. 8, 2014), <http://www.washingtonpost.com/blogs/post-politics/wp/2014/12/08/conservative-groups-seek-limits-during-lame-duck-on-wind-energy-subsidies/> [<http://perma.cc/U7YV-SLE3>]; Timothy Cama, *Senate Calls Hearing on Energy Tax Policy*, HILL (Sept. 11, 2014), <http://thehill.com/policy/energy-environment/217451-senate-calls-hearing-on-energy-tax-policy> [<http://perma.cc/GHJ7-ZXNL>]. This has been the rallying cry for conservative Congress members for some time and is currently a part of the Republican platform. See *America's Natural Resources*, GOP, <https://www.gop.com/platform/americas-natural-resources/> [<https://perma.cc/FU67-JPB3>] (last visited Nov. 29, 2015). Recently, conservatives have proposed to eliminate tax credits, the primary source of federal support for renewable energy resources. See Michael Sandoval, *It's Time to Stop Picking Winners and Losers in the Energy Industry*, DAILY SIGNAL (Jan. 28, 2013), <http://dailysignal.com/2013/01/28/its-time-to-stop-picking-winners-and-losers-in-the-energy-industry/> [<http://perma.cc/5HKR-LFQE>]; see also Patrick Burke, *GOP Congressmen: Gov't Should Stop 'Picking Winners and Losers' in Energy Sector*, CNS NEWS (Mar. 2, 2012), <http://cnsnews.com/news/article/gop-congressmen-gov-t-should-stop-picking-winners-and-losers-energy-sector> [<http://perma.cc/6DKF-2Q4C>]. As discussed below, these bills do not touch the vast majority of the subsidies for fossil fuels which are set forth in other areas of the tax code. Some have argued that the government's track record has been more successful than the private market's. See Laurent Belsie, *Romney Zinger: Obama Backs 'Green' Energy Losers. Is He Right?*, CHRISTIAN SCI. MONITOR (Oct. 4, 2012), <http://www.csmonitor.com/Environment/EnergyVoices/2012/1004/Romney-zinger-Obama-backs-green-energy-losers-is-he-right-video> [<http://perma.cc/DDJ6-ZRWZ>]; see also Susan

of framing the debate undermines sensible policy analysis in two ways. First, it obscures the long history of federal support for fossil fuels; the United States has been picking winners and losers for over 100 years. Second, it fails to articulate what it means to “pick winners and losers,” to explain why doing so is less efficient than pursuing other economic policies, and to inquire why this suboptimal choice has been made. This article addresses these failings by examining two sets of tax subsidies to the energy industry, one for fossil fuels and the other for renewables.

The federal government has employed a variety of mechanisms to support the growth and development of the economy,² to diversify the country’s energy portfolio,³ and more recently, to reduce carbon emissions.⁴ These subsidies include direct grants, loans, loan guarantees, research and development support, preferential sales of electricity to public bodies and cooperatives,⁵ forbearance against regulation,⁶ and tax subsidies.⁷

Most of these forms of support have been scrutinized in detail. For example, a number of scholars have drawn attention to the

Kraemer, *Obama DOE Picked More Energy Winners than Silicon Valley VCs*, CLEAN TECHNICA (Oct. 21, 2011), <http://cleantechnica.com/2011/10/21/obama-doe-picked-more-energy-winners-than-silicon-valley-vc/> [<http://perma.cc/2L2E-TQVG>].

2. NANCY PFUND & BEN HEALEY, DBL INVESTORS, WHAT WOULD JEFFERSON DO? THE HISTORICAL ROLE OF FEDERAL SUBSIDIES IN SHAPING AMERICA’S ENERGY FUTURE (2011), <http://www.dblpartners.vc/wp-content/uploads/2012/09/What-Would-Jefferson-Do-2.4.pdf?597435&48d1ff> [<http://perma.cc/E5PH-4VUA>].

3. Diversifying the energy portfolio of the United States reduces security risks. See RYAN WISER, MARK BOLINGER & GALEN BARBOSE, USING THE FEDERAL PRODUCTION TAX CREDIT TO BUILD A DURABLE MARKET FOR WIND POWER IN THE UNITED STATES 1 (2007), https://emp.lbl.gov/sites/all/files/REPORT%20bnl%20-%2063583_0.pdf [<https://perma.cc/Q5DT-GANE>] (discussing the federal production tax credit, a government created incentive for investors in wind power). The United States has a much higher renewable resource base than most of countries in Europe, yet meets far fewer of its needs with renewable energy. See *id.*

4. President Barack Obama, Remarks on Climate Change at Georgetown University (June 25, 2013), <http://www.whitehouse.gov/the-press-office/2013/06/25/remarks-president-climate-change> [<http://perma.cc/TWW8-5WRY>].

5. U.S. ENERGY INFO. ADMIN., DIRECT FEDERAL FINANCIAL INTERVENTIONS AND SUBSIDIES IN ENERGY IN FISCAL YEAR 2010 viii–x (2011), <https://www.eia.gov/analysis/requests/subsidy/archive/2010/pdf/subsidy.pdf> [<https://perma.cc/VV2U-YF7H>] [hereinafter EIA 2010 REPORT].

6. See IMF, ENERGY SUBSIDY REFORM: LESSONS AND IMPLICATIONS 6 (Jan. 28, 2013), <http://www.imf.org/external/np/pp/eng/2013/012813.pdf> [perma.cc/HLM5-3L3S]. In estimating global annual energy subsidies, the IMF counted the absence of corrective taxation to address market failures as a subsidy. *Id.*

7. Mona L. Hymel, *Environmental Tax Policy in the United States, a “Bit” of History*, 3 ARIZ. J. ENVTL. L. & POL’Y 157, 159 (2013).

significant conflicts between energy law and environmental policy.⁸ Historically, the Department of Energy and its precursors have sought to maximize the potential of fossil fuels, reduce scarcity, address inefficiencies in the market, and promote sensible consumption.⁹ Fragmented authority,¹⁰ public choice dilemmas,¹¹ and entrenched interests¹² have constrained executive branch attempts to reform energy policy both by way of centralized decision-making under President Carter and through market deregulation under both Presidents Carter and Reagan.¹³ Energy law and environmental policy have developed as separate disciplines with little coordination.¹⁴

Other scholars have seen environmental law, itself, as an impediment to environmental goals. They have traced the transformation of environmental law in the United States, from its beginnings in tort law to the enactment of command and control regulation in the 1970s¹⁵ and the implementation of market-based mechanisms in the 1990s, as a drive toward increasing efficiency.¹⁶ Some critics have noted that environmental regulatory activity has stalled through the ossification of environmental regulations¹⁷ and

8. See JOSEPH P. TOMAIN, ENDING DIRTY ENERGY POLICY 235–38 (2011).

9. See *id.*

10. See *id.* at 44. Authority over energy regulation is divided between the Department of Energy, the Department of the Interior, and the Federal Regulatory Energy Commission. See *id.*

11. *Id.* at 121–23.

12. *Id.* at 239–43.

13. *Id.* at 32.

14. *Id.* at 51–52.

15. See Richard J. Lazarus, *The Greening of America and the Graying of United States Environmental Law: Reflections on Environmental Law's First Three Decades in the United States*, 20 VA. ENVTL. L.J. 75, 76–78 (2001). Rapid industrialization in the United States during and after World War II resulted in significant air and water pollution and hazardous waste production. See *id.* at 76. When tort law proved ill equipped to address these kinds of challenges, command-and-control regulations were developed to limit pollution by reducing production or installing equipment. *Id.* at 76, 78, 88. Firms were, at times, barred from certain activities that depleted key natural resources. *Id.* at 78.

16. See Richard Stewart, *A New Generation of Environmental Regulation*, 29 CAP. U. L. REV. 21, 97 (2001). To address the inefficiencies of command-and-control regulation, policymakers turned to market-based economic systems such as taxes, subsidies, and cap-and-trade programs and conducted cost-benefit analyses to determine when to take regulatory action. See *id.* at 38–128.

17. See Uma Outka, *Environmental Law and Fossil Fuels: Barriers to Renewable Energy*, 65 VAND. L. REV. 1679, 1680–83 (2012) (arguing that existing regulations contain significant accommodations for fossil fuels, that cost-effectiveness and cost-competitiveness models provide skewed analyses because they fail to consider the long-term health and

Congressional stalemate, yielding no significant environmental legislation in the last twenty years and leaving the advancement of environmental goals to private governance mechanisms.¹⁸ A number of scholars have argued that the complexity of current environmental challenges will call for flexible, multi-scalar, multimodal responses and collaboration between the national, regional, state, and local levels of government and the private sector.¹⁹

Tax subsidies to the energy industry have received considerably less attention, in part, because of their complexity and obscurity. A handful of scholars have examined how tax policy has affected land use decisions and impeded environmental goals.²⁰ They have also explored the use of tax as a tool to address concerns about the climate²¹ and the natural and built environment.²² Only a few

environmental costs incurred over the lifecycle of the fuel, and that the constrain-but-permit model entrenches fossil fuel dominance); *see also* Michael A. Livermore, *Reviving Environmental Protection: Preference Directed Regulation and Regulatory Ossification*, 25 VA. ENVTL. L.J. 311, 332–33 (2007).

18. *See* Michael P. Vandenberg, *Private Environmental Governance*, 99 CORNELL L. REV. 129, 133 (2013).

19. *See* Hari M. Osofsky, *Multiscalar Governance and Climate Change: Reflections on the Role of States and Cities at Copenhagen*, 25 MD. J. INT'L L. 64 (2010); *see also* Craig Anthony Arnold, *Fourth-Generation Environmental Law: Integrationist and Multimodal*, 35 WM. & MARY ENVTL. L. & POL'Y REV. 771 (2011) (arguing that neither monolithic nor fragmented approaches to environmental problems are working, and that environmental law is evolving toward use of multiple methods to manage complex environmental problems, requiring coordination for success); Elinor Ostrom, *A Diagnostic Approach for Going Beyond Panaceas*, 104 PROC. NAT'L. ACAD. SCI. 15,181 (2007), <http://www.pnas.org/content/104/39/15181.full.pdf> [perma.cc/4YD7-DHLR] (arguing that there are no panaceas that will address the challenges faced by complex social ecological systems and offering an expanded version of her analytical framework to identify the rules, institutions, networks, and nested enterprises that will best manage these systems); J.B. Ruhl & James E. Salzman, *Climate Change, Dead Zones, and Massive Problems in the Administrative State: A Guide for Whittling Away*, 98 CAL. L. REV. 59 (2010) (describing problems resistant to any one policy response because of disproportionate aggregation, feedback loops, negative policy response spill-overs, and discontinuities).

20. *See* Janet Milne, *Watersheds: Runoff from the Tax Code*, 34 VT. L. REV. 883 (2010); Roberta Mann, *On the Road Again: How Tax Policy Drives Transportation Choice*, 24 VA. TAX REV. 587 (2005); *see also* Roberta Mann, *The (Not So) Little House on the Prairie: The Hidden Costs of the Home Mortgage Interest Deduction*, 32 ARIZ. ST. L.J. 1347 (2000).

21. *See* SHI-LING HSU, *THE CASE FOR A CARBON TAX, GETTING PAST OUR HANG-UPS TO EFFECTIVE CLIMATE POLICY* (2011); *see also* Reuven S. Avi-Yonah & David M. Uhlmann, *Combating Global Climate Change: Why a Carbon Tax Is a Better Response to Global Warming than Cap and Trade*, 28 STAN. ENVTL. L.J. 3 (2009).

22. Roberta Mann, *Smart Incentives for the Smart Grid*, 43 N.M. L. REV. 127 (2013); Roberta Mann, *Lightning in a Bottle: Using Tax Policy to Solve Renewable Energy's Storage Challenges*, 20 J.

articles have addressed the long history of tax subsidies for the energy industry.²³ Even when tax subsidies have been addressed as a part of a broader examination of energy subsidies, the analysis has frequently been incomplete.²⁴

This article advances this literature in three ways. Part II describes economic situations that would justify government intervention in the energy markets and explains why Congress has chosen to “pick winners and losers.” Part III examines the history of subsidies to both fossil fuels and renewable energy resources in light of those rationales and describes the divergent market trajectories of the two sets of subsidies. Part IV evaluates the subsidies on a qualitative basis, developing the thesis that the disparate market impacts derive from the differences in the way the subsidies are structured. This Part examines the subsidies’ relative risks, information costs, and transaction costs, liquidity and marketability. Part V examines the political economy associated with the subsidies, including their budgetary history, the first mover advantage available to fossil fuels, and the political advantages and administrative bias favoring subsidies that are shared with other sectors. It argues that certain structures have provided stability and certainty for fossil fuels and expanded their market share and that other structures have exposed renewables to legislative volatility and failure. Part VI discusses recent proposals for reform and Part VII concludes the article.

ENVTL. & SUSTAINABILITY L. 71 (2013); Roberta Mann, *Tax Incentives for Historic Preservation: An Antidote to Sprawl?*, 8 WIDENER L. SYMP. J. 207 (2002).

23. See Hymel, *supra* note 7; see also ENVTL. LAW INST., ESTIMATING U.S. GOVERNMENT SUBSIDIES TO ENERGY SOURCES: 2002–2008 (2009), https://www.eli.org/sites/default/files/eli-pubs/d19_07.pdf [<http://perma.cc/N55Q-NV4P>]; Roberta Mann, *Another Day Older and Deeper in Debt: How Tax Incentives Encourage Burning Coal and the Consequences for Global Warming*, 20 PAC. MCGEORGE GLOBAL BUS. & DEV. L.J. 111 (2007); Mona L. Hymel, *The United States’ Experience with Energy-Based Tax Incentives: The Evidence for Supporting Tax Incentives for Renewable Energy*, 38 LOY. U. CHI. L.J. 43 (2006).

24. TOMAIN, *supra* note 8, at 133–35 (describing shortcomings of the 2007 report on subsidies to the energy industry by Department of Energy’s Energy Information Administration).

II. RATIONALES FOR GOVERNMENT INTERVENTION IN THE ENERGY MARKETS

Historically, the federal government has intervened in energy markets²⁵ to develop public goods,²⁶ such as national security and defense, to promote positive externalities,²⁷ such as economic development within the United States and an expansion of power abroad,²⁸ and to overcome market barriers,²⁹ such as the high cost and financial risks of transporting remote natural resources to markets. State subsidies, succeeded by federal subsidies, helped to support timber harvesting and coal extraction, processing, and transport operations which were historically highly capital intensive,³⁰ including the construction of the railroad lines that brought the coal to buyers, and the smelting of iron and forging of steel for their construction.³¹ In another example, at the turn of the twentieth century, oil and gas exploration involved significant risk. With the outbreak of World War I, the federal government provided subsidies to share that risk and to prepare the country for military engagement.³² Subsidies encouraged private actors to

25. Economists generally find or assume that markets efficiently distribute goods and services. See JONATHAN GRUBER, PUBLIC FINANCE AND PUBLIC POLICY 3 (4th ed., 2010). In principle, market participants will trade until they reach equilibrium, when the combination of price and quantity meet the parties' needs and no further trades will enhance one party's welfare without diminishing that of another. *Id.* Markets will not deliver efficient outcomes, however, when there are substantial market failures. *Id.* at 123–26. In such cases, government intervention to address these failures can enhance efficiency. *Id.* at 4.

26. Public goods are nonrival and nonexcludable; consumption of the good does not keep others from consuming it, and one does not have the physical capacity to exclude others. *Id.* at 184. The private markets will decline to invest at the appropriate level in public goods because they cannot appropriate all of the benefits from the activity. *Id.* at 128–29.

27. When third parties enjoy the benefits of a good, those benefits are described as positive externalities. Unless the third parties pay the individual providing the good for the value they receive, the good will be produced in less-than-optimal volumes, which is said to be a market failure. *Id.* at 128–29.

28. PFUND & HEALEY, *supra* note 2, at 11.

29. See *id.* at 14–16.

30. See *id.* at 13–16. When the stream of real benefits and returns to projects occur over time, the returns and benefits for competing projects must be discounted to present value for comparison. Investors will prefer the project that has the higher present value, that is, the one that projects higher returns over a shorter period of time. HARVEY S. ROSEN AND TED GAYER, PUBLIC FINANCE 153–55 (2008). Consequently, private actors will tend not to invest in projects with high initial capital costs and delayed returns on investment if other investments are more profitable. *Id.*

31. See *id.* at 14–16.

32. Hymel, *supra* note 7, at 158.

provide the levels of investment that would produce public goods and positive externalities that benefit American society generally.³³ As the risks and costs associated with the extraction, development, and marketing of coal, oil, and natural gas have been reduced or eliminated, so has the justification for subsidizing these resources.³⁴

National security has also been an important reason to provide government support for fossil fuels on the theory that subsidies will counter price shocks from international conflicts and lessen the impact of coercion from foreign energy resource owners.³⁵ Even with decades of support, however, U.S. energy buyers remain sensitive to price changes and volatility because coal and oil—and to a lesser extent, gas—are global commodities and trade in international markets.³⁶ Furthermore, incidence models suggest that the benefits of these subsidies accrue primarily to producers, shareholders, and workers in the fossil fuel industry, not to consumers, limiting the impact on the broader economy.³⁷ If the subsidies are ineffective in stabilizing prices and the benefits accrue to a narrow group, the rationale for public support disappears.

Finally, policymakers have known since the 1970s that fossil fuels have negative effects on human health and the environment and have regulated their production and use.³⁸ The United States has nevertheless continued to subsidize fossil fuel production. Since the 1990s policymakers have known that carbon dioxide emitted during the combustion process causes climate change.³⁹

33. See *supra* note 27.

34. See, e.g., WILLIAM STANLEY JEVONS, *THE COAL QUESTION* (1865) (describing the reduced costs of surface mining over deep mining and the increased efficiency and electrical output from the development of the Watts steam engine). While earlier technological risks and costs have been mitigated, new ones have arisen as oil and gas have become more difficult to extract. New technologies, such as deep water drilling, tar sands extraction, and hydraulic fracturing, have been developed in recent years to access previously inaccessible fossil fuels.

35. See Gilbert E. Metcalf, *Federal Tax Policy Towards Energy*, in *TAX POLICY AND THE ECONOMY* 145, 147 (2007).

36. *Id.* at 148.

37. *Id.* at 166. Advocates have also argued for continued support because market barriers keep consumers from reducing their demand. *Id.* Consumers are often poorly informed, tenants lack the authority, and landlords lack the incentive to make energy efficiency improvements on rental properties. *Id.* at 148–49. However, these challenges are more readily solved through information programs, labeling, and energy efficiency subsidies to tenants than through direct and tax subsidies to the fossil fuel industry. *Id.*

38. Lazarus, *supra* note 15, at 77–82. Fossil fuels emit air pollution when burned, including nitrous oxides, sulfur dioxides, and particulates. See Metcalf, *supra* note 35, at 147.

39. Metcalf, *supra* note 35, at 147.

Economists have reached some consensus⁴⁰ that the most efficient way to address climate change and the other negative externalities⁴¹ associated with the use of fossil fuels is to impose a carbon tax or greenhouse gas tax.⁴² By setting the tax equal to the social cost of the pollution to society on a per unit basis,⁴³ the government would

40. See J. SCOTT HOLLADAY, JONATHAN HORNE & JASON A. SCHWARTZ, *ECONOMISTS AND CLIMATE CHANGE: CONSENSUS AND OPEN QUESTIONS* vii (2009), <http://policyintegrity.org/files/publications/EconomistsandClimateChange.pdf> [<http://perma.cc/8SRJ-A3Z7>] (finding that eighty-four percent of economists concur that climate change is having a negative effect on the economy of the United States, and about ninety-eight percent agreed that a market-based solution would reduce carbon emissions significantly while encouraging more efficient energy production). Supporters come from across the political spectrum. See N. Gregory Mankiw, *Smart Taxes: An Open Invitation to Join the Pigou Club*, 35 *EAST. ECON. J.* 14 (2009); see also Alan S. Blinder, *The Carbon Tax Miracle Cure*, *WALL ST. J.* (Jan. 31, 2011, 12:01 AM), <http://www.wsj.com/articles/SB10001424052748703893104576108610681576914> [<http://perma.cc/6KPZ-7ZJG>]; Robert Reich, *Inherit the Windfall*, *AM. PROSPECT* (Feb. 7, 2007), <http://prospect.org/article/inherit-windfall> [<https://perma.cc/JPR8-QRFW>]; Joseph Stiglitz, *Showdown in Bali*, *PROJECT SYNDICATE* (Dec. 7, 2007), <http://www.project-syndicate.org/commentary/showdown-in-bali> [<http://perma.cc/S8QY-M4BQ>].

41. Negative externalities occur when a portion of the costs of a good are borne by parties not involved in the market transaction. If the costs of production are shifted to third parties, then the producer will offer the good for a lower price than she would have if she had borne the total costs of production herself. If the costs of consumption are shifted to third parties, then the consumer will offer a higher price for the good than she would have if she had borne the total costs of consumption herself. Theoretically, those who are harmed by another party's activities may pay them to stop or reduce those activities, but transaction costs and information constraints are likely to impede this exchange. See GRUBER, *supra* note 25, at 130–34. Transaction costs are the costs associated with finding the right parties with whom to bargain, negotiating an agreement that binds all parties and addressing the challenges associated with strategic behavior. Such exchanges are not always feasible when common pool resources, such as air and water, are involved. See *id.* at 134.

42. See STAFF OF JOINT COMM. ON TAXATION, *JCX-28-12, PRESENT LAW AND ANALYSIS OF ENERGY-RELATED TAX EXPENDITURES* (2012).

43. Estimating those social costs is challenging. Many costs will be incurred in the present, and the benefits (or the costs of failure to act) will be borne primarily in the future. Economic analysts must select a discount rate to estimate the present value of future costs and benefits and compare them with those of the present. Determining the appropriate discount rate is a thorny question. Nicholas Stern, the former chief economist of the World Bank, estimates the marginal damages per metric ton of carbon dioxide at approximately eighty-five dollars. See NICHOLAS STERN, *THE ECONOMICS OF CLIMATE CHANGE* 287 (2007), http://www.wwf.se/source.php/1169157/Stern%20Report_Exec%20Summary.pdf [<http://perma.cc/LZ4Z-EHGC>]. William Nordhaus, a Yale economist, estimated that the marginal social damage would be much lower—\$7.50 per ton of carbon dioxide. See WILLIAM D. NORDHAUS, *A QUESTION OF BALANCE* 90, 92–93 tbl.5-4 (2008), http://www.econ.yale.edu/~nordhaus/homepage/Balance_2nd_proofs.pdf [<http://perma.cc/7D63-7JLB>]. Economist Martin Weitzman suggests that the pricing of carbon by Nicholas Stern should be used based on the possibility of catastrophic loss and the fat tail of risk distribution. See Martin L. Weitzman, *A Review of the Stern Review on the Economics of Climate Change*, 45 *J. ECON. LIT.* 686, 703, 719 (2007); see also HSU, *supra* note 21, at 23. Others have concluded that if Nordhaus's model had included nonmarket impacts in

establish an economically efficient price for the pollution, internalizing the negative externality.⁴⁴ A carbon tax or greenhouse gas tax is precise,⁴⁵ flexible,⁴⁶ and easily implemented⁴⁷ and administered.⁴⁸ It is less susceptible to arbitrage⁴⁹ and gaming⁵⁰ and raises fewer sovereignty⁵¹ and trade issues.⁵² It also generates revenue.⁵³

A less efficient market-based alternative would be to provide subsidies⁵⁴ to encourage private production of substitute goods.⁵⁵ Subsidizing substitute goods necessarily entails the picking winners

his model, his damage estimates would have matched Stern's. *See* HSU, *supra* note 21, at 28–29. Nonmarket impacts include harm to the environment, such as ecosystem change and species loss; harm to human health, including the spread of infectious diseases; and increases in extreme events and catastrophes. *Id.* at 28.

44. *See* HSU, *supra* note 21, at 22–23.

45. HSU, *supra* note 21, at 27. A carbon tax can place an increment of cost on an increment of damage, the estimated marginal damage, caused by a ton of carbon dioxide emitted. *See id.* The carbon tax would increase prices at every stage of manufacture and use when fossil fuels are used; the effect on the price of each good is proportionate to the carbon emissions of its production process and transmission. *See id.*

46. *See id.* at 70. A carbon tax sends a steady price signal. If the carbon tax at some level does not reduce emissions, legislation may index the tax to carbon emissions levels so that the tax ratchets up until it has an impact. *See id.* at 104–113.

47. A carbon tax may draw on existing infrastructure for quick implementation. A carbon tax may be implemented as a tax on large-scale energy producers and consumers. *See* Gilbert E. Metcalf et al., *Analysis of U.S. Greenhouse Gas Tax Proposals* 9–10 (Nat'l Bureau of Econ. Research, Working Paper No. 13980, 2008), <http://www.nber.org/papers/w13980> [<http://perma.cc/2J67-8JNL>] (noting that applying a tax at an upstream point reduces administrative costs to the government).

48. HSU, *supra* note 21, at 84–89. A carbon tax has pervasive effects. It sends a consistent price signal over time. It therefore continues to incentivize investments in energy efficiency and alternative energy resources when those changes might be cheapest—in a down economy. *See id.* at 70.

49. *Id.* at 77–83.

50. *Id.* at 27.

51. *Id.* at 46–52. A global carbon tax would function similarly to other international treaties, requiring all signatories to take the same actions, avoiding concerns about sovereignty. *Id.* at 93–95.

52. *Id.* at 91–100; *see also* Timothy Meyer, *Energy Subsidies and the World Trade Organization*, 17 ASIL INSIGHTS 22 (2013), <https://www.asil.org/insights/volume/17/issue/22/energy-subsidies-and-world-trade-organization> [<http://perma.cc/4WE2-BZL7>].

53. HSU, *supra* note 21, at 101–03. In the United States, a carbon tax of thirty dollars per ton would generate an estimated \$145 billion in annual revenue. *See* Yoram Bauman & Shiling Hsu, *The Most Sensible Tax of All*, N.Y. TIMES (July 4, 2012), http://www.nytimes.com/2012/07/05/opinion/a-carbon-tax-sensible-for-all.html?_r=1 [<https://perma.cc/FS3N-E8JU>].

54. Subsidies lower the cost of goods and encourage private purchases and sales. *See* GRUBER, *supra* note 25, at 7.

55. *See id.*

and losers. To reduce the harm from fossil fuels by encouraging specific alternatives, policymakers must choose the alternate behaviors and the substitute technologies to support, expanding their need for information and the scope of agreement.⁵⁶ In contrast, taxes on negative externalities are superior to subsidies because they are neutral with respect to the behavioral and technological choices⁵⁷ the public might make to avoid the higher prices that result from the tax on the harmful activity.⁵⁸ Market processes determine the most efficient means for responding to the tax.⁵⁹

At each stage, Congress has chosen inefficient mechanisms to manage fossil fuel externalities. Instead of using market-based mechanisms, such as taxes⁶⁰ or cap-and-trade programs, it uses command-and-control regulation.⁶¹ Instead of fully internalizing

56. See STAFF OF JOINT COMM. ON TAXATION, *supra* note 42, at 24.

57. See HSU, *supra* note 21, at 53–64. It offers no incentive to invest in any particular form of capital. Firms can respond to carbon taxes in ways that they think are efficient and effective. Innovators may compete to develop the best and cheapest technologies to reduce emissions. The incentives to innovate are broad and reach not only energy generation, but also energy use (energy efficient building envelope structures, heating and cooling systems, etc.). See *id.* at 64–68.

58. See STAFF OF JOINT COMM. ON TAXATION, *supra* note 42, at 24.

59. Brian D. Galle, *The Tragedy of the Carrots: Economics & Politics in the Choice of Price Instruments*, 64 STAN. L. REV. 797 (2012). Furthermore, a tax on greenhouse gases is better as a matter of political economy. Because entrepreneurs will respond to the carbon tax in many different ways, no single innovation will have sufficiently broad support to resist future policy changes that might reduce the value of their initial capital investments. See HSU, *supra* note 21, at 41–46.

60. While Congress has developed a number of greenhouse gas tax proposals in the recent years, no plans for such taxes are currently under consideration. See generally American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. (2009); America's Climate Security Act of 2007, S. 2191, 110th Cong. (2007); Low Carbon Economy Act of 2007, S. 1766, 110th Cong. (2007); Global Warming Reduction Act, S. 485, 110th Cong. (2007); Global Warming Pollution Reduction Act, S. 309, 110th Cong. (2007); Climate Stewardship and Innovation Act of 2007, S. 280, 110th Cong. (2007); Safe Climate Act of 2006, H.R. 5642, 109th Cong. (2006); Keep America Competitive Global Warming Policy Act of 2006, H.R. 5049, 109th Cong. (2006).

61. The Obama Administration recently sought to regulate carbon emissions under the Clean Air Act, directing the Environmental Protection Agency to promulgate regulations to regulate carbon dioxide emissions. These regulations have been published as the Clean Power Plan. See *Clean Power Plan for Existing Power Plants*, EPA (Nov. 20, 2015), <http://www.epa.gov/cleanpowerplan/clean-power-plan-existing-power-plants> [<https://perma.cc/9XBL-N73W>]. The regulations are currently embroiled in lawsuits brought by the attorneys general in twenty-four states. Suzanne Goldenberg, *Obama's Carbon Reduction Plan Under Attack from 24 States and Republicans*, GUARDIAN (Oct. 23, 2015, 1:22 PM), <http://www.theguardian.com/us-news/2015/oct/23/obama-carbon-coal-power-plant-epa-lawsuit-republicans> [<https://perma.cc/R7ZP-YGWR>].

the social costs in the price of fossil fuels, Congress undercuts its own regulation by subsidizing them through the income tax.⁶² Instead of taxing the negative externalities associated with fossil fuels, it subsidizes alternatives to fossil fuels,⁶³ a process which necessarily entails picking winners and losers.

III. THE HISTORY OF ENERGY INDUSTRY TAX SUBSIDIES

Stanley Surrey coined the phrase “tax expenditure” to describe the array of exclusions, exemptions, deductions, credits and special rates that depart from the normal tax base and the central function of the income tax to raise revenue for the federal government.⁶⁴ He saw the subsidies as the functional equivalent of budgetary spending,⁶⁵ but considered them to be ill-conceived, inequitable, and inefficient, and foresaw that they would increase complexity and add to taxpayer and government administrative burdens.⁶⁶ He argued that only by making tax expenditures more transparent and subjecting them to the regular scrutiny that Congress imposes on direct spending could Congress effectively control its budget and manage its tax policy.⁶⁷ To facilitate Congress’s review and analysis of these forms of spending through the tax code, the Department of the Treasury, the Joint Committee on Taxation and the Congressional Budget Office have periodically prepared tax expenditure budgets describing the variety of tax subsidies and the magnitude of their cost to the government.⁶⁸ None of these entities are charged with the responsibility for assessing the effectiveness of these subsidies, however.⁶⁹ Consequently, evaluations of the performance of tax expenditures are relatively

62. See *infra* Part III.A.

63. See *infra* Part III.B.

64. See Stanley S. Surrey, *Excerpts from Remarks by Assistant Secretary Surrey, November 15, 1967, Before the Money Marketeers, on the U.S. Income Tax System—The Need for a Full Accounting*, in U.S. DEP’T. OF THE TREASURY, DOC. NO. 3245, ANNUAL REPORT OF THE SECRETARY OF THE TREASURY ON THE STATE OF THE FINANCES FOR THE FISCAL YEAR ENDED JUNE 30, 1968, at 322, 322–23 (1969).

65. See STANLEY S. SURREY, *PATHWAYS TO TAX REFORM* 6 (1973).

66. See STANLEY S. SURREY & PAUL R. MCDANIEL, *TAX EXPENDITURES* 25–26 (1985).

67. See *id.* at 2.

68. See STAFF OF JOINT COMM. ON TAXATION, JCX-37-08, *A RECONSIDERATION OF TAX EXPENDITURE ANALYSIS* (2008).

69. See U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-13-479, *TAX EXPENDITURES: IRS DATA AVAILABLE FOR EVALUATIONS ARE LIMITED* 13 (2013), <http://www.gao.gov/assets/660/654273.pdf> [<https://perma.cc/8Q5U-9CHM>].

limited.⁷⁰ This Part surveys the array of tax expenditures for fossil fuels and renewable energy resources and then examines the market response to those subsidies.

A. Fossil Fuel Tax Subsidies

From its inception, the U.S. income tax has included significant subsidies to support the development of energy resources.⁷¹ The income tax initially included a deduction for depletion of oil, gas, and other natural resources as they are extracted.⁷² Tax subsidies

70. Some of the early legal scholarship critiqued the tax expenditure concept, exploring the boundaries of the normal tax base and questioning normative assumptions undergirding the distinction between the “normal” tax base and “spending.” See, e.g., Boris I. Bittker, *Accounting for Federal “Tax Subsidies” in the National Budget*, 22 NAT’L TAX J. 244 (1969); Boris I. Bittker, *Income Tax Deductions, Credits, and Subsidies for Personal Expenditures*, 16 J.L. & ECON. 193 (1973). Some have sought to reframe the analysis between allocation and distribution. See Daniel N. Shaviro, *Rethinking Tax Expenditures and Fiscal Language*, 57 TAX. L. REV. 187 (2004). A number of scholars have concluded that the tax system may actually be a more efficient and effective mechanism for delivering subsidies than the administrative systems developed and funded through the annual budgetary process. See David A. Weisbach & Jacob Nussim, *The Integration of Tax and Spending Programs*, 113 YALE L.J. 955 (2004) (comparing the administrative costs and error rates between the Earned Income Tax Credit, delivered through the income tax system, favorably against those for the Food Stamp Program); Lawrence Zelenak, *Tax or Welfare? The Administration of the Earned Income Tax Credit*, 52 U.C.L.A. L. REV. 1867, 1915 (2005) (reporting that among families with children, the participation rate is fifty percent for the Food Stamp program (a direct subsidy), but the participation rate is ninety percent for this group for the Earned Income Tax Credit, a tax benefit); Leonard E. Burman & Deborah I. Kobes, *EITC Reaches More Eligible Families Than TANF, Food Stamps*, 98 TAX NOTES 1769, 1769 (Mar. 17, 2003), <http://www.urban.org/sites/default/files/alfresco/publication-pdfs/1000467-EITC-Reaches-More-Eligible-Families-Than-TANF-Food-Stamps.PDF> [perma.cc/NXA9-KGXX]; see also Tracey M. Roberts, *Mitigating the Distributional Impacts of Climate Change Policy*, 67 WASH. & LEE L. REV. 209 (2010) (arguing that any rebate of revenues from a carbon tax or cap-and-trade program should be used to offset the distributional impacts of the policy, and that the rebate would be delivered most efficiently through income tax). More recent scholarship has questioned whether a tax expenditure budget is relevant any longer, given that Congress expanded tax expenditures rather than eliminating them, tripling the number of subsidies and increasing annual outlays by trillions of dollars. See Leonard E. Burman, *Is the Tax Expenditure Concept Still Relevant?*, 56 NAT’L TAX J. 613 (2003). Others have critiqued the tax expenditure budget for its failure to adequately estimate the true cost of the subsidies. See Rebecca Kysar, *Lasting Legislation*, 159 PENN. L. REV. 1007 (2011) (describing the unreliability of estimates of the costs of tax expenditures and budget items based on the instability of baseline estimates and Congress’s predilection for waiving or changing the rules to pursue new policies, ignoring estimates, and ignoring costs that will occur beyond a particular budget window).

71. See Hymel, *supra* note 7, at 159.

72. See *id.* at 158. The Revenue Act of 1913, also known as the Underwood Tariff Act, included “a reasonable allowance for depletion” for up to five percent of the output of an oil well on an annual basis until the initial capital investment was recovered. *Id.* at 165. The depletion allowance has been modified on numerous occasions. The Revenue Act of 1918,

to support the development of fossil fuels now include deductions for intangible drilling costs,⁷³ subsidies for extraction of oil and gas from shale, tar sands and coal seams,⁷⁴ and credits for enhanced oil recovery projects.⁷⁵ While some of the subsidies were restricted during the 1990s, the restrictions have been loosened in recent years to accommodate the demands of war and a faltering economy.⁷⁶ This Section describes each type of tax subsidy to the fossil fuel industry and the related research, extraction, refining, and transportation processes.

1. Accelerated Cost Recovery

In general, income taxes are levied only against net income, the profits a business enjoys. To calculate net income, businesses deduct their expenses from their gross revenues. Some purchases a business may make, such as equipment, will generate income over time. Therefore, instead of allowing a company to deduct the full cost of equipment at the time of purchase, the income tax requires that these kinds of investments be capitalized and allows the business to deduct only a portion of the cost each year.⁷⁷ The deduction may take the form of depreciation allowances, which were initially designed to reflect the decline in value of the property from wear and tear, or depletion, the decline in value of property that results from extraction of natural resources.⁷⁸ Capitalization and depreciation or depletion deductions better match the income generated from using the property with the recovery of the costs associated with acquiring the property.

to support U.S. involvement in World War I, expanded the allowance to permit investors to recover costs in excess of their capital investments. *Id.* In 1926, the allowance was based on the estimated fair market value of the wells at the time of discovery. *Id.* at 166. Until 1932, the deduction did not decrease the owner's basis in the property, permitting investors to recover their investment twice. *Id.* at 167. By 1969, the depletion rate was 27.5%, permitting the oil and gas industry to cut its tax rates by 50%. *Id.*

73. See I.R.C. § 617 (2012); see also Hymel, *supra* note 7, at 169–70.

74. See Hymel, *supra* note 7, at 171.

75. *Id.* at 171–72.

76. *Id.* at 178–80.

77. *Overview of Depreciation*, IRS, <https://www.irs.gov/publications/p946/ch01.html> [<https://perma.cc/28LD-8VMQ>] (last visited Jan. 1, 2016) (“Depreciation is an annual income tax deduction that allows you to recover the cost or other basis of certain property over the time you use the property.”).

78. *Id.*

The income tax initially provided for taxpayers to recover the costs of equipment over the economic life of the property; tax depreciation followed economic depreciation.⁷⁹ Since 1981, however, the depreciation system has provided for accelerated cost recovery. The Modified Accelerated Cost Recovery System (“MACRS”) provides for the entire purchase price to be recovered within a period shorter than the useful life of the property.⁸⁰ No salvage value is taken into account even though there is a robust market for fully depreciated assets.⁸¹ The permissible recovery methods allow businesses to front-load their depreciation deductions; they may take larger deductions in earlier years.⁸² This system allows taxpayers to recover their costs at an accelerated rate rather than at a pace that tracks their earnings from property they are using in their trade or business.

A number of tax provisions allow the fossil fuel industry to recover their investments even more quickly than MACRS. Bonus depreciation, under section 168(k), allows businesses to deduct a fraction of the cost of depreciable property immediately. Under the original authorization, the Job Creation and Worker Assistance Act of 2002, taxpayers could immediately deduct thirty percent of their cost basis in depreciable property in addition to taking normal depreciation deductions on their remaining basis in the property.⁸³ The following year the rate was increased to fifty percent.⁸⁴ The provision, which was originally designed as a short term stimulus,⁸⁵ was extended from 2002 to 2005 and from 2008 to

79. For some types of property, not otherwise covered under the modified accelerated depreciation system under section 168 or under the amortization provisions of section 197, this is still the case. *See* I.R.C. § 167 (2012).

80. *See* I.R.C. § 168 (Supp. 2015).

81. *Id.* § 168(b)(4).

82. *See id.* Straight-line depreciation divides the total amount of the expenditure by the recovery period to give an aliquot portion of depreciation per year. The double declining balance method allows taxpayers to deduct two times the depreciation allowed under the straight-line method in the first few years of the recovery period. The 150% declining balance method allows the taxpayer to deduct one and a half times the depreciation allowed under the straight-line method. *See id.*

83. *See* Job Creation and Worker Assistance Act of 2002, Pub. L. No. 107-147, 116 Stat. 21.

84. *See* Jobs and Growth Tax Relief Reconciliation Act of 2003, Pub. L. No. 108-27, 117 Stat. 752.

85. JANE GRAVELLE, CONG. RESEARCH SERV., BONUS DEPRECIATION: ECONOMIC AND BUDGETARY ISSUES (2014).

2014, after which it expired.⁸⁶ Bonus depreciation has recently been reinstated and extended to apply to property placed in service from 2015 through 2020.⁸⁷ Bonus depreciation drops to forty percent for properties placed in service in 2018 and to thirty percent for properties placed in service in 2019.⁸⁸

More dramatically, section 179 permits the immediate deduction of the entire cost of property placed in service in a given year.⁸⁹ Subject to certain limits, the section permits the full cost of equipment to be “expensed” rather than capitalized and recovered over time through depreciation deductions. The deduction is subject to an investment limit⁹⁰ and an income limit.⁹¹ New and used tangible property qualifies if it is acquired for use in a trade or business and may be depreciated under the MACRS system.⁹² The maximum deduction is reduced dollar for dollar, but not below zero, by the amount by which the aggregate cost of qualifying property a taxpayer purchases and places in service during the year exceeds an investment threshold.⁹³ The deduction is also limited by the taxable income of the taxpayer for the year.⁹⁴ If the deduction exceeds the firm’s income for the year, the excess may be carried forward and deducted in the following year.⁹⁵ This expensing provision has been a part of the tax code since 1958, when it was justified as a way of simplifying taxes for small businesses.⁹⁶ In general, the limits on expensing of equipment have been \$25,000 per year with a dollar for dollar reduction to the extent that the cost of all depreciable property placed in service

86. See American Taxpayer Relief Act of 2012, Pub. L. No. 112-240, 126 Stat. 2313; Tax Relief, Unemployment Compensation Reauthorization, and Job Creation Act of 2010, Pub. L. No. 111-312, 124 Stat. 3296; Small Business Jobs Act of 2010, Pub. L. No. 111-240, 124 Stat. 2504; American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115; Economic Stimulus Act of 2008, Pub. L. No. 110-185, 122 Stat. 613.

87. Consolidated Appropriations Act, 2016, Pub. L. No. 114-113, § 143, 129 Stat. 2242 (2015). The Act also applies retroactively to permit taxpayers to take bonus depreciation on qualified property placed in service in 2015. *Id.*

88. *Id.*

89. I.R.C. § 179 (Supp. 2015).

90. *Id.* § 179(b)(1).

91. *Id.* § 179(b)(3).

92. *Id.* § 179(d)(1).

93. *Id.* § 179(b)(2).

94. *Id.* § 179(b)(3)(A).

95. *Id.* § 179(b)(3)(B).

96. GRAVELLE, *supra* note 85, at 3 n.6.

exceeded \$200,000.⁹⁷ The provision has been used in more recent years to stimulate the economy; by setting higher limits, Congress makes the benefit available to larger businesses.⁹⁸ A temporary expansion of the parameters for expensing equipment under section 179 may stimulate business investment in qualified assets in the short term by reducing the cost of capital for businesses to acquire those assets and by increasing the cash flow of firms investing in those businesses.⁹⁹

The Consolidated Appropriations Act, 2016 provides for these limits to be increased to \$500,000 and \$2,000,000 respectively.¹⁰⁰ Businesses may immediately deduct the cost of up to \$500,000 of equipment, with a dollar-for-dollar reduction to the extent that the cost of property placed into service exceeds \$2,000,000.¹⁰¹ The Act also makes section 179 permanent.¹⁰²

Oil and gas companies may also take an immediate business deduction for “intangible drilling costs.”¹⁰³ Instead of capitalizing these expenditures and recovering them over time through depreciation, the companies may deduct wages and the full cost of machinery and unsalvageable materials used in exploration and development of oil and gas properties as those expenses are incurred.¹⁰⁴ This tax expenditure also permits the coal industry to expense the exploration and development costs associated with coal extraction, including surface mining (strip mining, open-pit mining and mountaintop removal activities) and the construction of shafts and tunnels for underground mining.¹⁰⁵ Similarly, section 179C permits the costs associated with refining crude oil and other liquid fuels¹⁰⁶ to be deducted immediately as an expense.¹⁰⁷

97. See I.R.C. § 179.

98. GRAVELLE, *supra* note 85, at 3 n.6; GARY GUENTHER, CONG. RESEARCH SERV., SECTION 179 AND BONUS DEPRECIATION EXPENSING ALLOWANCES: CURRENT LAW AND ISSUES FOR THE 114TH CONGRESS 10 (2015).

99. GUENTHER, *supra* note 98, at 10–11. If a business may acquire equipment and immediately deduct the cost of that equipment from its taxes, it may redeploy the tax savings in other things, such as returns to shareholders.

100. Consolidated Appropriations Act, 2016, Pub. L. No. 114-113, § 124, 129 Stat. 2242.

101. *Id.*

102. *Id.*

103. I.R.C. § 617 (2012).

104. *Id.*

105. *Id.*

106. I.R.C. § 45K(c) (Supp. 2014).

107. I.R.C. § 179C (2012).

Several other tax expenditures hasten the period for cost recovery. Qualifying natural gas gathering lines¹⁰⁸ and distribution lines¹⁰⁹ have shorter recovery periods than under MACRS. Oil and gas geological and geophysical costs are amortized; major integrated oil companies may recover their costs over a seven-year period and other oil companies may recover their costs over two years.¹¹⁰

A number of studies have indicated that accelerated depreciation is generally an ineffective tool for stimulating the economy during periods of recession or slow growth.¹¹¹ Furthermore, allowing businesses to expense equipment creates opportunities for tax arbitrage¹¹² and interferes with the efficient allocation of capital,¹¹³ diverting funds from other uses that may be more productive. Together, the favorable tax treatment from accelerated depreciation and debt financing can yield a negative tax rate.¹¹⁴

108. I.R.C. § 168(e)(3)(C)(iv) (Supp. 2015). This provision treats natural gas gathering lines as seven-year property, allowing natural gas companies to recover their investment in the lines in seven and a half years rather than the ten to sixteen-year class life period. *Id.* In addition, the provision provides taxpayers who invest in the lines to receive relief from the Alternative Minimum Tax ("AMT"). The AMT provides an alternative tax base with significantly reduced exclusions, exemptions and deductions than the usual tax base and provides for relatively high flat rates instead of graduated rates. This provision allows taxpayers who would otherwise be subject to the AMT to continue to take depreciation under MACRS rather than employing the alternative depreciation system otherwise mandated under the AMT. *See id.*

109. I.R.C. § 168(e)(3)(E)(viii) (Supp. 2015). This provision treats natural gas distribution lines as fifteen-year property and reduces the recovery period by five to ten years based on class life. *Id.*

110. I.R.C. § 167(h) (2012). In general, a major integrated oil company is a producer of crude oil with an average daily worldwide production of crude oil of at least 500,000 barrels for the taxable year and gross receipts in excess of \$1 billion for its taxable year ending during calendar year 2005. *Id.*

111. GUENTHER, *supra* note 98, at 13.

112. GUENTHER, *supra* note 98, at 14. Taxpayers may borrow funds to purchase new depreciable assets, immediately deduct the full cost of the assets in the year the assets are placed in service and then also deduct the interest on the loan used to buy the assets over time. *Id.*

113. *Id.* Tax subsidies encourage taxpayers to make decisions not on the actual costs and benefits of the goods and services they acquire, but on the after-tax costs and benefits, distorting the decision-making process. The tax cost, the loss in revenue, from the tax preference may exceed the economic benefits of those decisions, creating a deadweight loss. *Id.*

114. GRAVELLE, *supra* note 85, at 9-10 ("Under the average 26% effective tax rate for equipment under current [2014] law without bonus depreciation, the effective tax rate on debt financed investment is -19%. With bonus depreciation, it is -37%.").

With the current oil glut,¹¹⁵ these subsidies for the oil and gas industry can only contribute to oversupply and divert resources from other important activities. Some scholars have argued that the assorted tax provisions for accelerated cost recovery may have shifted investment toward the purchase of equipment and away from hiring employees, yielding a jobless recovery.¹¹⁶

2. Preferential Tax Rates

One of the oldest and most significant tax expenditures is also one of the most expensive in terms of lost revenue. Oil depletion allowances¹¹⁷ were first incorporated in the income tax during World War I, to encourage investment in a high-risk industry.¹¹⁸ As nonrenewable natural resources, such as coal, oil, gas and minerals, are extracted, the reserves of those resources are depleted. Initially, companies that extracted natural resources were simply allowed to recover the costs of their initial investment through depletion deductions.¹¹⁹ However, in 1921 Congress modified the depletion provisions of the income tax to permit percentage depletion, which allows companies to deduct a fixed percentage of their gross sales in calculating their income tax liability.¹²⁰ Now coal, oil, and gas companies, instead of simply recovering their costs, receive tax benefits well in excess of the amount they invested in acquiring the property for resource extraction.¹²¹ In recent

115. Clifford Krauss, *Stock Prices Sink in a Rising Ocean of Oil*, N.Y. TIMES (Jan. 15, 2016), <http://www.nytimes.com/2016/01/16/business/energy-environment/oil-prices-one-million-barrel-glut.html> [<https://perma.cc/B9VR-PAFJ>] (describing the growing 1 million barrel per day oil glut).

116. See Theodore P. Seto, *The Problem with Bonus Depreciation*, 126 TAX NOTES 782 (Feb. 8, 2010).

117. The percentage depletion allowance has regularly been hailed as a classic example of an open-handed response by Congress to rent-seeking from the industries that fund their campaigns. See JOSEPH J. THORNDIKE, *THEIR FAIR SHARE: TAXING THE RICH IN THE AGE OF FDR* 14 (2013); see also W. ELLIOTT BROWNLEE, *FEDERAL TAXATION IN AMERICA: A SHORT HISTORY* 73–75 (2d ed. 2004).

118. See THORNDIKE, *supra* note 117, at 304 n.19.

119. See *id.* at 13.

120. See *id.*

121. See *id.* at 14. The executive branch sought repeatedly to modify the depletion allowance since it was first passed in 1918. Presidents Franklin D. Roosevelt, Harry S. Truman, and John F. Kennedy all attempted to eliminate the percentage depletion allowance. During the Ford administration, Congress repealed the depletion allowance for large companies. However, in 1990 Congress reduced the requirements to claim the depletion allowance and in 1999, it extended the period for which these changes would remain in effect. In 2005, Congress expanded the depletion allowance to permit more

years, the benefit has been restricted to independent oil and gas companies; integrated oil and gas companies are required to take cost depletion.¹²² Today, sections 613 and 613A permit independent oil and gas producers and royalty owners to deduct fifteen percent of the gross income they earn from qualifying oil, gas, and oil shale deposits as depletion.¹²³ Coal companies may deduct ten percent of their gross income from coal production as depletion allowances.¹²⁴ These depletion deductions effectively impose a tax rate of zero percent on a portion of coal, oil and gas company revenues.

Similarly, the domestic activities production deduction, codified at section 199, authorizes businesses to deduct a percentage of the income earned from certain favored activities,¹²⁵ again, imposing an effective rate of zero percent on a portion of that income.¹²⁶ While the subsidy was initially designed to support manufacturing,¹²⁷ it was quickly expanded to include other selected industries including coal mining and oil and gas production.¹²⁸ Currently oil and gas industry firms may take a deduction of six percent of their income from specified activities and coal producers may deduct nine percent.¹²⁹ While the stated congressional goal for the subsidy was to create jobs, there is no

companies undertaking drilling activities to claim the deduction. Hymel, *supra* note 7, at 165–69.

122. I.R.C. §§ 613, 613A (2012). “Independent” companies concentrate their business on exploration and production of oil and gas from the wellhead, upstream activities, and are not involved in refining and marketing oil and gas products, downstream activities. “Integrated” companies are vertically integrated and derive revenue from both upstream and downstream activities.

123. *See* THORNDIKE, *supra* note 117, at 14.

124. *See id.*

125. I.R.C. § 199 (Supp. 2015).

126. *See id.*

127. ROBERT J. SHAPIRO, ANATOMY OF A SPECIAL TAX BREAK AND THE CASE FOR BROAD CORPORATE TAX REFORM 3 (2013), http://www.progressivepolicy.org/wp-content/uploads/2013/03/2013.3.20-Shapiro_Anatomy-of-a-Special-Tax-Break-and-the-Case-for-Broad-Corporate-Tax-Reform.pdf [<http://perma.cc/E75X-SMQH>]. In 2002, the World Trade Organization held that a tax exemption designed to support manufacturing in the United States by exempting income from exports and from foreign operations was an unreasonable restraint on trade in violation of the General Agreement on Tariffs and Trade. Congress responded by enacting the 2004 American Jobs Creation Act, which created an alternate subsidy commonly known as the domestic production deduction. *See id.* at 2–3.

128. *See id.* at 2–3. Industries that are ineligible for the deduction include healthcare, insurance, education, transportation, warehousing, retail, hotel, and food services. *Id.* at 2.

129. *See id.*

evidence that the provision has done so.¹³⁰ In addition, the provision distorts the allocation of capital within industries by steering the purchasing decisions of companies that seek to claim the deduction.¹³¹ The provision distorts the market more broadly by enhancing the after-tax return to the benefited industries, skewing alternative investment incentives.¹³²

In general, royalties paid to individuals are subject to the system of graduated rates applied to ordinary income.¹³³ Section 631(c), however, treats income received under a royalty contract for the sale of coal as capital gain, which is taxed at lower rates.¹³⁴ Congress originally provided this tax benefit to owners of mining rights in coal properties in 1950 and 1951,¹³⁵ when the top marginal rate on ordinary income was 91% and capital gains were taxed at 25%.¹³⁶ Today, the top marginal rate on ordinary income is 39.6%, the top preferential rate on capital gains is 20%, and the health and environmental costs of generating electricity from coal renders the special treatment for coal royalties unnecessary and harmful to public health.

3. Exemptions from the Application of Tax Rules

Fossil fuels also enjoy a number of exemptions from the application of tax rules. The passive activity loss rules were designed to keep taxpayers from using tax shelters to shield their

130. *See id.* at 6–7.

131. *See id.*

132. *See id.*

133. In 2016, for unmarried individuals, the income tax rate applied to the first \$9,275 of taxable income is 10%, the next \$28,375 of taxable income is taxed at 15%, the next \$53,500 of income is taxed at 25%, the next \$99,000 of taxable income is taxed at 28%, the next \$223,200 of income is taxed at 33%, the next \$1,700 of income is taxed at 35%, and income exceeding \$415,050 is taxed at 39.6%. *See* Rev. Proc. 2015-53, § 3.01 tbl.3, 2015-44 I.R.B. 615. Preferential rates for capital gains are roughly 0% for taxpayers in the first 0, 10, and 15% brackets, 15% for taxpayers in the 25, 28, 33 and 35% brackets, and 20% for taxpayers in the top bracket. *See e.g.*, Kelly Phillips Erb, *IRS Announces 2015 Tax Brackets, Standard Deduction Amounts and More*, FORBES (Oct. 30, 2014, 12:34 PM), <http://www.forbes.com/sites/kellyphillipserb/2014/10/30/irs-announces-2015-tax-brackets-standard-deduction-amounts-and-more>.

134. *See* I.R.C. § 631(c) (Supp. 2014).

135. Revenue Act of 1951, Pub. L. No. 82-183, 65 Stat. 124.

136. *See* DAVID SHER, ENVTL. & ENERGY STUDY INST., FOSSIL FUEL SUBSIDIES: A CLOSER LOOK AT TAX BREAKS, SPECIAL ACCOUNTING, AND SOCIETAL COSTS 2 (2011), http://www.esi.org/files/fossil_fuel_subsidies_062311a.pdf [<http://perma.cc/5GTG-G3MH>].

income.¹³⁷ Section 469 provides that businesses in which the taxpayer does not materially participate are passive activities.¹³⁸ Losses from those activities may not be deducted against ordinary income.¹³⁹ However, the oil and gas industry enjoys an exception; taxpayers with working interests in oil and gas properties may deduct losses from those businesses against their other income sources.¹⁴⁰

States issue bonds to raise money to build public structures and improvements and to finance other public goods. The federal government supports these state activities by excluding from taxation the interest on the bonds received by bondholders.¹⁴¹ States could use revenue from the sale of the bonds to purchase higher-yielding investment properties, a form of tax arbitrage.¹⁴² To prevent tax arbitrage, section 148 denies tax exemption for bonds that are used to obtain “investment-type property.”¹⁴³ However, the natural gas industry enjoys an exception to this rule. Section 148(b)(4) provides that prepayments under qualified natural gas supply contracts are excluded from the definition of “investment-type property.”¹⁴⁴

4. Tax Benefits to Boost Compliance with Environmental and Labor Regulations

Fossil fuel firms also receive a number of tax benefits to support compliance with long-standing environmental and labor laws. Small business refiners receive a credit for producing diesel fuels that comply with the sulfur control requirements for highway diesel fuels set by the EPA,¹⁴⁵ and small business refiners may immediately

137. *Passive Activity Losses—Real Estate Tax Tips*, IRS (Dec. 23, 2015), <https://www.irs.gov/Businesses/Small-Businesses-&Self-Employed/Passive-Activity-Losses-Real-Estate-Tax-Tips> [<https://perma.cc/4B7X-UZTT>].

138. *See* I.R.C. § 469 (Supp. 2014).

139. *See id.*

140. *See* I.R.C. § 469(c)(3).

141. *See* I.R.C. § 103 (2012). Taxpayers, particularly those in higher tax brackets, are encouraged to purchase tax-exempt bonds to receive tax-free interest income. *Id.*

142. The states are then using bond revenue from tax-free investments to obtain higher yields on investments that are already amply supported by a market, not to create public goods.

143. *See* I.R.C. § 148 (2012); *see also* I.R.C. § 103.

144. *See* I.R.C. § 148(b)(4). This provision is known as the “Natural Gas Arbitrage Exemption.”

145. I.R.C. § 179B (2012); I.R.C. § 45H (2012).

expense seventy-five percent of the capital costs associated with purchasing sulfur control equipment instead of taking depreciation.¹⁴⁶ Coal-fired energy producers are also given a special cost recovery period for pollution control equipment.¹⁴⁷

The Surface Mining Control and Reclamation Act requires mining companies to fund trusts to cover the costs associated with reclaiming and restoring properties that have been destroyed during the mining process.¹⁴⁸ The income tax provides a deduction for mining companies that make early payments to reserve trusts to cover these activities.¹⁴⁹ Mining companies are also permitted to take an immediate deduction for the full cost of mine safety equipment rather than recovering those costs gradually through depreciation.¹⁵⁰ Finally, coal companies are required to contribute funds to the Black Lung Disability Trust Fund.¹⁵¹ Disabled miners suffering from black lung and other mining-related illnesses receive payments from this fund.¹⁵² The payments to miners are not taxed as income to the miners.¹⁵³ The exclusion provides a benefit to mining companies because they would be required to pay greater sums to cover the injuries and lost wages of the miners if the benefits were taxable.

5. Exemption from the Corporate Tax for Certain Publicly Traded Partnerships

Other than the business corporation, the primary vehicle for encouraging capital formation for fossil fuel resources is the publicly traded partnership. By organizing entities in partnership form, businesses may avoid being taxed twice, once at the corporate level on net income and again at the shareholder level on dividends, and instead enjoy the benefit of flow-through taxation under Subchapter K.¹⁵⁴ Partnerships are not taxed on

146. See I.R.C. § 179B; see also I.R.C. § 45H.

147. I.R.C. § 169(d)(5) extends the amortization period for recovering an investment in pollution control equipment to eighty-four months from the sixty-month period that is generally available for other types of pollution control facilities. I.R.C. § 169(d)(5) (2012).

148. See 30 U.S.C. §§ 1231–32 (2012).

149. I.R.C. § 468 (2012).

150. I.R.C. § 179E (Supp. 2014).

151. See I.R.C. § 9501 (2012).

152. 30 U.S.C. § 922 (2012).

153. *Id.*

154. Under Subchapter K, partnerships enjoy one level of taxation; income generated by the partnership is taxed only at the partner level. Items of income, gain, loss, deduction, and

their earnings;¹⁵⁵ instead, items of income, gain, deduction, loss and credit flow through to the partners and are reported on their individual tax returns.¹⁵⁶ In addition, distributions of property from a partnership to its partners will not usually trigger gain or loss.¹⁵⁷ Under certain circumstances, publicly traded partnerships combine flow-through taxation, non-recognition on distributions of property (benefits usually reserved to partnerships) with public trading and limited liability (benefits usually reserved to publicly-traded corporations).

In 1987, concerned about the erosion of the corporate tax base,¹⁵⁸ and the provision of an unfair advantage to businesses organized in corporate form,¹⁵⁹ Congress modified the rules¹⁶⁰ to

credit flow through to the partners and are reported on each partner's individual income tax return. Under Subchapter C, however, corporate income is taxed twice, both at the corporate level on net income and at the shareholder level, on dividends. For example, Corporation C calculates its net income, and then pays the appropriate income tax. If Corporation C elects to distribute its earnings and profits to its shareholders, the shareholders will have income tax liability on the dividends received. Corporate earnings are therefore said to be subject to "double taxation." Publicly traded partnerships enjoy public trading, undertake business functions similar to corporations, provide limited liability to their owners, and income from their operations resembles dividend income. See LYNN E. FOWLER, PUBLICLY TRADED PARTNERSHIPS (2011).

155. I.R.C. § 701 (2012).

156. I.R.C. § 702 (2012).

157. Publicly traded partnerships were first developed following the reduction in marginal rates on individual income taxes under the Tax Reform Act of 1981 and the Tax Reform Act of 1986. See MOLLY F. SHERLOCK & MARK P. KEIGHTLEY, CONG. RESEARCH SERV., MASTER LIMITED PARTNERSHIPS: A POLICY OPTION FOR THE RENEWABLE ENERGY INDUSTRY 5 (2011), <http://acore.org/wp-content/uploads/2011/02/CRS-MLPs-for-RE-6-28-11.pdf> [<http://perma.cc/T85U-FZ2F>]; see also Deborah Fields et al., *Triangles in a World of Squares: A Primer on Significant U.S. Federal Income Tax Issues for Natural Resources Publicly Traded Partnerships (Part I)*, TAXES, Dec. 2009, at 21, 23, http://www.mlpassociation.org/wp-content/uploads/2015/08/KPMG_PTP_Primer_Part_I.pdf [<http://perma.cc/D7WJ-XPEV>]. This trend accelerated after Congress repealed the *General Utilities* doctrine. In *General Utilities & Operating Co. v. Helvering*, the Supreme Court held that a corporation recognized no gain or loss on the distribution of appreciated property to its shareholders. See *Gen. Utils. & Operating Co. v. Helvering*, 296 U.S. 200 (1935). The case was repealed when Congress passed the Tax Reform Act of 1986. With the amendment to the corporate income tax, distributions of appreciated property to corporate shareholders were no longer non-recognition events; instead, they were treated as sales. Upon a distribution of property, the corporation realizes gain that will be taxed under the corporate tax and the shareholders receiving dividends will be taxed at the individual level. See I.R.C. § 311(b) (2012). Partnership taxation, governed under Subchapter K, provides that distributions of property from the partnership to the partners are non-recognition events. See I.R.C. § 731 (2012).

158. FOWLER, *supra* note 154; see H. R. Rep. No. 100-495 (1987) (Conf. Rep.), *reprinted in* 1987 U.S.C.C.A.N. 2313-1245.

159. Fields et al., *supra* note 157, at 23.

160. See I.R.C. § 469 (Supp. 2014); see also SHERLOCK & KEIGHTLEY, *supra* note 157, at 6.

require publicly traded partnerships to be treated as corporations for tax purposes.¹⁶¹ A partnership is “publicly traded”¹⁶² if its partnership interests¹⁶³ are traded on an established securities exchange or any other readily tradable secondary market.¹⁶⁴ While publicly traded partnerships are generally treated as corporations for tax purposes,¹⁶⁵ Congress carved out an exception¹⁶⁶ for publicly traded partnerships for which ninety percent of their gross income is “qualifying income.”¹⁶⁷ If ninety percent of the income

161. I.R.C. § 7704 (2012) (providing for most publicly traded partnerships to be taxed as corporations even if they would otherwise be characterized as partnerships under section 7701).

162. *See* I.R.C. § 7704(b) (2012).

163. A partner holds an “interest in a partnership” if the partner has any interest in the capital or profits of the partnership, financial instruments, or contracts, the value of which are determined in whole or in part by reference to the partnership income and equity-flavored debt instrument instruments, such as convertible debt. *See* 26 C.F.R. § 1.7704-1(a)(2)(i) (2015).

164. “Securities exchanges” include public exchanges, national securities exchanges that are exempt from registration under the Securities Exchange Act of 1934 because of limited volume, foreign securities exchanges, regional or local exchanges, and over the counter markets comprised of interdealer quotation systems. *See* 26 C.F.R. § 1.7704-1(b) (2015).

165. *See* I.R.C. § 7704 (2012) (providing for most publicly traded partnerships to be taxed as corporations even if they would otherwise be characterized as partnerships under section 7701).

166. *See* I.R.C. § 7704(c). In addition, existing partnerships that did not meet the qualifying income requirement could remain a partnership for ten years but would be taxed as a corporation after that. When that ten-year period expired in 1997, instead of forcing the publicly traded partnerships that had been grandfathered to be taxed as corporations, Congress permitted them to elect to continue operating as partnerships, and in lieu of the corporate tax, pay an additional 3.5% tax on gross income. *See* SHERLOCK & KEIGHTLEY, *supra* note 157, at 6.

167. “Qualifying income” consists generally of passive forms of income including interest, dividends, real property rents, gains from the dispositions of real property, income and gains derived from exploration, development, mining or production, processing, refining, transportation, or the marketing of any mineral or natural resource, industrial source carbon dioxide, or the transportation or storage of certain fuels. *See* I.R.C. § 7704(d) (“Except as otherwise provided in this subsection, the term “qualifying income” means—(A) interest, (B) dividends, (C) real property rents, (D) gain from the sale or other disposition of real property (including property described in section 1221(a)(1)), (E) income and gains derived from the exploration, development, mining or production, processing, refining, transportation (including pipelines transporting gas, oil, or products thereof), or the marketing of any mineral or natural resource (including fertilizer, geothermal energy, and timber), industrial source carbon dioxide, or the transportation or storage of [certain] fuel[s], or any alcohol fuel . . . or any biodiesel fuel . . . any gain from the sale or disposition of a capital asset (or property described in section 1231(b)) held for the production of income described in any of the foregoing subparagraphs of this paragraph, and (G) in the case of a partnership described in the second sentence of subsection (c)(3), income and gains from commodities (not described in section 1221(a)(1) or futures, forwards, and options with respect to commodities.”).

the publicly traded partnership receives is qualifying income, the entity will be classified as a partnership rather than a corporation for tax purposes.¹⁶⁸ Consequently, investors in natural resources publicly traded partnerships¹⁶⁹ enjoy the combination of regular distributions¹⁷⁰ and a tax shelter in a single investment.¹⁷¹ Investors base their price on the projected level of income they expect to receive from the minimum quarterly distributions and the “tax shield” it provides to allow those distributions to pass to them tax-free.¹⁷²

168. See I.R.C. § 7704(c).

169. Publicly traded partnerships are usually comprised of two different types of business partners: limited partners that invest capital, own the assets, and receive quarterly distributions similar to dividends available to shareholders in C corporations, and a general partner that manages the entity and receives incentive pay. Limited partners do not engage in managerial or other activities associated with operating publicly traded partnerships. Under the partnership tax rules, a buyer of a partnership interest receives tax attributes based on the character of the interest in the hands of the seller of that interest. This would normally give rise to significant diversity among the different partnership interests. Publicly traded partnerships impose certain rules and restrictions and make certain tax elections to ensure that all partnership units maintain their uniformity and fungibility over time. The units carry the same set of rights, entitlements, and tax consequences without regard to the buyer or seller's identity or the tax attributes of the units in their hands. See Fields et al., *supra* note 157, at 30.

170. In general, publicly traded partnerships deliver minimum quarterly distributions to unit holders of all of the available cash in excess of what is necessary to conduct business, comply with the requirements of local law and lenders, and cover a certain number of future distributions. See *id.* at 29. Publicly traded partnerships use price hedges and obtain contributions of property requiring little development in order to secure a predictable level of cash flow. See *id.* at 30. They also look to have the income tax consequences from the distributions minimized. See *id.*

171. In partnerships, items of income, gain, loss, deduction, and credit are not taxed at the partnership level, but flow through and are recognized by investors annually, independent of whether the investors receive a distribution of cash. See *id.* at 22.

172. Cash distributions will be tax-free to the extent of a partner's basis in her partnership units (“outside basis”). See I.R.C. § 731 (2012). The distributions are first treated as a return of capital. See SHERLOCK & KEIGHTLEY, *supra* note 157, at 2. Outside basis is increased by contributions and recognition of income and gain during the year. I.R.C. §§ 722, 705 (2012). It is decreased by distributions and recognition of deduction and loss incurred during the year. I.R.C. §§ 733, 705 (2012). Outside basis is also increased by a partner's share of recourse liabilities for which the partner bears the risk of loss and by an allocation of nonrecourse liabilities undertaken by the partnership. See I.R.C. § 752 (2012). By increasing outside basis through the highly leveraged acquisition of property and taking accelerated depreciation, depletion, and amortization deductions, a publicly traded partnership allows a significant portion of the partnership's cash to flow to investors without the recognition of income for tax purposes. See Fields et al., *supra* note 157, at 30. This is known as a “tax shield.” See *id.* To maintain their tax shield, publicly traded partnerships plan periodic, regular acquisitions of property subject to depreciation, depletion, and amortization. See *id.* Publicly traded partnerships may pay more for property in subsequent

The rationale for the exemption from the corporate tax under section 7704(c) was that firms undertaking active corporate business activities should pay the corporate income tax, and entities engaged in activities that were essentially “no more than investments” should not.¹⁷³ While publicly traded partnerships may initially have been used to finance proven technologies with passive income and stable cash flows,¹⁷⁴ fossil fuel companies are using the entities to finance increasingly risky extraction activities.¹⁷⁵ In 2008 the Emergency Economic Stabilization Act¹⁷⁶ expanded the definition of qualifying income for publicly traded partnerships to include transportation and storage of renewable and alternative fuels, allowing pipelines transporting alternative fuels to receive the

years to ensure that they will be able to maintain their tax shield. *See id.* Limited partners enjoy a tax shield that covers eighty percent of their distributions. *See* DOUG KOPLOW, TOO BIG TO IGNORE: SUBSIDIES TO FOSSIL FUEL MASTER LIMITED PARTNERSHIPS 8 (2013), http://priceofoil.org/content/uploads/2013/07/OCI_MLP_2013.pdf [<http://perma.cc/D4T8-BNSM>].

173. H.R. Rep. 100-391(II), *reprinted in* 1987 U.S.C.C.A.N. 2313-378, 2313-683 (“In general, the purpose of distinguishing between passive-type income and other income is to distinguish those partnerships that are engaged in activities commonly considered as essentially no more than investments, and those activities more typically conducted in corporate form that are in the nature of active business activities. In the former case, the rationale for imposing an additional corporate-level tax on investments in publicly traded partnership form is less compelling, because purchasers of such partnership interest could in most cases independently acquire such investments (or the income has already been subject to corporate-level tax, in the case of dividends). Where the activity of the partnership does not fall into the category of generating passive-type income, however, it is less likely that direct interests in the activity would be available to investors; rather it is more likely that such activities would be conducted in corporate form and would therefore be subject to corporate level tax before profits reached the hands of investors.”). This language was not included in the conference report, however. *See* H.R. No. 100-495 (1987) (Conf. Rep.), *reprinted in* 1987 U.S.C.C.A.N. 2313.

174. *See* SHERLOCK & KEIGHTLEY, *supra* note 157, at 9.

175. Victor Fleischer, *How the IRS Encourages Oil and Gas Spinoffs*, N.Y. TIMES: DEALBOOK (June 18, 2013, 10:43 AM), <http://dealbook.nytimes.com/2013/06/18/how-the-i-r-s-encourages-oil-and-gas-spinoffs/> [<https://perma.cc/4J9N-9EU4>] (“The problem today is that MLPs are no longer the sleepy equivalents of regulated utility companies. Led by companies like Kinder Morgan energy partners, many MLPs are growth companies with volatile earnings. They hold out the promise of capital appreciation, not just steady income, to attract investors.”). *But see* H.R. Rep. 100-391(II), *reprinted in* 1987 U.S.C.C.A.N. 2313-378, 2313-684 (“In the case of natural resources activities, special considerations apply. Thus, passive-type income from such activities is considerably broader, and includes income and gains from exploration, development, mining or production, refining, transportation (including through pipelines transporting gas, oil or products thereof), or marketing of, any mineral or natural resource, including geothermal energy and timber.”). This language was not included in the conference report, however. *See* H.R. No. 100-495 (1987) (Conf. Rep.), *reprinted in* 1987 U.S.C.C.A.N. 2313.

176. Emergency Economic Stabilization Act, 12 U.S.C. §§ 5201–61 (2012).

same tax treatment as petroleum lines.¹⁷⁷ The Internal Revenue Service (“IRS”), with a series of private letter rulings, has further expanded qualifying income to reach businesses that supply natural resource extraction and distribution firms, such as those that supply, store, and transport fracturing fluids, and remove, treat and dispose of fracturing fluid flow back.¹⁷⁸ Companies that lease equipment to oil exploration and production companies and that provide transportation and storage for oil and gas and deliver them from production to the refinery and to retailers may also operate as publicly traded partnerships.¹⁷⁹

6. Tax Credits

In general, tax credit provisions authorize taxpayers to reduce their tax liabilities by an amount equal to a certain percentage of the cost basis¹⁸⁰ of equipment or other property acquired and used in connection with specified activities. Numerous tax credits are available to the fossil fuel industries. For example, U.S. corporations are entitled to receive a credit for foreign taxes paid.¹⁸¹ Under a special rule, corporations are allowed to treat oil and gas royalty payments made to foreign governments as payments of foreign taxes and credit them against the company’s corporate tax liability.¹⁸²

The United States imposes a federal excise tax of 18.4 cents per gallon on gasoline and 24.4 cents per gallon on diesel fuels.¹⁸³ The funds are deposited in the United States Highway Trust Fund,¹⁸⁴

177. See SHERLOCK & KEIGHTLEY, *supra* note 157, at 7.

178. See Fleischer, *supra* note 175.

179. See *id.*

180. A taxpayer’s basis tracks his investment in the property. *Topic 703—Basis of Assets*, IRS, <https://www.irs.gov/taxtopics/tc703.html> [<https://perma.cc/6EQY-LP7J>] (last updated Dec. 30, 2015). Initially, upon purchasing property, a taxpayer’s basis would be the price he paid for purchasing the property plus any transaction costs, such as attorney’s fees, brokerage fees, or survey costs, for example, that he incurred in acquiring the asset. See *id.* A taxpayer is permitted to recover her investment over time for most property used in her trade or business through depreciation allowances, depletion deductions, or amortization. See *Overview of Depreciation*, *supra* note 77. Depreciation, depletion, and amortization deductions are subtracted from the taxpayer’s basis in the asset annually. *Id.*

181. See I.R.C. § 901 (2012).

182. The tax credit is available even if the foreign government to which the royalties are being paid does not have an income tax, as with Kuwait, Qatar, and Saudi Arabia. See *id.*

183. See I.R.C. § 4041 (Supp. 2015).

184. The excise tax is not indexed to inflation and was last raised in 1993. This has led to shortfalls in the Highway Trust Fund, hampering the federal government’s ability to fund

which funds road construction, mass transit, and the cleanup of fuel leaks from underground storage tanks. Section 6426 provides a credit against this tax for alternative fuels, including ethanol and biodiesel, but the credit also extends to certain fossil fuels, such as natural gas.¹⁸⁵

Fossil fuels have also benefited from tax credits originally developed to expand renewable energy resources. The credit for production of nonconventional fuels has been expanded to include fuels such as oil from shale, tight sandstone and tar sands, natural gas from geopressurized brine, coal seams, and coal-based synthetic fuels.¹⁸⁶ Section 30C provides a tax credit of up to thirty percent of the costs of alternative fuel vehicle refueling properties.¹⁸⁷ Section 43 provides a tax credit equal to fifteen percent of the costs associated with enhanced oil recovery, which includes hydraulic fracturing and other processes to recover oil and gas otherwise

highway repairs, environmental restoration, and public transit alternatives. *See* Michael A. Memoli, *Congress Approves Temporary Highway Funding Measure*, L.A. TIMES (July 31, 2014, 6:28 PM), <http://www.latimes.com/nation/politics/la-na-congress-highway-20140731-story.html> [<https://perma.cc/S2EJ-3666>]. The excise tax and Highway Trust Fund were established in 1956 to finance the development of the United States Interstate Highway System. *See* Federal Aid Highway Act of 1956, Pub. L. No. 84-627, § 209, 70 Stat. 374, 397–401. The portion of the fund devoted to developing mass transit was created 1982. AM. PUB. TRANSP. ASS'N, THE SAFE, ACCOUNTABLE, FLEXIBLE, EFFICIENT TRANSPORTATION EQUITY ACT: A LEGACY FOR USERS, EXTENSIONS, AND OTHER RELATED LAWS, FY 2004 THROUGH FY 2012 16 (2012), http://www.apta.com/gap/policyresearch/Documents/Primer_SAFETEA_LU_Funding.pdf [<https://perma.cc/JMU4-NS36>].

185. I.R.C. § 6426(d) excludes the following from the federal excise tax on fuels: liquefied petroleum gas (“LPG”), compressed natural gas (“CNG”), liquefied natural gas (“LNG”), liquefied hydrogen, liquid fuel derived from coal, liquid hydrocarbon derived from biomass, and other “alternative fuels” defined at 42 U.S.C. § 13211(2): “methanol, denatured ethanol, and other alcohols; mixtures containing 85 percent or more (or such other percentage, but not less than 70 percent, as determined by the Secretary, by rule, to provide for requirements relating to cold start, safety, or vehicle functions) by volume of methanol, denatured ethanol, and other alcohols with gasoline or other fuels; natural gas, including liquid fuels domestically produced from natural gas; liquefied petroleum gas; hydrogen; coal-derived liquid fuels; fuels (other than alcohol) derived from biological materials; electricity (including electricity from solar energy); and any other fuel the Secretary determines, by rule, is substantially not petroleum and would yield substantial energy security benefits and substantial environmental benefits.” I.R.C. § 6426(d) (Supp. 2014); 42 U.S.C. § 13211(2) (2012).

186. I.R.C. § 45 (Supp. 2015).

187. I.R.C. § 30C (Supp. 2015). The properties that qualify for this credit allow public refueling for vehicles that use fuels comprised of: (1) electricity, (2) at least twenty percent biodiesel, or (3) eighty-five percent by volume of ethanol, natural gas, compressed natural gas, liquefied natural gas and compressed natural gas (methane), liquefied petroleum gas (propane and butane), and hydrogen. *See id.*

inaccessible through the conventional drilling process.¹⁸⁸ In the hydraulic fracturing process, fluids are injected into a well bore under high pressure to create cracks in the rock and accelerate the flow of oil and natural gas to the surface.¹⁸⁹ Companies using injectant methods that are not hydrocarbon-based may also deduct the costs associated with those injectants.¹⁹⁰ Sections 48A and 48B provide a credit for investments in “clean coal,” coal for which emissions from the combustion of that coal have been offset or reduced.¹⁹¹ During the energy production process, coal gasification and integrated gasification combined cycle projects segregate carbon dioxide emissions, capture them and then sequester them underground for long-term storage.¹⁹² The tax credit is equal to twenty percent of the tax basis of integrated gasification combined cycle property and fifteen percent of the basis for other advanced coal-based generation technologies.¹⁹³

Fossil fuels have enjoyed over one hundred years of public support through a broad variety of mechanisms. These inducements are no longer necessary to encourage startup capital investment. Furthermore, the global market for these fuels undermines any subsidies intended to reduce and stabilize prices for consumers. The negative environmental and health impacts alone suggest that support for these fuels should be reduced or eliminated. Nevertheless, the United States continues to provide substantial support for fossil fuels through the income tax.¹⁹⁴

188. I.R.C. § 43 (2012).

189. Hannah Wiseman, *Untested Waters: The Rise of Hydraulic Fracturing in Oil and Gas Production and the Need to Revisit Regulation*, 20 FORDHAM ENVTL. L. REV. 115, 116 (2009).

190. I.R.C. § 193 (2012).

191. I.R.C. §§ 48, 48B (Supp. 2015).

192. See STEPHEN ANSOLABEHRE ET AL., THE FUTURE OF COAL (2007), http://web.mit.edu/coal/The_Future_of_Coal.pdf [<https://perma.cc/ST2K-NTW8>]; see also INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, IPCC SPECIAL REPORT ON CARBON DIOXIDE CAPTURE AND STORAGE 25 (2005), https://www.ipcc.ch/pdf/special-reports/srccs/srccs_wholereport.pdf [<https://perma.cc/CF7J-RAHL>].

193. See I.R.C. § 48A (2012).

194. See STAFF OF JOINT COMM. ON TAXATION, JCX-29-12, ESTIMATED BUDGET EFFECTS OF S. 2204, THE “REPEAL BIG OIL TAX SUBSIDIES ACT” SCHEDULED FOR CONSIDERATION ON THE SENATE FLOOR ON MARCH 26, 2012 (2012), <https://www.jct.gov/publications.html?func=startdown&id=4415> [perma.cc/Q2NV-JAZC] (indicating that the largest tax subsidies for oil and gas alone have a revenue cost that is twice the size of renewable energy subsidies).

Efforts to scale back the subsidies have met with little success, however.¹⁹⁵

B. Renewable Energy Tax Subsidies

While Congress has employed diverse forms of support for fossil fuels over many years, public support for renewable energy resources is of fairly recent vintage and has taken only two forms, accelerated depreciation under the MACRS system and tax credits.¹⁹⁶ Congress passed the Energy Tax Act of 1978 in response to a series of energy crises and the Arab Oil Embargo.¹⁹⁷ This Act provided nonrefundable investment tax credits to support investment in alternative energy resources, including solar and geothermal energy.¹⁹⁸ Residential tax credits encouraged taxpayers to weatherize their homes to conserve energy and install solar and wind energy equipment.¹⁹⁹ While the residential subsidies expired in 1982 and the investment credits expired in 1985, tax credits have been resurrected, renewed, and expanded in recent years.²⁰⁰

195. See, e.g., JEFFREY H. BIRNBAUM & ALAN S. MURRAY, SHOWDOWN AT GUCCI GULCH 20–21, 83–84, 143–44, 229–31, 288 (1987) (describing attempts to remove tax subsidies for the oil and gas industry prior to and during the passage of the Tax Reform Act of 1986).

196. See PAUL SCHWABE, KARLYNN CORY & JAMES NEWCOMB, NAT'L RENEWABLE ENERGY LAB., RENEWABLE ENERGY PROJECT FINANCING: IMPACTS OF THE FINANCIAL CRISIS AND FEDERAL LEGISLATION 2 (2009), <http://www.nrel.gov/docs/fy09osti/44930.pdf> [<http://perma.cc/K9ZZ-B6C5>]. In response to energy crises and the Arab oil embargo in the 1970s, Congress passed a series of business and residential tax credits. See Energy Tax Act of 1978, Pub. L. No. 95-618, 92 Stat. 3174. The Energy Tax Act of 1978 provided a series of tax credits to support investment in alternative energy resources, including solar and geothermal energy. See GILBERT METCALF, MIT JOINT PROGRAM ON SCI. & POL'Y OF GLOBAL CHANGE, FEDERAL TAX POLICY TOWARDS ENERGY 14-15 (2007), http://globalchange.mit.edu/files/document/MITJPSPGC_Rpt142.pdf [<http://perma.cc/M87P-WX53>]; Hymel, *supra* note 7, at 160. The tax credits were later extended to include wind and ocean thermal technologies. The tax credits have also been extended to support the development of nonconventional fossil fuels, including oil from shale, tight sandstone and tar sands, natural gas from geopressurized brine, coal seams, coal-based synthetic fuels, clean coal, and other fuels. See I.R.C. §§ 30, 43, 45, 48A, 48B (Supp. 2015).

197. Energy Tax Act of 1978, Pub. L. No. 95-618, 92 Stat. 3174.

198. See METCALF, *supra* note 196; see also Hymel, *supra* note 7, at 160. The tax credit has since been expanded to include wind and ocean thermal.

199. See *id.*

200. See Consolidated Appropriations Act, 2016, Pub. L. No. 114-113, 129 Stat. 2242 (2015); Tax Increase Prevention Act of 2014, Pub. L. No. 113-295, 128 Stat. 4010; American Taxpayer Relief Act of 2012, Pub. L. No. 112-240, 126 Stat. 2313; Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010, Pub. L. No. 111-312, 124 Stat. 3296; American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115; Economic Stabilization Act of 2008, Pub. L. No. 110-343, 122 Stat. 3765; Energy Tax Incentives Act of 2005, Pub. L. No. 109-58, 119 Stat. 986.

1. Residential Renewable Energy Tax Credit

Following their expiration in 1982, Congress made another set of residential tax credits available for the use of solar energy systems under the Energy Policy Act of 2005.²⁰¹ The Act established a federal tax credit for residential energy property equal to thirty percent of qualified expenditures for systems serving a taxpayer's residence in the United States.²⁰² The credit is available when the unit is installed, or for new homes, when the taxpayer moves into the unit.²⁰³ Initially, the credit was limited to solar-electric systems, solar water heating systems, and fuel cells, but in 2008, the credit was extended to small wind-energy systems and geothermal heat pumps.²⁰⁴ The American Recovery and Reinvestment Act of 2009 further expanded the credit in a number of ways. It repealed the \$2,000 limit on the amount of credits that could be claimed for all systems placed in service after 2008, except for fuel cells, which have a maximum credit of \$500 per 0.5 kilowatt hour.²⁰⁵ It permitted the credit to be combined with other subsidies and to be applied against any alternative minimum tax liability.²⁰⁶ However, under this Act, all systems except solar and solar thermal technologies must be placed in service on or before December 31, 2016, after which the credit expires.²⁰⁷ The Consolidated Appropriations Act, 2016 extended the credit for photovoltaic energy and solar thermal technologies until 2022, with a gradual reduction in the amount of the credit through that period.²⁰⁸

Congress has provided separate support for renewable energy developers to fund high startup costs on ventures with long future

201. Energy Policy Act of 2005, Pub. L. 109-58, 119 Stat. 594.

202. See I.R.C. § 25D (Supp. 2015).

203. *Residential Renewable Energy Tax Credit*, DATABASE ST. INCENTIVES FOR RENEWABLES & EFFICIENCY, <http://programs.dsireusa.org/system/program/detail/1235> [<https://perma.cc/C37N-CF2J>] (last updated Jan. 14, 2016).

204. Energy Improvement and Extension Act of 2008, Pub. L. 110-343, 122 Stat. 3765.

205. *Residential Renewable Energy Tax Credit*, *supra* note 203.

206. See *id.*

207. See *id.*

208. The credit for photovoltaic and solar water heating technology is thirty percent for systems placed in service by December 31, 2019, twenty-six percent for systems placed in service after that date and by December 31, 2020, and twenty-two percent for systems placed in service between January 1 and December 31, 2021. The credits expire as of January 1, 2022 unless renewed or reinstated by Congress. See Consolidated Appropriations Act, 2016, Pub. L. No. 114-113, § 304, 129 Stat. 2242 (2015); I.R.C. § 25D (Supp. 2015).

revenue streams.²⁰⁹ Subsidies help to mitigate these risks. By granting credits against an investor's tax liabilities, the government induces "tax equity investors" to assume a portion of the risk associated with the development of renewable energy.²¹⁰ The investors then apply the tax credits to reduce their tax liability in later years.²¹¹ The main vehicles Congress uses to support investment in renewable energy projects are the production tax credit²¹² and the investment tax credit.²¹³

2. Production Tax Credit

The production tax credit²¹⁴ ("PTC") was first made available with The Energy Policy Act of 1992.²¹⁵ Production tax credits provide taxpayers with a credit against income tax liability based on the per unit production of electricity generated by a qualifying project over a set period of years.²¹⁶ In general, the PTC provides a ten-year,²¹⁷ inflation-adjusted,²¹⁸ production-based credit for power

209. *Barriers to Renewable Energy Technologies*, UNION CONCERNED SCIENTISTS, http://www.ucsusa.org/clean_energy/smart-energy-solutions/increase-renewables/barriers-to-renewable-energy.html#.VeXyDpcpV_A [<http://perma.cc/D2PV-W3NA>] (last visited Nov. 29, 2015). These startup costs include the expenses of finding and negotiating rights to purchase sites for facilities with access to transmission lines, funding the permitting process, construction, installation, operation and maintenance, marketing, growing and transporting biomass, and training workers to perform these tasks. *See id.*

210. Roberta F. Mann & E. Margaret Rowe, *Taxation*, in *THE LAW OF CLEAN ENERGY: EFFICIENCY AND RENEWABLES* 146 (Michael B. Gerrard ed., 2011).

211. In general, tax credit provisions authorize taxpayers to reduce their tax liabilities by an amount equal to a certain percentage of the cost basis of equipment or other property used in connection with specified activities. Initially, a taxpayer's basis is the price paid to purchase the property plus any transaction costs (such as attorney's fees, brokerage fees, or survey costs) incurred in acquiring the property. *See supra* note 180 and accompanying text.

212. *See* I.R.C. § 45 (Supp. 2015).

213. *See* I.R.C. § 48 (Supp. 2015).

214. I.R.C. § 45.

215. The Energy Policy Act of 1992, Pub. L. 102-486, 106 Stat. 2776. Significant federal funding for renewable energy only became available with the Energy Policy Act of 1992, and firms first began taking advantage of this support in 1994. *See* PFUND & HEALEY, *supra* note 2, at 24. The PTC was originally enacted in 1992 as a temporary subsidy for investment in renewable energy. Congress has repeatedly extended the PTC and re-enacted the legislation after allowing it to lapse. *Renewable Electricity Production Tax Credit (PTC)*, U.S. DEP'T OF ENERGY, <http://energy.gov/savings/renewable-electricity-production-tax-credit-ptc> [<https://perma.cc/JQP7-XTXS>] (last visited Nov. 29, 2015); *Residential Renewable Energy Tax Credit*, *supra* note 203.

216. *See* Mann & Rowe, *supra* note 210, at 146.

217. *See id.* The duration of the production tax credit is ten years after the facility is placed in service. Open loop biomass, geothermal, small irrigation hydroelectric power, and

generated by qualifying facilities.²¹⁹ The credits flow for a five- or ten-year period from the date the project is placed in service.²²⁰ The PTC is not tradable.²²¹ Initially, the PTC provided support for wind energy and closed loop biomass²²² and the credit was briefly expanded to include solar. Projects currently eligible for PTC credits include projects generating electricity produced by wind, closed loop biomass, open loop biomass,²²³ geothermal, small irrigation power, municipal solid waste,²²⁴ qualified hydropower, and marine and hydro-kinetic power.²²⁵

Developers of renewable energy projects employ a variety of financing structures that permit tax equity investors to receive the tax benefits.²²⁶ A common structure is the “flip transaction,”²²⁷ which allows the tax credit investors to acquire their interests for

landfill gas technologies used in municipal solid waste combustion facilities have five-year credit periods. *Renewable Electricity Production Tax Credit (PTC)*, *supra* note 215.

218. The initial credit was set at 1.5 cents per kilowatt hour. The credit is currently 2.3 cents per kilowatt hour of energy produced by wind, geothermal, and closed loop biomass facilities and 1.2 cents per kilowatt hour for open-loop biomass, landfill gas, municipal solid waste, qualified hydroelectric, and marine and hydrokinetic energy resources. *Renewable Electricity Production Tax Credit (PTC)*, *supra* note 215; see Ari Natter, *Credits to Spur Renewable Energy Sources Seen Set to End: Taxes*, BLOOMBERG (Sept. 30, 2013, 12:00 AM), <http://www.bloomberg.com/news/articles/2013-09-30/credits-to-spur-renewable-energy-sources-seen-set-to-end-taxes> [<http://perma.cc/SA6Z-NCPB>].

219. With the production tax credit subsidy set at 2.3 cents per kilowatt hour, the price of energy produced by wind facilities is competitive with conventional energy resources. See Diane Cardwell, *Renewed Tax Credit Buys Wind Power Projects*, N.Y. TIMES (Mar. 21, 2013), <http://www.nytimes.com/2013/03/22/business/energy-environment/a-tax-credits-renewal-lifts-wind-projects.html> [<https://perma.cc/5VGR-8EMK>].

220. See *Renewable Electricity Production Tax Credit (PTC)*, *supra* note 215; see also *Residential Renewable Energy Tax Credit*, *supra* note 203.

221. MARK BOLINGER ET AL., NAT'L RENEWABLE ENERGY LAB., PTC, ITC, OR CASH GRANT? AN ANALYSIS OF THE CHOICE FACING RENEWABLE POWER PROJECTS IN THE UNITED STATES 11–12 (2009), <http://www.nrel.gov/docs/fy09osti/45359.pdf> [<http://perma.cc/3SQM-CB3L>].

222. See Mann & Rowe, *supra* note 210, at 146. Closed loop biomass uses the organic material from a plant grown exclusively for use to produce electricity at a qualifying facility.

223. See *id.* Open loop biomass generates electricity from agricultural livestock waste and cellulose waste material from crops, wood, or forests. Open loop biomass receives a credit of 0.75 cents per kilowatt hour of electricity generated.

224. See *id.* Municipal solid waste facilities include trash combustion and landfill facilities that produce natural gas from biodegradation.

225. See *id.*

226. See *id.*

227. The IRS has provided guidance on the structure of these transactions. See I.R.S. Announcement 2009-69, 2009-40 I.R.B. 475 (Oct. 5, 2009), <https://www.irs.gov/pub/irs-drop/a-09-69.pdf> [<https://perma.cc/SC64-CU9F>].

the tax credit period and then exit the venture.²²⁸ Before investors commit equity to a project that will receive the PTC, they verify that they will have tax liability over a ten-year period to use the tax credits. PTC credits are realized each year over the ten-year credit period as the project generates power. If the project is sold, the remaining credits go to the new owner. However, the sellers may be subject to depreciation recapture.²²⁹ As of 2005, developers must reduce the PTC by the portion of project costs that are financed using other government subsidies, such as government grants, loan guarantees, tax-exempt bonds, and other federal tax credits.²³⁰ In general, under the PTC, the project owner must also operate the project and sell power to an unrelated third party.²³¹

The PTC has always been a temporary subsidy, with automatic sunsets included in the legislation, indicating the date by which the credits would expire. Congress has repeatedly extended the PTC beyond the initial sunset dates, or, after allowing the credits to expire, re-enacted the legislation. The PTC was most recently extended under the Consolidated Appropriations Act, 2016.²³²

228. See BOLINGER ET AL., *supra* note 221, at 11; see also Mann & Rowe, *supra* note 210, at 146. The developer acts as a general partner and manages the development and operation of the facility. The tax credit investors are limited partners. See Mann & Rowe, *supra* note 210, at 146. During the period the credits flow, the limited partners may receive up to ninety-nine percent of the items of income, gain, loss, deduction, and credit. See Rev. Proc. 2007-65, 2007-2 C.B. 967, *modified by* I.R.S. Announcement 2009-69, 2009-40 I.R.B. 475 (Oct. 5, 2009). At the end of the credit period, once the tax credit investors reach certain targets set forth in the partnership or limited liability company agreement that governs the entity that owns and operates the facility, the interests of the investors are reduced and the interests of the developer, the general partner, are increased. See Mann & Rowe, *supra* note 210, at 146. At that point, the developer may acquire the interests of the investors. See *id.*

229. See I.R.C. § 1245 (Supp. 2014). Under MACRS system, depreciation deductions are taken in advance of actual economic depreciation of the equipment. See *supra* notes 79–82 and accompanying text. If property is sold at a gain, much of the gain may be attributable to accelerated depreciation under MACRS. Section 1245 ensures that the taxpayer pays tax on gains at ordinary rates (rather than at the lower capital gains rates which are otherwise applied under section 1231) to reflect depreciation deductions which reduced income taxed at ordinary rates. This is known as depreciation recapture. See I.R.C. § 1245.

230. See *Renewable Electricity Production Tax Credit (PTC)*, *supra* note 215; see also *Renewable Electricity Production Tax Credit (PTC)*, DATABASE ST. INCENTIVES FOR RENEWABLES & EFFICIENCY, <http://programs.dsireusa.org/system/program/detail/734> [<https://perma.cc/KA92-LAMU>] (last updated Dec. 21, 2015).

231. BOLINGER ET AL., *supra* note 221, at 12. The rules for open and closed loop biomass do not mandate that the projects be owned and operated by the same party and that power be sold to an unrelated third party. See *id.*

232. See Consolidated Appropriations Act, 2016, Pub. L. No. 114-113, § 301, 129 Stat. 2242 (2015).

The Act extends the PTC for wind projects that have commenced construction by December 31, 2019 but reduces the amount of the credit, after application of inflation adjustments, in 2017, 2018 and 2019.²³³ The other technologies²³⁴ may receive the PTC for projects that have commenced construction by December 31, 2016. The legislation has a retroactive date of January 1, 2015, allowing qualifying projects that have commenced construction during the 2015 and 2016 calendar years to claim the PTC.²³⁵

3. Investment Tax Credit

The investment tax credit (“ITC”) was first made available in 1962 with the goal of stimulating the economy and bolstering the competitiveness of domestic companies in international trade.²³⁶ The current version of the ITC, developed under the Energy Policy Act of 2005,²³⁷ provides a credit against tax liability based on the total project cost²³⁸ for qualifying projects, which include solar energy projects, geothermal heat pump projects, and small wind projects.²³⁹ Unlike the PTC, the ITC may be layered with government-sponsored low interest loan programs and other subsidies to finance renewable and energy projects.²⁴⁰

233. The PTC amount is reduced by twenty percent for wind facilities commencing construction in 2017, by forty percent for wind facilities commencing construction in 2018, and by sixty percent for wind facilities commencing construction in 2019. DATABASE ST. INCENTIVES FOR RENEWABLES & EFFICIENCY, *supra* note 230.

234. The non-wind projects are closed loop biomass, open loop biomass, geothermal, small irrigation power, municipal solid waste, hydropower, and marine and hydro-kinetic power projects. *See id.*

235. *See Renewable Electricity Production Tax Credit (PTC)*, *supra* note 215. Congress had allowed the PTC to expire at the end of 2013, but the Tax Increase Prevention Act of 2014 provided credits for projects that were under construction prior to January 1, 2015. *See id.* In March of 2015, the IRS further extended the availability of the credits by modifying the tests used to determine if a project has commenced construction. *See* I.R.S. Notice 2015-25, 2015-13 I.R.B. 814 (Mar. 11, 2015). The effect of the guidance was to require the project to have commenced construction prior to January 1, 2015 and be placed in service prior to January 1, 2017. The retroactive application of the legislation ensures that the projects that commenced construction following the 2013 expiration will receive credits. *See id.*

236. *See generally* Revenue Act of 1962, Pub. L. No. 87-834, § 2, 76 Stat. 960, 962-73.

237. Energy Policy Act of 2005, Pub. L. 109-58, 119 Stat. 747 (codified in scattered sections of 42 U.S.C.).

238. *See id.*; BOLINGER ET AL., *supra* note 221, at 11.

239. I.R.C. § 48 (Supp. 2015).

240. American Recovery and Reinvestment Act of 2009, Pub. L. 111-5, 123 Stat. 115 (codified in scattered sections of U.S.C.). The American Recovery and Reinvestment Act of 2009 repealed its restriction on the use of the credit for projects there were also subsidized

Furthermore, ITC projects need not be owned and operated by the same entity;²⁴¹ this permits the use of sale-leaseback structures²⁴² and inverted pass-through leases.²⁴³ The ITC is realized the first year after the facility is placed in service, but the project owner is the only party eligible to use the credit.²⁴⁴ A tax equity investor must retain his interest in the project for at least five years for the full amount of the credits to vest; if the project is sold before all the credits have vested, the credits are disgorged.²⁴⁵ The ITC has expired periodically and Congress has reinstated and modified it a number of times.²⁴⁶ The ITC has been most recently extended under the Consolidated Appropriations Act, 2016.²⁴⁷ A number of solar technologies will continue to receive the thirty percent ITC

by federal energy financing. *See Renewable Electricity Production Tax Credit (PTC)*, *supra* note 215.

241. *See* JOHN F. WITTE, THE POLITICS AND DEVELOPMENT OF THE FEDERAL INCOME TAX 225 (1985). Congress authorized these tax credit lease arrangements under the Tax Credit Reform Act of 1981. *See id.*

242. BOLINGER ET AL., *supra* note 221, at 11. Sale-leaseback transactions are the main vehicle for structuring the flow of investment and the receipt of tax benefits for ITC transactions; developers enter into sale-leaseback transactions with investors that want to offset their income tax liability. *See* Mann & Rowe, *supra* note 210, at 146. Typically, the investors acquire the energy project and then lease it back to the project developer. The term of the lease may not extend beyond eighty percent of the expected life of the project. *See* I.R.C. § 50(d)(5) (Supp. 2014). The tax benefits, including both the investment tax credits and accelerated depreciation deductions, remain with the owner investor. Mann & Rowe, *supra* note 210, at 146–47. The sale-leaseback provides 100% financing for the project, allowing the investor to receive 100% of the tax benefits. *Id.* The sale-leaseback structure must be in place within three months after the project is placed in service. *Id.* At the end of the lease, the developer may renew the lease at the fair market rent or may buy the project at fair market value. *Id.*

243. BOLINGER ET AL., *supra* note 221, at 11. In an inverted pass-through lease, the developer of the project owns the project and leases it to the tax credit investor. The tax credit investor may claim the investment tax credit and also deduct rent paid under the lease, but the developer retains the depreciation deductions. Accelerated depreciation allows projects to depreciate over an accelerated five-year schedule. *See* I.R.C. § 168 (Supp. 2015). In addition, the projects were permitted to have a fifty percent first-year bonus depreciation allowance available through the end of 2014. *See id.*; I.R.C. § 168(k). Consequently, at the end of the lease the developer retains ownership of the project; there are no additional payments to be made to the tax credit investor and no significant transfers or additional transaction costs are necessary for the investor to exit the project. *See* Mann & Rowe, *supra* note 210, at 147.

244. *See* BOLINGER ET AL., *supra* note 221, at 11.

245. *See id.*

246. *See* WITTE, *supra* note 241, at 312; *see also* NOVOGRADAC & CO., RENEWABLE ENERGY TAX CREDIT HANDBOOK (2010).

247. *See* Consolidated Appropriations Act, 2016, Pub. L. No. 114-113, § 303, 129 Stat. 2242 (2015).

through December 31, 2019, after which the credit is reduced in phases to ten percent.²⁴⁸ Other technologies have earlier expiration dates.²⁴⁹ Geothermal electric systems remain entitled to a ten percent credit.²⁵⁰

4. Accelerated Cost Recovery

Since 1986 MACRS has permitted renewable energy properties eligible for the ITC to enjoy cost recovery deductions as five-year property,²⁵¹ though the properties are likely to have a much longer useful life.²⁵² Eligible biomass property and marine and hydrokinetic properties have class-lives of seven years. With the revival of bonus depreciation²⁵³ under the Consolidated Appropriations Act, 2016, taxpayers may deduct fifty percent of the basis of renewable energy equipment placed in service by December 31, 2017 in addition to the depreciation that may be

248. *See id.*; I.R.C. § 48(a)(2)(A)(i) (Supp. 2015). Photovoltaic, solar water heating, solar space heating and cooling units, solar process heat projects that have commenced construction by December 31, 2019 enjoy a thirty percent credit. Afterward, the credit is reduced to twenty-six percent for projects commencing construction by December 31, 2020, twenty-two percent for by December 31, 2021. The credit is ten percent for projects commencing construction in 2022 and future years. *See Consolidated Appropriations Act, 2016, Pub. L. No. 114-113, § 304, 129 Stat. 2242 (2015); I.R.C. § 25D (Supp. 2015).*

249. *See Consolidated Appropriations Act, 2016, Pub. L. No. 114-113, § 143, 129 Stat. 2242 (2015).* Large wind projects placed in service by 2016 will receive a thirty percent credit, after which the credit is reduced to twenty-four percent in 2017, eighteen percent in 2018, twelve percent in 2019. In 2020 the credit expires. For hybrid solar lighting, fuel cells, and small wind the credit is thirty percent for systems placed in service by December 31, 2016, after which the credits expire. Geothermal heat pumps, microturbines, combined heat and power systems placed in service by December 31, 2016 will receive a ten percent credit, after which the credits will expire. *See Business Energy Investment Tax Credit (ITC), DATABASE ST. INCENTIVES FOR RENEWABLES & EFFICIENCY*, <http://programs.dsireusa.org/system/program/detail/658> [<https://perma.cc/V7M2-6KGZ>] (last updated Dec. 21, 2015).

250. *See Business Energy Investment Tax Credit (ITC), supra note 249.*

251. *See Consolidated Appropriations Act, 2016, Pub. L. No. 114-113, § 143, 129 Stat. 2242 (2015); I.R.C. § 168(d)(3)(B)(vi) (Supp. 2015).* The section identifies eligible properties by reference to systems eligible for the ITC under I.R.C. § 48(a)(3)(A). For equipment on which a taxpayer claims the ITC or a § 1603 grant, the taxpayer must reduce the project's basis by fifty percent the value of the thirty percent ITC. The taxpayer may deduct eighty-five percent of the cost basis of the equipment. *See I.R.C. § 50(c)(1) (Supp. 2014).*

252. Under the alternative depreciation system, which more closely approximates economic depreciation, solar and wind systems have a twelve-year class life. I.R.C. § 168(g) (Supp. 2015).

253. I.R.C. § 168(k) (Supp. 2015).

taken under MACRS.²⁵⁴ As with the bonus depreciation for qualified properties used in the fossil fuel industries, bonus depreciation reduces to forty percent for items placed in service in 2018 and to thirty percent for items placed in service in 2019.²⁵⁵ Renewable energy projects may also benefit from section 179, which permits businesses to take an immediate deduction for the full cost of qualifying property, subject to certain limits.²⁵⁶

C. Market Response to Subsidies

This Section contrasts the market response to the two sets of tax expenditures to the energy industry. Fossil fuel investments have been highly profitable²⁵⁷ and demand for investments in fossil fuel publicly traded partnerships has grown dramatically. From 1994 to 2009, the number of publicly traded partnerships traded on public exchanges increased by a factor of ten.²⁵⁸ By 2009, more than 100 publicly traded partnerships were listed on public exchanges, most of them in the energy and natural resources industries.²⁵⁹ By March of 2013, the market capitalization of fossil fuel publicly traded partnerships had reached \$385 billion, an increase of 275 percent from 2000.²⁶⁰

254. See Consolidated Appropriations Act, 2016, Pub. L. No. 114-113, § 143, 129 Stat. 2242 (2015); I.R.C. § 168(k) (Supp. 2015).

255. § 143, 129 Stat. 2242 (2015); I.R.C. § 168(k).

256. See *supra* Part III.A.1. The amount of the ITC applicable to a project is determined by reference to cost basis of the property. I.R.C. § 48(a)(1) (Supp. 2015). For equipment on which a taxpayer claims the ITC or a § 1603 grant, the taxpayer must reduce the project's basis by fifty percent the value of the thirty percent ITC. The taxpayer may expense eighty-five percent of the cost basis of the equipment. See I.R.C. § 50(c)(1) (Supp. 2014).

257. See *Profits for Oil, Gas & Coal Companies Operating in the U.S. and Canada*, OIL CHANGE INT'L (May 2015), <http://priceofoil.org/profits-oil-gas-coal-companies-operating-u-s-canada/> [<http://perma.cc/R9AA-LTBN>] (reporting that public companies involved in extracting, transporting, refining, distributing and trading in fossil fuels in the United States and Canada made \$257 billion profits in 2014); Shakuntala Makhijani, *Profits for Oil, Gas & Coal Companies Operating in the U.S. and Canada*, OIL CHANGE INT'L (Sept. 26, 2013), <http://priceofoil.org/2013/09/26/profits-oil-gas-coal-companies-operating-u-s-canada/> [<http://perma.cc/U2PE-Q439>] (reporting that public companies involved in extracting, transporting, refining, distributing and trading in fossil fuels in the United States and Canada made \$331 billion profits in 2013).

258. See Fields et al., *supra* note 157, at 21.

259. See *id.*

260. See KOPLOW, *supra* note 172, at 4. Some journalists have criticized the rules for publicly traded partnerships as being “undemocratic” because they provide wealthy investors opportunities not available to the general public. See *Finance in America: Subterranean Capitalist Blues*, ECONOMIST (Oct. 26, 2013), <http://www.economist.com/news/leaders/21588365-response-red-tape-and-high-taxes-corporate-america-mutating-subterranean->

In contrast, the market for tax credits has declined precipitously. The primary investors providing equity funding in tax credit transactions have been large corporations, banks, and insurance companies, institutions with predictable revenues and a long-term need to offset corporate income. As these institutions felt the brunt of the recession, the number of banks and insurance companies seeking tax credits declined dramatically. By 2008 there were only twenty institutions in the pool of tax credit investors acquiring interests in renewable energy projects,²⁶¹ including AIG, Citibank, Wachovia, Lehman Brothers, Merrill Lynch and Wells Fargo.²⁶² In 2009 there were as few as six active investors, consisting primarily of large investment banks, commercial banks, and insurance companies.²⁶³

In response to the reduced demand for tax credits, the challenges PTC projects faced in moving to production, and the inability of tax credit investors to use the credits they had, Congress included modifications to the tax credit regimes in the American Recovery and Reinvestment Act of 2009.²⁶⁴ The Act allowed tax credit investors with facilities that qualified for the PTC (receiving credits based on energy produced) to instead take the ITC

capitalist [<http://perma.cc/PGL8-TWSK>]; *The New American Capitalism: Rise of the Distortion*, ECONOMIST (Oct. 26, 2013), <http://www.economist.com/news/briefing/21588379-mutation-way-companies-are-financed-and-managed-will-change-distribution> [<http://perma.cc/ESH6-TBKJ>]. This has changed in recent years. The American Jobs Creation Act of 2004 opened a pathway for mutual funds to invest in publicly traded partnerships, expanding the pool of potential investors substantially. See I.R.C. § 851(b) (Supp. 2014) (treating net income from publicly traded partnerships as qualifying income of regulated investment companies); SHERLOCK & KEIGHTLEY, *supra* note 157, at 6–7. The wisdom of extending the market for units in publicly traded partnerships to individual investors is questionable. While initially the pass through rules were available only for publicly traded partnerships that received passive forms of income, the IRS has, in a series of private letter rulings, expanded the kinds of activities that will produce “qualified income.” See *infra* note 354. These businesses undertake far more risk than was contemplated under the statute. The ability to absorb risk has been a persistent rationale for limiting the kinds of investors that are allowed to invest under the securities rules. For example, the Regulation D Rules, which place limits on the kinds of investors and the liquidity of the shares that are offered in private placement. See 17 C.F.R. §§ 230.500–08 (2015). Investors purchasing unregistered securities must be financially sophisticated, have sufficient knowledge and experience in financial and business matters to evaluate the investment, or sufficient levels of assets to bear the risk. See *id.*

261. See SCHWABE, CORY & NEWCOMB, *supra* note 196, at v.

262. See *id.* at 3.

263. See *id.* at v.

264. See American Recovery and Reinvestment Act of 2009, Pub. L. 111-5, 123 Stat. 115 (codified in scattered sections of U.S.C.).

(receiving credits based on their investment and the total project cost).²⁶⁵ In addition, the Act authorized the Department of the Treasury to offer a one-time grant to investors in lieu of the ITC.²⁶⁶ Grant proceeds were exempt from taxation.²⁶⁷ The cash grant was available through 2013.²⁶⁸

To further complicate matters, credit tightened significantly after 2007, raising borrowing costs for renewable energy project developers.²⁶⁹ Lenders sought to conserve capital and began to limit lending, thereby increasing the costs of borrowing significantly.²⁷⁰ The tightening of the debt and equity markets resulted in shortfalls that slowed development of renewable energy projects and led to massive layoffs throughout the renewable energy industry.²⁷¹ Congress also, under the American Recovery and Reinvestment Act, provided for the federal government to issue loan guarantees to bolster the credit market.²⁷² While the changes in the tax credit programs and the provision of loan guarantees allowed the projects to move forward again, the delays and closures took a significant toll on the industry.²⁷³

The divergence in the markets for the two sets of subsidies begs the question, “Why is this the case?” Parts IV and V explore the ways the subsidies’ structures determine their success and failure, examine whether the differences in structure are a by-product of history, and consider the impacts of politics on their formation and longevity.

265. Mann & Rowe, *supra* note 210, at 149.

266. See MOLLY F. SHERLOCK, CONG. RESEARCH SERV., THE RENEWABLE ELECTRICITY PRODUCTION TAX CREDIT: IN BRIEF 8 (2014), <http://guaranicenter.org/wp-content/uploads/2014/07/CRS-PTC-Report-of-April-7-2014.pdf> [<https://perma.cc/5SLQ-FBRY>].

267. See Mann & Rowe, *supra* note 210, at 149.

268. See *Renewable Electricity Production Tax Credit (PTC)*, *supra* note 215. The American Taxpayer Relief Act of 2012, passed in January 2013, extended the period in which the PTC eligible projects could claim the ITC by requiring projects to begin construction by the end of 2013. See American Taxpayer Relief Act of 2012, Pub. L. 112-240, 126 Stat. 2313 (to be codified in scattered sections of I.R.C.).

269. See BOLINGER ET AL., *supra* note 221, at 1.

270. See SCHWABE, CORY & NEWCOMB, *supra* note 196, at 3.

271. See BOLINGER ET AL., *supra* note 221, at 1. When developers using debt for construction loans and down payments to secure the purchase of equipment found themselves unable to obtain a loan, projects were brought to a halt. See *id.*

272. See SCHWABE, CORY & NEWCOMB, *supra* note 196, at 3.

273. See BOLINGER ET AL., *supra* note 221, at 1.

IV. STRUCTURAL ANALYSIS

This Part examines qualitative differences in the way the structures of the two sets of tax subsidies are designed, along three interrelated dimensions: (1) marketability and liquidity, (2) information and transaction costs, and (3) risk and uncertainty.

A. Liquidity and Marketability

Interests in publicly traded partnerships under section 7704(c) are attractive investments because they offer investors the unique combination of a predictable stream of income and a tax shelter for that income.²⁷⁴ The units are easily acquired and sold because they are fungible and traded on a public exchange.²⁷⁵ While tax and other limitations, such as the passive activity loss rules, have generally kept retail investors from buying units in publicly traded partnerships directly, a 2004 change in the rules for mutual funds has expanded access to small retail investors.²⁷⁶ In addition, the pooling of risks from the securitization of many interests in natural resources makes these investments more attractive.

In contrast, tax credit projects have inherent limitations on marketability and liquidity. To the extent developers cannot use the tax credits themselves, they create business organizational structures that allow the benefit of the credits to flow through to other tax credit investors.²⁷⁷ In order to use tax credits, an investor will need to have positive tax liability. Tax-exempt entities, such as pension funds, sovereign wealth funds, and public utilities have no tax liability and cannot use the credits.

Second, because the credits are delivered over a five- or ten-year period, the only investors able to take full advantage of the credits are those with a predictable level of tax liability.²⁷⁸ The primary investors in tax credits include investment banks, commercial

274. See Fields et al., *supra* note 157, at 30.

275. See *id.*

276. See American Jobs Creation Act of 2004, Pub. L. No. 108-357, § 331, 118 Stat. 1418, 1476 (2004) (codified at I.R.C. § 851(b) (Supp. 2014)) (treating net income from publicly traded partnerships as qualifying income of regulated investment companies); see also SHERLOCK & KEIGHTLEY, *supra* note 157, at 6–7.

277. See, e.g., SCHWABE, CORY & NEWCOMB, *supra* note 196, at 2–3. This increases transaction costs.

278. See *id.* at 3.

banks, and insurance companies.²⁷⁹ The number of tax credit investors for renewable energy has dropped significantly as a result of the decline in the corporate tax base,²⁸⁰ the impacts of economic recession,²⁸¹ and the subsequent tightening of credit markets.²⁸²

279. *See id.*

280. As the corporate tax base has declined, the demand for tax credits has waned. *See* Jia Lynn Yang, *Post Analysis of Dow 30 Firms Shows Declining Tax Burden as a Share of Profits*, WASH. POST (Mar. 26, 2013), https://www.washingtonpost.com/business/economy/post-analysis-of-dow-30-firms-shows-declining-tax-burden-as-a-share-of-profits/2013/03/26/3dfe5132-7b9a-11e2-82e8-61a46c2cde3d_story.html[<http://perma.cc/FG4E-ZTWB>] (describing heightened corporate profits, declining corporate tax revenues, and corporate tax planning to shift income across national boundaries and reduce their overall tax burden). There are several theories for the reduction in the corporate tax base. Alan J. Auerbach, *Why Have Corporate Tax Revenues Declined? Another Look*, 53 CESIFO ECON. STUD. 153 (2007). First, Congress has reduced the statutory corporate rate over time and changed the tax treatment for investment and capital recovery through accelerated depreciation. *Id.* at 159. Second, the corporate tax base has eroded as more businesses have chosen partnership, limited liability company, and S corporation forms, which are subject to pass-through regimes, rather than the corporate income tax. *Id.* at 163–64; *see also* CONG. BUDGET OFFICE, PUB. NO. 4298, TAXING BUSINESSES THROUGH THE INDIVIDUAL INCOME TAX 1 (2012) (describing the trend of new businesses to form not as C corporations, subject to the corporate tax, but as S corporations, partnerships and limited liabilities which enjoy pass-through taxation). Third, multinational corporations have been able to avoid the corporate tax through a number of mechanisms. In general, the U.S. corporate tax is paid only on foreign income that is repatriated to the United States; multinational corporations have avoided the tax by continuing to hold the cash overseas in foreign subsidiaries. Multinational corporations have also been able to shift much of their income to low-tax jurisdictions through transfer pricing mechanisms. Finally, a number of corporations have used inversion strategies, claiming foreign domicile through merger and acquisition activities, to avoid U.S. corporate tax liability on their earnings. Note, however, that the Department of the Treasury and the IRS have recently issued notices that the IRS will be promulgating new rules to reverse the tax benefits associated with inversion activity motivated substantially by tax avoidance. *See* I.R.S. Notice 2014-52, 2014-2 C.B. 712 (Sept. 22, 2014); *see also* I.R.S. Notice 2015-79, 2015-49 I.R.B. 775 (Nov. 20, 2015). While corporate tax reform has been discussed in recent years, for the immediate future, these trends will likely continue. *See* WHITE HOUSE & U.S. DEP'T OF THE TREASURY, THE PRESIDENT'S FRAMEWORK FOR BUSINESS TAX REFORM (2012), <https://www.treasury.gov/resource-center/tax-policy/Documents/The-Presidents-Framework-for-Business-Tax-Reform-02-22-2012.pdf> [<http://perma.cc/L5QH-9FRT>]; *Finance Committee Bipartisan Tax Working Group Reports*, U.S. SENATE COMMITTEE ON FIN. (July 8, 2015) <http://www.finance.senate.gov/chairmans-news/finance-committee-bipartisan-tax-working-group-reports> [<https://perma.cc/8UTR-3U97>]; Howard Gleckman, *Tax Reform Is Possible, but It Won't Be Easy*, FORBES (Nov. 4, 2015), <http://www.forbes.com/sites/beltway/2015/11/04/tax-reform-is-possible-but-it-wont-be-easy/> (“At the leadership council meeting, my colleague Eric Toder outlined four possible options: 1) eliminating business tax expenditures (2) [sic] enacting other measures to raise taxes from businesses such as limiting the deductibility of interest or requiring large pass-throughs to pay corporate income tax, 3) raising tax rates on capital gains and dividends or 4) enacting a new revenue source, such as a carbon tax or a value-added tax. While each of those approaches may have policy merit, none has anything close to enough political support to make business reform happen.”); Michael Burak, *What's the Likelihood of Tax Reform in the*

Third, limits on the use of credits, deductions, and losses affect the ability of many taxpayers to enter the market for tax credits. Prior to the enactment of the Emergency Economic Stabilization Act of 2008, the ITC could not be applied to liability under the Alternative Minimum Tax.²⁸³ In addition, the passive activity loss rules²⁸⁴ and the “at risk” rules²⁸⁵ have generally kept non-institutional investors from using the PTC and ITC.²⁸⁶

Fourth, renewable energy projects funded with tax credits compete for investors with other energy and non-energy investments and other tax credit deals.²⁸⁷ Tax equity investors seek an internal rate of return on their investment as well as the return of their initial capital contribution. Projects using the PTC and the

New Congress?, PWC TAX INSIGHTS (Jan. 28, 2015), <http://www.pwc.com/us/en/tax-services/publications/insights/assets/pwc-ip-whats-likelihood-tax-reform-new-congress.pdf> [<https://perma.cc/KK2Q-S842>] (“President Barack Obama and Republican leaders in the US House of Representatives and the US Senate have said they want to work together and have identified tax reform as one of the few priority issues on which agreement could be possible At the same time, differences between the two political parties may pose challenges for the enactment of significant legislation.”); Scott A. Hodge, *Do the Election Results Improve the Odds of Tax Reform?*, TAX FOUND. (Nov. 5, 2014), <http://taxfoundation.org/blog/do-election-results-improve-odds-tax-reform> [<https://perma.cc/G65J-L89Y>] (“One of the most obvious questions from Tuesday’s election results is: what does this mean for tax reform? I think it certainly enhances the prospects of Congress and the president reaching a grand bargain on overhauling the tax code, however the likelihood that it will be this Congress and this president making such a deal seem pretty remote.”).

281. With corporate consolidation, the carryover of losses has offset income and reduced the demand for tax credits. See Auerbach, *supra* note 280, at 160–61.

282. During the economic downturn, financial institutions and investors suffering net operating losses were using those losses to offset past and future tax liabilities, eliminating demand for tax credits for the immediate future. See Mann & Rowe, *supra* note 210, at 147. Treasury Notice 2008-83 suspended restrictions under I.R.C. § 382 on the offset of net operating losses and unrealized built in losses against the taxable income of certain corporate entities that acquired or merged with other entities. I.R.S. Notice 2008-83, 2008-2 C.B. 905 (Sept. 30, 2008). This allowed banks to realize losses generated by the banks they acquired. The American Recovery and Reinvestment Act of 2009 limited the applicability of Treasury Notice 2008-83 to periods prior to January 17, 2009. In addition, companies that undertook mergers and acquisitions during this period were allowed to use the loss carryovers to offset current income. The Worker, Homeownership, and Business Assistance Act of 2009 extended the period for net operating loss carry-backs to five years. See Worker, Homeownership, and Business Assistance Act of 2009, Pub. L. 111-92, 123 Stat. 2984; see also Rev. Proc. 2009-52, 2009-49 I.R.B. 744 (Nov. 21, 2009).

283. See I.R.C. § 55 (Supp. 2014).

284. See I.R.C. § 465 (Supp. 2014) (describing the at-risk rules).

285. See I.R.C. § 469 (Supp. 2014) (describing the passive activity loss rules).

286. See Rev. Proc. 2007-65, 2007-45 I.R.B. 967 (indicating in safe harbor guidelines that the passive activity loss rules apply to tax equity investment transactions).

287. The ITC and PTC compete with the Low Income Housing Tax Credit and the New Markets Tax Credit for investors. I.R.C. §§ 42, 45 (Supp. 2015).

ITC compete with affordable housing projects financed with the Low Income Housing Tax Credit (“LIHTC”), which provides a minimum rate of return to investors. Furthermore, in comparison with the PTC, the LIHTC exposes investors to no operational risks because the credits are received based on the amount of investment.²⁸⁸

Finally, the ITC requires investors to buy and hold their investments for five years.²⁸⁹ Investment tax credits may be used in the first year, but vest at twenty percent per year for five years.²⁹⁰ A portion of the credit may be recaptured if the project is sold within five years.²⁹¹ PTC credits are realized over the ten-year credit period as the project generates power, but if the tax credit investors sell the project, they may be subject to depreciation recapture.²⁹² The tax credit investor will have a higher tax liability from disgorging the tax benefits they received previously.²⁹³ The recapture provisions increase the price of exit, create lock-in, and inhibit the rational deployment of capital. These aspects make the credit market for renewable energy credits less competitive.

B. Transaction and Information Costs

The subsidy structures for fossil fuels and renewable energy also diverge in terms of the information and transaction costs they impose on deal participants. Investors in publicly traded partnerships enjoy low information and transactions costs. The publicly traded partnership provides for the securitization of interests in many projects, the costs of which are likely to be passed forward to and spread among the many investors, though the

288. See SCHWABE, CORY & NEWCOMB, *supra* note 196, at 5; see also I.R.C. § 42.

289. Mann & Rowe, *supra* note 210, at 149.

290. *Id.*

291. See I.R.C. §§ 46, 48, 50(a)(1)(B) (Supp. 2015). The ITC is comprised of several credits, including the energy credit under § 48. The ITC is subject to recapture if property is disposed of—or otherwise ceases to be investment credit property—within five years after the date the property is placed in service. I.R.C. § 50(a)(1)(B). During the year of recapture, the owner’s tax is increased by the total credit taken and multiplied by a recapture percentage based on how long the ITC property was held. If the property is disposed of (or ceases to be investment credit property) less than one year after the property is first placed in service, there is 100% recapture. After one year, there is eighty percent recapture, after two years, sixty percent, after three years, forty percent, after four years, twenty percent, and after five years, no portion of the credit will be recaptured. *Id.*

292. I.R.C. § 1245 (Supp. 2014).

293. See Mann & Rowe, *supra* note 210, at 149.

incidence has not been modeled. Because those costs may be spread over a much broader pool of investors, the cost per investor will be reduced. In addition, investors' direct transaction costs are limited to those associated with the purchase and sale of stock on a public exchange. Because the units are publicly traded, sponsors selling interests in publicly traded partnerships must provide information about the investment through a prospectus.²⁹⁴ By including information about the anticipated revenue stream, the minimum quarterly distributions, and the projected tax shield to be maintained over several years, the investigation and knowledge costs are reduced for potential investors.

Tax credit deals, in contrast, incur both high transaction and information costs. Few of the developers seeking to construct and operate renewable energy facilities can afford to finance the construction and development of a renewable energy project alone.²⁹⁵ On the equity side of the financing plan, tax credits are awarded on a project-by-project basis. Risks are concentrated rather than pooled as with publicly traded partnership vehicles.²⁹⁶ Tax credits also require investors to be able to project their own tax liabilities well into the future to take full advantage of the credits. Tax credit transactions employ four main financing structures.²⁹⁷ Investors make their decisions on the price to be paid for credits based on the deal structure.²⁹⁸ These investors must determine whether the developer can use all of the tax benefits, whether the developer can fund the project cost without additional debt, whether the developer wants to retain a stake in ownership and ongoing cash flow going forward, whether the developer wants early cash distributions, whether the project has a low projected

294. See Securities Act of 1933, Pub. L. No. 73-22, 48 Stat. 74 (May 27, 1933), (codified as amended at 15 U.S.C. § 77a et seq.); *Registration Under the Securities Act of 1933*, U.S. SEC. & EXCHANGE COMMISSION, <http://www.sec.gov/answers/regis33.htm> [https://perma.cc/WU8C-LVE2] (last updated Sept. 2, 2011).

295. D.P. GOLDMAN, J.J. MCKENNA & L.M. MURPHY, NAT'L RENEWABLE ENERGY LAB., FINANCING PROJECTS THAT USE CLEAN ENERGY TECHNOLOGIES: AN OVERVIEW OF BARRIERS AND OPPORTUNITIES 2 (2005), <http://www.nrel.gov/docs/fy06osti/38723.pdf> [http://perma.cc/6MW9-5E9N].

296. PAUL SCHWABE, ET AL., NAT'L RENEWABLE ENERGY LAB., MOBILIZING PUBLIC MARKETS TO FINANCE RENEWABLE ENERGY PROJECTS: INSIGHTS FROM EXPERT STAKEHOLDERS 3-6 (2012), <http://www.nrel.gov/docs/fy12osti/55021.pdf> [https://perma.cc/5SYV-AD9W].

297. MICHAEL MENDELSON ET AL., NAT'L RENEWABLE ENERGY LAB., THE IMPACT OF FINANCIAL STRUCTURE ON THE COST OF SOLAR ENERGY 4 (2012), <http://www.nrel.gov/docs/fy12osti/53086.pdf> [https://perma.cc/A3YP-SQWQ].

298. *Id.*

internal rate of return, and whether the investment is merely a refinancing rather than an acquisition.²⁹⁹ This variation gives rise to a broad range of prices for investments in similar projects.

Developers are generally unable to leverage their existing assets to obtain loans to complete their development of the project.³⁰⁰ Consequently, the primary mechanism for financing clean energy technologies is asset-based financing.³⁰¹ While project finance has typically been used only in large-scale projects because of the high administrative and transaction costs, it is currently being used to finance much smaller renewable energy projects.³⁰² Loans are generally nonrecourse; lenders seek repayment from the stream of income from the project and from the project's underlying assets in the case of default.³⁰³ The National Renewable Energy Lab analyzed several financial structures for the development of renewable energy resources,³⁰⁴ comparing the levelized energy costs³⁰⁵ for wind power to determine which structures to use in large-scale solar projects.³⁰⁶ They concluded that the use of debt at the project level would reduce the overall cost of capital and

299. *See id.*

300. GOLDMAN, MCKENNA, & MURPHY, *supra* note 295, at 2. Lenders will make debt available for the project based on the size and stability of the developer. *See id.* at 3–5 (discussing key challenges involved in financing clean-energy technology projects, including scalability and various types of risk).

301. *Id.* at 1.

302. *Id.* at 2.

303. *See id.* at 1. Creditors may also request additional security in the form of pledges from creditworthy third parties or sponsors in the project. In general, the debt-to-equity ratio is high, often in the range of seventy percent debt to thirty percent equity. *Id.* at 2. Debt is preferred, as the least expensive form of financing, but equity is needed to maintain creditworthiness. Revenues from the project are used to pay interest and principal on the debt, cover the transaction costs of developing and structuring the project, cover operation and maintenance costs, and generate a return to the equity investors. *Id.*

304. MENDELSON ET AL., *supra* note 297, at iv.

305. The “levelized costs of energy” are the minimum costs required to produce power over a nominal twenty-year period for each of the different energy production methods. The equation attempts to factor in the hard capital costs of the various types of facilities that must be built and equipment that must be put into service to produce that energy. The calculation assumes that the operating costs are covered and that the equity and debt requirements are satisfied. *Id.* at 14.

306. *See id.* at 1. They evaluated four different structures: (1) a situation in which the owner could finance the development and operations of the facility, (2) an all equity partnership flip, in which equity investors entered to claim the tax credits available to the project, and once the tax credit had lapsed, exit the partnership, (3) a leveraged partnership flip structure, in which a portion of the financing costs associated with development of the project are financed by debt, and (4) a sale-leaseback structure. *Id.* at 2–3.

ultimately produce a lower levelized cost of energy to consumers.³⁰⁷ Project debt also complicates the deal structure, however; tax credit equity investors see debt as a source of increased risk, since the developer has less at stake and the lender has senior title to the assets in bankruptcy.³⁰⁸ Because there is higher risk, the tax credit investors require higher levels of returns on their investment.³⁰⁹ Debt complicates due diligence investigations as well.³¹⁰

Investors in renewable energy face additional risks compared to investors in traditional energy resources, including risks associated with new technology,³¹¹ resource availability,³¹² scale,³¹³ and market competition.³¹⁴ Because the facilities have no operating history, equity investors and lenders must determine the value of the assets involved in the project, the projected stream of income for the project, the extent of the equity and debt involved, the creditworthiness of project sponsors, and the availability of other security to ensure a return on investment.³¹⁵ Project revenues may also be less stable; the revenues are determined by the price of electricity.³¹⁶ Project sponsors attempt to reduce these risks by entering into energy purchase agreements with utilities.³¹⁷ Energy purchase agreements ensure that the project will be able to sell its electricity and produce a consistent stream of revenues; they provide assurance to lenders and investors of a return on their investments. This assurance is undercut, however, when there is an oversupply of electric capacity.³¹⁸ Renewable electricity projects also face risks associated with transmission; the de-bundling of

307. *Id.* at 27.

308. *Id.*

309. *Id.* The availability of federal loan guarantees reduces risk to both the lender and to tax credit investors. However, the debt to equity ratio may change.

310. *See id.*

311. *See* GOLDMAN, MCKENNA & MURPHY, *supra* note 295, at 3. Investors have a concern that technology will become obsolete and unable to perform in a commercial setting. They also face high information costs because often there is little information on comparable projects. *See id.*

312. *See id.* at 4. Cash flows may be lower than those for fossil fuel utilities, particularly if the renewable resource, such as solar energy, is produced only at certain times and is not available on demand to produce additional power during periods of peak demand. *Id.*

313. *Id.* at 5.

314. *Id.* at 3.

315. *Id.*

316. *Id.* at 4.

317. *Id.* (noting that revenue security is “enhanced where power purchase, or other off-take agreements . . . are available”).

318. *Id.*

generation facilities from transmission facilities has undermined the ability of electricity generators to assure that they will be able to transmit the electricity they generate.³¹⁹ These uncertainties, and the attendant due diligence costs that investors are required to incur to clarify them, result in higher capital costs for renewable energy technology projects than for traditional technologies for power generation.³²⁰

C. Risk and Uncertainty

Initially, the operational risks associated with publicly traded partnerships invested in natural resources were low; the entities received the privilege of corporate tax exemption because they were passively delivering revenues such as royalties from oil and gas leases and income from the transportation of oil and gas through pipelines.³²¹ The risks associated with natural resource development have increased, however. Publicly traded partnerships now engage in operations that impose not only operational risks, but also regulatory risks from tort liability and regulatory sanction for soil, water, and air pollution.³²² As publicly traded partnerships undertake operations that resemble normal corporate activity, this tax preference begins to lack justification.³²³ Nevertheless, the tax preference is permanent; there has been little legislative activity to eliminate the corporate tax exemption under section 7704(c). In fact, the exemption has been expanded to include a much broader array of activities.³²⁴ While the fossil fuel

319. GOLDMAN, MCKENNA & MURPHY, *supra* note 295, at 2.

320. *See id.* at 3.

321. *See* Fleischer, *supra* note 175.

322. *See, e.g.*, U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-12-388, PIPELINE SAFETY (2012), <http://www.gao.gov/assets/590/589514.pdf> [<https://perma.cc/58ZA-R2JB>] (outlining increased risks from lack of data on federally unregulated onshore gathering lines, their location, age and condition, higher levels of encroachments from land use changes, and the expansion of larger gathering lines operating at higher pressures to accommodate increased extraction of oil and natural gas from shale deposits); PAUL W. PARFOMAK, CONG. RESEARCH SERV., KEEPING AMERICA'S PIPELINES SAFE AND SECURE: KEY ISSUES FOR CONGRESS (2013) (reviewing pipeline safety and security risks and policy); Lena Groeger, *Pipelines Explained: How Safe Are America's 2.5 Million Miles of Pipelines?*, PRO PUBLICA (Nov. 15, 2012), <http://www.propublica.org/article/pipelines-explained-how-safe-are-americas-2.5-million-miles-of-pipelines> [<https://perma.cc/4DYM-XGUF>].

323. *See* Fleischer, *supra* note 175.

324. *See id.* The IRS has, through a series of private letter rulings, issued guidance that undercuts the rationale for preferential treatment for passive investments, granting publicly traded partnership status to companies that supply and transport hydraulic fracturing fluid

industry faces little legislative risk associated with the tax treatment of the investment vehicle, the actual risks that investors face are rising.

Operational risk for wind and solar have declined as the technology has matured. Investors in renewable energy now face greater risk from the expiration of the tax credit regime. The temporary duration of tax credits undercuts investment in renewable energy resources.³²⁵ Both the PTC and the ITC are subject to sunsets, the expiration of the tax provisions that authorize their use.³²⁶ The PTC has been renewed and extended repeatedly over the course of its history; it was allowed to lapse six times, but it has always ultimately been renewed or reinstated.³²⁷

Even with the extensions and renewals, actual and threatened expirations have at times been catastrophic for development of a manufacturing base for solar and wind in the United States. During the periods in which the tax credits were allowed to lapse very little new wind capacity was brought online.³²⁸ The limited one- and two-year extensions of the PTC have required developers to rush to complete construction quickly to be assured of receiving the credits.³²⁹ The stringent time pressures have undermined the function of the credit in stimulating low-cost wind development, reduced investment, increased costs,³³⁰ and given rise to cycles of

(chemicals used in the extraction process), activities that are only incidental to energy production. *See id.*; *see also infra* note 354.

325. *See* WISER, BOLINGER & BARBOSE, *supra* note 3, at 5; *see also* N.L., *Blowing Hot and Cold*, *ECONOMIST* (June 7, 2013, 5:41 PM), <http://www.economist.com/blogs/democracyinamerica/2013/06/energy-policy> [<http://perma.cc/JF62-SWKG>].

326. *See* Diane Cardwell, *Worry About Solar Projects After End of Tax Credits*, *N.Y. TIMES* (Jan. 25, 2015), <http://www.nytimes.com/2015/01/26/business/worry-for-solar-projects-after-end-of-tax-credits.html> [<https://perma.cc/EZ3M-C46N>]; *see also* DATABASE ST. INCENTIVES FOR RENEWABLES & EFFICIENCY, *supra* note 230.

327. The production tax credit was allowed to expire in July 1999, at the end of 2001, at the end of 2003, at the end of 2012, and at the end of 2014. *See* DATABASE ST. INCENTIVES FOR RENEWABLES & EFFICIENCY, *supra* note 230; *Wind Energy Tax Credit Set to Expire at the End of 2012*, U.S. ENERGY INFO. ADMIN. (Nov. 21, 2012), <https://www.eia.gov/todayinenergy/detail.cfm?id=8870> [<https://perma.cc/M67F-LMJP>].

328. *Production Tax Credit for Renewable Energy*, UNION CONCERNED SCIENTISTS, http://www.ucsusa.org/clean_energy/smart-energy-solutions/increase-renewables/production-tax-credit-for.html#.Vm1wC4SwKki [<http://perma.cc/LMV8-3DGZ>] (last visited Nov. 28, 2015).

329. *See* WISER, BOLINGER & BARBOSE, *supra* note 3, at 5.

330. *Id.*

boom and bust.³³¹ Sunsets have also undermined the industry's ability to plan rationally, develop projects, coordinate the development of transmission infrastructure, and innovate in manufacturing.³³² Finally, the two-year credit period has simply been too short to support investments in geothermal or biomass, which have lengthy planning and development periods.³³³

Along all three dimensions, liquidity and marketability, information and transaction costs, and risk and certainty, renewables have been given short shrift when compared to fossil fuels. The next Part explores the political factors that have led to different treatment. It examines the ways that structure affects tax expenditure visibility and administrative accountability and contributes to the continued dominance of the fossil fuel industry.

V. POLITICAL ECONOMY

A. Budgetary History and Temporary Legislation

The divergence in fossil fuel and renewable energy subsidies and their markets may result, in part, from historical path dependence. The ITC originally dates to 1964 and the PTC was established under the Energy Policy Act of 1992, when funding for renewable energy began in earnest.³³⁴ During this period, the federal

331. *Id.*

332. *Id.* at 9. U.S. manufacturers have not been able to compete in development and manufacturing; instead, they have been overtaken by foreign markets. A ten-year extension of the PTC for wind is estimated to reduce the installed cost of wind projects by fifteen percent to twenty percent, the cost savings arising from increased efficiency, labor deployment in capital investment, enhanced research and development, transportation savings, and an increase in domestic manufacturing that would reduce the risks associated with exchange rates on U.S. dollars for foreign currencies to acquire foreign manufactured turbines and components. *See id.* at 9–10.

333. Planning and permitting processes sometimes exceed two years for renewable projects. This deters developers from pursuing projects because credits may no longer be available at the time the project is approved. The twelve- to twenty-four-month development window provided for by the PTC extensions is not long enough to allow the development of geothermal or biomass projects, which have development periods approaching five years. *See WISER, BOLINGER & BARBOSE, supra* note 3, at 12.

334. Energy Policy Act of 1992, Pub. L. No. 102–486, § 1212, 106 Stat. 2776, 2969 (codified as amended at 42 U.S.C. § 13317 (2012)). The PTC was originally enacted in 1992 as a temporary subsidy for investment in renewable energy. Congress has repeatedly extended the PTC and re-enacted the legislation after allowing it to lapse. *See Renewable Electricity Production Tax Credit (PTC), supra* note 215; DATABASE ST. INCENTIVES FOR RENEWABLES & EFFICIENCY, *supra* note 230.

government was struggling with significant budget deficits.³³⁵ For the prior decades, Congress had enjoyed the benefits of hidden annual tax increases.³³⁶ Tax brackets were set forth in the statutes in nominal dollars; inflation caused higher tax rates to be imposed on taxpayers at lower and lower levels of income, a phenomenon known as “bracket creep.”³³⁷ Congress lowered tax rates significantly in 1981³³⁸ and 1986,³³⁹ and included a provision to modify the brackets based on changes in the consumer price index, eliminating the hidden tax increases wrought by inflation.³⁴⁰ While the Tax Reform Acts of 1981 and 1986 were designed to be revenue neutral, a substantial increase in federal spending during the Reagan Administration sharply increased budget deficits and the federal debt.³⁴¹ In 1990, in response to the ballooning deficits, Congress passed PAYGO, a budgetary process that enforced budgetary discipline by requiring all new budget proposals to be revenue neutral.³⁴²

PAYGO required Congress to pay for new spending programs or tax cuts with cuts to other spending programs or with higher taxes.³⁴³ Failure to comply would result in “sequestration,” an across-the-board reduction in spending for non-exempt mandatory

335. See BROWNLEE, *supra* note 117, at 150–51.

336. See Tracey M. Roberts, *Brackets: A Historical Perspective*, 108 NW. U. L. REV. 925, 945–46 (2014).

337. See *id.* at 946.

338. See *id.* at 937. In 1981, under the Economic Recovery Tax Act of 1981 (“ERTA”), the top rate dropped from seventy percent to fifty percent. ERTA also authorized the Department of the Treasury to index the brackets for inflation. *Id.*

339. See *id.* The Tax Reform Act of 1986 then brought top marginal rates down again with the top marginal rate set at twenty-eight percent. *Id.*

340. See *id.* at 947–48.

341. From 1981 to 1988, the federal debt increased from approximately \$1 trillion to \$2.6 trillion (approximately \$2.557 trillion to \$5.125 trillion in 2013 dollars). *Historical Debt Outstanding—Annual 1950–1999*, TREASURYDIRECT, http://www.treasurydirect.gov/govt/reports/pd/histdebt/histdebt_histo4.htm [<https://perma.cc/7G8B-N6PX>] (last updated May 5, 2013); see also *Historical Federal Receipt and Outlay Summary*, TAX POL’Y CTR. (Feb. 2, 2015), <http://www.taxpolicycenter.org/taxfacts/displayafact.cfm?Docid=200> [<http://perma.cc/Y3E8-HRTW>].

342. See Omnibus Budget Reconciliation Act of 1990, Pub. L. No. 101-508, § 252, 104 Stat. 1388, 1388-581–82 (codified as amended at 2 U.S.C. § 902 (2012)).

343. *The Budget Process: What Is PAYGO?*, TAX POL’Y CTR., <http://www.taxpolicycenter.org/briefing-book/background/budget-process/paygo.cfm> [<http://perma.cc/4YBL-426D>] (last updated July 12, 2007).

programs in an amount that would offset the loss in revenues.³⁴⁴ When the PAYGO statute expired in 2002, Congress returned to deficit spending, allowing the federal debt to nearly double between 2001 and 2009.³⁴⁵ In 2010 Congress passed a statutory form of PAYGO reinstating the original rules, with significant exemptions.³⁴⁶ The Senate's Byrd Rule also limits discretion in spending. It prohibits committees from adding items to a budget resolution, other than those that affect revenue or spending, and bars initiatives that would increase the deficit for a period beyond the period identified in the budget resolution.³⁴⁷

PAYGO requires new spending to be paid for over the budget year, and the following four or nine fiscal years.³⁴⁸ Congress has sidestepped this limitation by adopting legislation that expires within the five or ten year time-frame, reducing the overall revenue cost of the legislation.³⁴⁹ While most of the fossil fuel subsidies were passed before PAYGO, the tax subsidies for renewables have been developed during periods of increasing budget deficits, subject to the PAYGO rules, and limited by sunset requirements.

Budgetary history does not provide a complete explanation for the sunsets on renewable energy credits, however. The ITC was first developed during the "era of easy finance," when tax rates were high and inflation and bracket creep functioned as a hidden tax increase.³⁵⁰ Yet the ITC has been repealed, reinstated, and allowed to lapse on numerous occasions, while tax subsidies for fossil fuels developed in the 1960s have not experienced the same volatility.³⁵¹ Furthermore, the corporate tax exemption for natural resources publicly traded partnerships was developed within only a few years of the date the ITC was expanded and the PTC was

344. See RICHARD KOGAN, CTR. ON BUDGET & POL'Y PRIORITIES, THE NEW PAY-AS-YOU-GO RULE IN THE HOUSE OF REPRESENTATIVES 5 (2007), <http://www.cbpp.org/sites/default/files/atoms/files/1-12-07bud.pdf> [<https://perma.cc/NCX4-EJZD>].

345. The PAYGO system was adopted as a standing rule in the House of Representatives for a period but waived on numerous occasions. See *id.* at 3, 6.

346. See Statutory Pay-As-You-Go Act of 2010, Pub. L. No. 111-139, tit. I, 124 Stat. 8, 8–29 (to be codified in scattered sections of 2 U.S.C.).

347. See *The Budget Process: What Is PAYGO?*, *supra* note 343.

348. See *id.*

349. See Kysar, *supra* note 70, at 1011–12 (asserting that sunset provisions "reduce the cost of legislation" which stop a member of the House from challenging the legislation under the statutory PAYGO requirement).

350. See BROWNLEE, *supra* note 117, at 107–28.

351. See *supra* note 246 and accompanying text.

created to support renewables. Tax credits for renewables have always been temporary;³⁵² the rules for publicly traded partnerships are permanent fixtures of the income tax.³⁵³ Moreover, Congress and the IRS have expanded the kinds of income that qualify for exemption from the corporate tax under section 7704(c) in recent years,³⁵⁴ even though budgetary constraints have persisted since the late 1980s and deficits have increased substantially since 2000.³⁵⁵ The political economy in operation during the periods in which these subsidies were developed may also contribute to the story.

B. Client Politics and the First Mover Advantage

As James Q. Wilson wrote in *The Politics of Regulation*,³⁵⁶ when the costs of legislation are diffuse and its benefits are concentrated,

352. See e.g., DATABASE ST. INCENTIVES FOR RENEWABLES & EFFICIENCY, *supra* note 230 (noting the “numerous” times the PTC has expired and been renewed); see also Cardwell, *supra* note 326 (expressing concern that the ITC might expire at the end of 2016).

353. See I.R.C. § 7704 (2012). Note the provision is within the Tax Code and it contains no sunset provisions or expiration date. See *id.*

354. See Emergency Economic Stabilization Act of 2008, Pub. L. No. 110-343, § 208(a), 122 Stat. 3765, 3840 (expanding the definition of “qualifying income” to include income or gains from the transportation or storage of certain fuels). The IRS has issued a series of private letter rulings that expand the definition of qualifying income to include a number of activities associated with hydraulic fracturing and oil and gas exploration. See I.R.S. Priv. Ltr. Rul. 201414004 (Sept. 11, 2013) (addressing income from the wholesale marketing and transportation of silica for hydraulic fracturing to customers engaged in the exploration and production of oil and natural gas); I.R.S. Priv. Ltr. Rul. 201250003 (Sept. 6, 2012) (addressing income from the lease of an offshore oil and gas platform (along with related machinery and equipment)); I.R.S. Priv. Ltr. Rul. 201227002 (Mar. 1, 2012) (addressing income from the removal, treatment, recycling, and disposal of fracturing flowback, produced wastewater, and other residual waste products from oil and gas well fracturing); I.R.S. Priv. Ltr. Rul. 201227001 (Mar. 1, 2012) (addressing income from the transportation of refined petroleum products and other products to customers engaged in drilling, exploration and production, and mining activities at the site of such activities); I.R.S. Priv. Ltr. Rul. 200909006 (Feb. 27, 2009) (addressing income from licensing seismic data to oil and gas producers). In May of 2015, the IRS proposed new regulations on qualifying income under § 7701(d)(1)(E) to clarify the types of activities related to exploration and development, mining, production, refining, processing, or a transportation or marketing of a mineral or natural resources that give rise to qualifying income. See 80 Fed. Reg. 25,970 (May 6, 2015) (to be codified at 26 C.F.R. pt. 1).

355. See generally CONG. BUDGET OFFICE, THE BUDGET AND ECONOMIC OUTLOOK: 2014 TO 2024, HISTORICAL BUDGET DATA tbl.H-1 (2014), <https://www.cbo.gov/sites/default/files/113th-congress-2013-2014/reports/45010/45010-breakout-AppendixH.pdf> [<https://perma.cc/JCP2-8H8F>].

356. See JAMES Q. WILSON, THE POLITICS OF REGULATION 369 (1982) (“When the benefits of the prospective policy are concentrated but the costs are widely distributed, *client politics* is likely to result. Some small, easily organized group will benefit and thus has a powerful incentive to organize and lobby; the costs of the benefit are distributed at a low per capita

legislation is easy to enact, maintain, and extend.³⁵⁷ Tax subsidies for fossil fuels are a good example of the legislative product of “client politics.”³⁵⁸ The first subsidies for fossil fuels date to the early years of the income tax, when the fossil fuel industry could enjoy concentrated benefits, the costs were diffuse and borne generally,³⁵⁹ and the environmental and health costs would not be known until the 1980s.³⁶⁰ Tax subsidies for old technologies embedded in the tax code enjoy favorable treatment for two other reasons. They benefit from being prior in time, obtaining a “first-mover advantage” in the context of rent-seeking activities.³⁶¹ Congress offers fossil fuels financial support at levels that are nearly twice those provided to renewable energy resources.³⁶²

rate over a large number of people, and hence they have little incentive to organize in opposition—if, indeed, they even hear of the policy. As we shall see, however, an important organizational change has occurred that has altered the normal advantage enjoyed by the client group in these circumstances—the emergence of ‘watchdog’ or ‘public interest’ associations that have devised ways of maintaining themselves without having to recruit and organize the people who will be affected by a policy. Absent such watchdog organizations, however, client politics produces regulatory legislation that most nearly approximates the producer dominance model. Countless industries and occupations have come to enjoy subsidies and regulations that, in effect, spare them the full rigors of economic competition.”).

357. *See id.*

358. *See id.*

359. Tax expenditures reduce the tax base and shift the costs of government to others.

360. Justin Gillis & Clifford Krauss, *Exxon Mobil Investigated for Possible Climate Change Lies by New York Attorney General*, N.Y. TIMES (Nov. 5, 2015), http://www.nytimes.com/2015/11/06/science/exxon-mobil-under-investigation-in-new-york-over-climate-statements.html?_r=0 [<https://perma.cc/KTH4-TK4N>]; Sara Jerving, et al., *What Exxon Knew about the Earth’s Melting Arctic*, L.A. TIMES (Oct. 9, 2015), <http://graphics.latimes.com/exxon-arctic/> [<https://perma.cc/4752-6Y5Y>] (“Today, as Exxon’s scientists predicted 25 years ago, Canada’s Northwest Territories has experienced some of the most dramatic effects of global warming.”); Avaneesh Pandey, *ExxonMobil and Climate Change: New Documents Reveal Oil Giant Knew Risks but Continued To Fund Deniers*, INT’L BUS. TIMES (July 9, 2015), <http://www.ibtimes.com/exxonmobil-climate-change-new-documents-reveal-oil-giant-knew-risks-continued-fund-2000868> [<https://perma.cc/CXF5-WAPJ>] (“In the early 1980s, when climate change and the threats associated with it were largely confined to the realm of science, ExxonMobil—one of the world’s largest oil companies—was not only aware of the links between fossil fuels and global warming, it was also actively trying to promote climate change denial among the general public, newly-discovered emails indicate.”).

361. The first firm to enter a market may later dominate the market because they were the first to access and control key resources. *See* Fernando Suarez & Gianvito Lanzolla, *The Half-Truth of First-Mover Advantage*, HARV. BUS. REV. (April 2005), <https://hbr.org/2005/04/the-half-truth-of-first-mover-advantage> [<https://perma.cc/NN9V-Q7GP>].

362. *See* STAFF OF JOINT COMM. ON TAXATION, *supra* note 194 (indicating that the largest tax subsidies for oil and gas—and excluding coal subsidies altogether—have a revenue cost that is twice as large as those for renewable energy).

Tax subsidies for renewable energy, on the other hand, arose during periods in which the dynamics were entirely different. Proposals for tax subsidies for renewable energy have resulted from “entrepreneurial politics,”³⁶³ situations in which the costs of change are borne by a smaller segment of society, but the costs of the status quo are borne in small increments by a larger swath of society. Countries with less wealth and fewer resources to adapt or mitigate the damage will likely suffer the effects of climate change disproportionately.³⁶⁴ Because global warming is a stock-flow problem,³⁶⁵ the most significant impacts from global warming are

363. See WILSON, *supra* note 356, at 370 (“[A] policy may be proposed that will confer general (though perhaps small) benefits at a cost to be borne chiefly by a small segment of society. When this is attempted, we are witnessing *entrepreneurial politics*. Antipollution and auto-safety bills were proposed to make air cleaner or cars safer for everyone at an expense that was imposed, at least initially, on particular segments of industry. Since the incentive to organize is strong for opponents of the policy, but weak for the beneficiaries, and since the political system provides many points at which opposition can be registered, it may seem astonishing that regulatory legislation of this sort is ever passed. It is, and with growing frequency in recent years—but it requires the efforts of a skilled entrepreneur who can mobilize latent public sentiment (by revealing a scandal or capitalizing on a crisis), put the opponents of the plan publicly on the defensive (by accusing them of deforming babies or killing motorists), and associate the legislation with widely shared values (clean air, pure water, health, and safety). The entrepreneur serves as the vicarious representative of groups not directly part of the legislative process. . . . Policy entrepreneurs and their allies inside the government were in large measure responsible for the laws enforced by the Environmental Protection Agency.”).

364. See Robert Mendelsohn, Ariel Dinar & Larry Williams, *The Distributional Impact of Climate Change on Rich and Poor Countries*, 11 ENVTL. & DEV. ECON. 159, 161 (2006) (“The results [of our study] indicate that the poorest half of the world’s nations suffer the bulk of the damages from climate change, whereas the wealthiest quarter has almost no net impacts.”).

365. See Richard J. Lazarus, *Super Wicked Problems and Climate Change: Restraining the Present to Liberate the Future*, 94 CORNELL L. REV. 1153, 1165–66 (2009). Global temperatures depend on the concentration (or the “stock”) of greenhouse gases in the atmosphere. The stock is increased as carbon dioxide and other greenhouse gases “flow” into the atmosphere. Human activities have increased the rate at which this has occurred, primarily by burning fossil fuels. The stock decreases as carbon is taken out of the atmosphere. This occurs primarily when trees, grasses, and marine-based plants absorb carbon dioxide and store it. The metaphor that is most commonly used to illustrate the problem is a bathtub. The tap represents the flow of greenhouse gases into the atmospheric tub. The drain represents the capacity of existing plant life to remove the greenhouse gases from the atmosphere. Because the flow of greenhouse gases into the tub is proceeding at a much faster rate than natural processes can drain them, the stock of greenhouse gases is increasing and global temperatures are rising. An additional concern is that the increase in greenhouse gases is changing the ocean chemistry and reducing the ability of marine plant life to remove carbon dioxide from the atmosphere. In other words, the drains are closing. To stop human-caused global warming, the stock of greenhouse gases has to drop. This means that the rate at which greenhouse gases are released into the atmosphere needs to drop well below the rate

expected to occur in the future.³⁶⁶ The long-term costs are concentrated among individuals and groups that cannot lobby on their own behalf—individuals in the future, many of whom will have no say in American politics.

The renewable energy sector may also be the victim of situations where tax benefits are concentrated, costs are concentrated and the public generally has little voice, known as “interest group politics.”³⁶⁷ The lower social costs associated with a shift toward renewable energy are diffuse and not well understood by the public: decreased pollution, reduced military activity to protect the U.S. energy supply, and potentially, mitigated impacts from climate change. In the short term, parties developing, manufacturing and distributing renewable energy benefit from the subsidies, but the broader public benefits from cleaner air and a more stable supply of energy. The expansion of the market for renewable energy reduces the market share enjoyed by the fossil fuel industry. As consumers substitute renewable energy for fossil fuels, coal, oil, and gas resources lose value; the fossil fuel industries lose rents as the United States diversifies its energy portfolio. The fossil fuel industry, therefore, has every reason to oppose efficient, effective subsidies for renewable energy development.

C. Sunsets as a Political Tool

Sunsets also have a significant impact on the political economy. While sunsets may avoid allowing legislation to become entrenched, some suggest that it merely gives a preference to legislation passed in earlier eras; it reifies the status quo and prevents policymakers from shifting away from the existing

at which the gases are removed. This will take time, so global temperatures will continue to rise for some time after greenhouse gas production declines. *See id.*

366. *See* Daniel A. Farber, *From Here to Eternity: Environmental Law and Future Generations*, 2003 U. ILL. L. REV. 289 (2003) (describing the tradeoff to be made between current costs and benefits that will accrue in the future, the appropriate model for determining the rate at which future benefits should be discounted, and other factors that may affect the model).

367. *See* WILSON, *supra* note 356, at 368 (“When both costs and benefits are narrowly concentrated, conditions are ripe for *interest group politics*. A subsidy or regulation will often benefit a relatively small group at the expense of another comparable small group. Each side has a strong incentive to organize and exercise political influence. The public does not believe it will be much affected one way or another; though it may sympathize more with one side than the other, its voice is likely to be heard in only weak or general terms.”).

allocations of entitlements.³⁶⁸ Sunset provisions require the parties benefitting from the change in the law to overcome their collective action problems every few years to compel Congress to renew the legislation.³⁶⁹ Limitations on the duration of legislation provide for a reversion to the status quo as a default unless Congress takes action.³⁷⁰ This, again, serves the older industry.

The touted benefits of temporary legislation include fiscal restraint, increased periods for deliberation, and avoidance of entrenchment.³⁷¹ Scholars have drawn each of these benefits into question.³⁷² Congress is required to estimate the budgetary impacts of legislation.³⁷³ Tax expenditures that are in place for only a temporary period are estimated to have a lower revenue cost than permanent legislation.³⁷⁴ While a lower budgetary cost signals restraint, that lower cost is never realized.³⁷⁵ Congress has repeatedly altered the rules, changed baseline estimates, fudged extension and renewal costs, and ignored economic effects that occur beyond the budget window in the process of passing and extending temporary legislation.³⁷⁶

368. To maintain the status quo for new policies that are correct, the proponents must incur additional transaction costs. See Kysar, *supra* note 70, at 1042. Sunsets shift the burden of collective action and their related transaction costs onto the parties that have succeeded in changing the prior policy. Sunsets are therefore not neutral; they threaten to terminate new, beneficial laws in favor of a return to the earlier status quo. See *id.* at 1046 (citing GUIDO CALABRESE, *COMMON LAW FOR THE AGE OF STATUTES* 61–62 (1982)). Kysar suggests that we need to determine first whether we need to revise the policy in the future, whether the faulty or limited information available at the time the legislation is enacted will be improved upon in the future, and whether other events are likely to intervene to impact the policy. See *id.* at 1043.

369. See Kysar, *supra* note 70, at 1046.

370. See *id.* (citing GUIDO CALABRESE, *COMMON LAW FOR THE AGE OF STATUTES* 61–62 (1982)).

371. See *id.* at 1009.

372. See *id.* at 1068.

373. See generally Alan J. Auerbach, *Federal Budget Rules: The US Experience*, 15 SWEDISH ECON. POL'Y REV. 57 (2008).

374. See Kysar, *supra* note 70, at 1026.

375. See *id.* at 1024–25, 1035, 1037 (describing the shifting baselines and exceptions to requirements for revenue offsets to pay for tax reductions, the Congressional changes to PAYGO rules, and the costs that are incurred beyond the budget window).

376. See *id.* at 1036. For example, two recent revenue acts, EGTERA and JGTRRA, contained sunset provisions that set an expiration date of 2010 for the Bush tax cuts. Even if the Bush tax cuts had expired on time, rather than having been extended for an additional two years, the two revenue acts actually constituted the third-largest tax cut in history. They are displaced only by tax cuts that occurred in 1926, during an economic boom following World War I, and the reduction of the rate on top incomes to twenty-eight percent under the Tax Reform Act of 1986. The sunsets allowed the legislation to escape the constraints of

Policymakers also justify sunset provisions as providing Congress with additional opportunities for deliberation and protection against short-lived plans.³⁷⁷ While in theory sunsets may give Congress more time to gather information and to deliberate when policy decisions are difficult and outcomes are uncertain,³⁷⁸ sunsets create increased opportunity for lobbying and rent seeking by parties on both sides of the legislation and may, therefore, yield only social waste.³⁷⁹ Periodic review of sunset provisions can be costly and may outweigh the benefits associated with reviewed legislation.³⁸⁰ Moreover, sunsets increase compliance burdens and impose heavy administrative costs.³⁸¹

Sunsets make legislation more susceptible to problems identified in behavioral economics. Cognitive bias in risk analysis will cause citizens to under-regulate for risks that are likely to occur in the future rather than the present.³⁸² Loss aversion may cause parties to over-value existing economic benefits, compared to the hazards produced by a set of entitlements that will be gained at another time.³⁸³ Sunsets also increase opportunities for myopia bias, the tendency to avoid immediate loss rather than losses that might occur in the future even if those future losses are more significant.³⁸⁴ Regulation of carbon dioxide emissions may be perceived as taking away something the public currently enjoys, inciting opposition to legislation.³⁸⁵ Climate change is a significant factor in the support of renewable energy subsidies. Cognitive bias, myopia bias, and loss aversion are all at play in climate change politics even without the added burden of legislative sunsets; the effects of carbon dioxide emissions are non-linear and the most

PAYGO, designed to impose fiscal restraint on Congress, by requiring that tax cuts be offset with budget cuts or face sequestration, and the limitations of the Byrd Rule, designed to prevent parties from attaching riders to the budget reconciliation bill. *See id.* at 1025.

377. *Id.* at 1041–42.

378. *See id.* at 1014–15.

379. *Id.* at 1051. In addition, temporary legislation opens the door for Congress to extract more and higher rents from those who seek to maintain legislation beyond sunsets because Congress finds it easier to allow a provision to sunset than to take action to extend the provision. *See id.* at 1056. Sunsets also tend to crowd out new laws and reform plans of newly-elected legislators. *See id.* at 1059.

380. *Id.* at 1016. Periodic reviews have not proved to be cost-saving features. *Id.*

381. *Id.* at 1064–65.

382. *Id.* at 1047–48.

383. *Id.*

384. *Id.* at 1047–48.

385. *Id.*

significant impacts, which may be catastrophic, are projected to occur in the future.³⁸⁶

Finally, sunsets upset planning.³⁸⁷ In an increasingly complex world, social policy should be coordinated.³⁸⁸ However, this requires stability. While lasting legislation signals a credible commitment to a policy and provides the stability that would allow businesses to make long-term plans, sunseting subsidies signal a lack of commitment.³⁸⁹

D. The Value of Cohorts

The older industry's legislative advantage has also increased as other unrelated industries have begun to benefit from public trading and the corporate tax exemption under section 7704(c). As interest groups for other sectors of the economy, such as timber interests or the financial services industry,³⁹⁰ have begun claiming benefits, support for that tax subsidy has expanded. Consequently, any efforts to remove this provision will be met with more widespread opposition because there are a larger, more diverse set of cohorts to defend it from repeal.

Having additional cohorts that receive a tax benefit also shields that benefit from scrutiny. When evaluating subsidies to the energy industry, the Energy Information Administration has been biased

386. See generally Lazarus, *supra* note 365.

387. Congress has extended the production tax credit six times and allowed it to sunset four times, leading to a boom and bust cycle for renewable energy investors. See WISER, BOLINGER & BARBOSE, *supra* note 3, at 5. When expirations were allowed to occur, installation of wind power facilities dropped between seventy-three percent and ninety-three percent. See *id.* This dramatically reduced wind capacity and caused job loss for employees of wind companies and supporting manufacturing facilities. See *id.*

388. See *supra* note 19 and accompanying text.

389. See Kysar, *supra* note 70, at 1063. Long-term legislation also provides time for the benefits of the legislation to diffuse through society more evenly, creating a greater number of advocates and permitting long-term commitments to a changed paradigm, whereas temporary legislation produces a limited set of winners and losers. *Id.* at 1062–63.

390. The publicly traded partnership structure has been used by subsidiaries of capital equity firms, such as Apollo, Blackstone, Carlisle, and KKR to attain obtain pass-through treatment. See John McKinnon, *More Firms Enjoy Tax-Free Status*, WALL ST. J. (Jan. 10, 2012), <http://www.wsj.com/articles/SB10001424052970203733504577026361246836488> [<https://perma.cc/2XU3-AGHU>] (describing KKR's decision to organize as a pass through entity, i.e. publicly traded partnership); see also Victor Fleischer, *The So-Called Blackstone Bill, Resurrected*, N.Y. TIMES: DEALBOOK (Feb. 27, 2014, 6:30 AM), <http://dealbook.nytimes.com/2014/02/27/the-so-called-blackstone-bill-resurrected/> [<https://perma.cc/F77B-7J5V>] (listing large private equity firms that have gone public as passive income publicly traded partnerships).

in its analysis of tax expenditures. While the Energy Information Administration uses figures from the Department of the Treasury,³⁹¹ and then supplements them with information from the Joint Committee on Taxation,³⁹² it generally excludes from its analysis tax benefits that are shared with other sectors.³⁹³ Because the real estate industry, the mining industry, and the financial services industry also enjoy the benefits of exemption from the corporate tax under section 7704(c), the revenue costs of that exemption are not included in the Energy Information Administration's analyses.³⁹⁴ The agency's 2010 and 2015 reports omitted from their review the publicly traded partnership exemption from the corporate tax and a number of other fossil fuel tax subsidies, such as the domestic production deduction, several accelerated depreciation provisions, and classification of oil and gas royalties paid to foreign governments as taxes eligible for the foreign tax credit.³⁹⁵

E. Type, Scrutiny, and Reporting

A number of fossil fuels subsidies are hidden from public view and administrative scrutiny for other reasons. The Budget Act requires the Congressional Budget Office and the Department of the Treasury to publish detailed lists of tax expenditures annually.³⁹⁶ The Office of Management and Budget publishes these estimates as part of the President's budget in the Analytical Perspectives section.³⁹⁷ The Act defines tax expenditures as

391. These figures are in turn drawn from economic forecasts from the Office of Management and Budget. See KOPLOW, *supra* note 172, at 27.

392. See *id.* at 13, 27.

393. See *id.*

394. In 2010 and 2015, the Energy Information Administration released two reports estimating subsidies to the energy industry, neither of which included the tax benefits associated with the PTP structure. See EIA 2010 REPORT, *supra* note 5, at xi–xii; U.S. ENERGY INFO. ADMIN., DIRECT FEDERAL FINANCIAL INTERVENTIONS AND SUBSIDIES IN ENERGY IN FISCAL YEAR 2013, at xi–xiii (2015), <https://www.eia.gov/analysis/requests/subsidy/pdf/subsidy.pdf> [<https://perma.cc/8KDV-NXQZ>] [hereinafter EIA 2015 REPORT].

395. See EIA 2010 REPORT, *supra* note 5 at ix–x; EIA 2015 REPORT, *supra* note 394, at xi–xiii.

396. Congressional Budget and Impoundment Control Act of 1974, Pub. L. No. 93-344, 88 Stat. 298; STAFF OF JOINT COMM. ON TAXATION, JCX-97-14, ESTIMATES OF FEDERAL TAX EXPENDITURES FOR FISCAL YEARS 2014–2018, at 2 n.4 (2014).

397. See, e.g., OFFICE OF MGMT. & BUDGET, ANALYTICAL PERSPECTIVES, BUDGET OF THE U.S. GOVERNMENT, FISCAL YEAR 2016 (2015) <https://www.whitehouse.gov/sites/default/files/omb/budget/fy2016/assets/spec.pdf> [<https://perma.cc/E7TY-MS26>].

“revenue losses attributable to provisions of the Federal tax laws which allow a special exclusion, exemption or deduction from gross income or which provide a special credit, a preferential rate of tax, or a deferral of tax liability.”³⁹⁸ However, the Office of Management and Budget and the Department of the Treasury exclude any subsidies associated with choice of legal form from their list of tax expenditures.³⁹⁹ Therefore, any of the tax benefits to fossil fuels from use of the publicly traded partnership form and its exemption from the corporate tax under section 7704(c) are also excluded from the tax expenditure budget.⁴⁰⁰ The Congressional Budget Office has also issued a report and an update covering federal financial support for fuels and energy technologies.⁴⁰¹ Their report also fails to mention the tax preference provided to fossil fuels under section 7704(c).⁴⁰² Consequently, this benefit has been shielded from congressional scrutiny until recently. The Joint Committee on Taxation began including the revenue costs associated with this fossil fuel preference in its tax expenditure publications in 2008,⁴⁰³ and it appears to have significantly understated the revenue cost for the first several years of reporting.⁴⁰⁴

398. Congressional Budget and Impoundment Control Act of 1974, Pub. L. No. 93-344, § 3, 88 Stat. 298, 299.

399. See KOPLOW, *supra* note 172, at 12.

400. Similarly, two reviews of energy-related tax expenditures developed by the Congressional Budget Office in 2012 and 2013 failed to quantify the revenue losses associated with the exemption from the corporate tax provided to natural resources publicly traded partnerships under section 7704(c). See *id.* at 11–12.

401. See *Testimony, Federal Financial Support for Fuels and Energy Technologies Before the Subcomm. on Energy of the H. Comm. on Science, Space, and Tech.* (2013) [hereinafter *Testimony of Terry M. Dinan*] <http://www.cbo.gov/sites/default/files/cbofiles/attachments/03-12-EnergyTechnologies.pdf> [<https://perma.cc/6KKQ-V3GG>] (testimony of Terry M. Dinan, Senior Advisor, Congressional Budget Office); see also TERRY DINAN & PHILIP WEBRE, CONG. BUDGET OFFICE, FEDERAL FINANCIAL SUPPORT FOR THE DEVELOPMENT AND PRODUCTION OF FUELS AND ENERGY TECHNOLOGIES (2012), http://www.cbo.gov/sites/default/files/cbofiles/attachments/03-06-FuelsandEnergy_Brief.pdf [<https://perma.cc/2BLJ-J8YY>].

402. See *Testimony of Terry M. Dinan, supra* note 401, at 4–5 tbl.1 (showing energy-related tax preferences in fiscal year 2013).

403. See STAFF OF JOINT COMM. ON TAXATION, JCS-2-08, ESTIMATES OF FEDERAL TAX EXPENDITURES FOR FISCAL YEARS 2008–2012, at 63 (2008).

404. See KOPLOW, *supra* note 172, at 12. While the Joint Committee on Taxation currently estimates that the five-year total revenue loss associated with publicly traded partnerships is approximately \$7.8 billion, their analyses from prior years appear to have significantly understated the subsidy. See *id.* Privately funded analyses based on market metrics and a comparison of the pretax earnings of C corporations and publicly traded partnerships suggest that the actual revenue losses may have actually been over six times the

Errors could be more easily corrected if the data were pulled from those claiming the tax benefits. The various tax expenditure budget publications are based on projections, only some of which are derived from taxpayer data.⁴⁰⁵ According to a report by the General Accounting Office, the IRS does not collect data for sixty-three percent of the tax expenditures identified by the Department of the Treasury.⁴⁰⁶ Often the information is not included on any of the forms taxpayers are required to prepare and submit: tax

estimates the Joint Committee on Taxation published from 2009–12. *See id.* at 20. Note that these figures estimate the revenue loss from exempting the natural resources publicly traded partnerships from the corporate tax under section 7704(c). The estimates do not include the revenue losses associated with preferential rates for qualified dividends.

405. *See* STAFF OF JOINT COMM. ON TAXATION, JCX-18-15, BACKGROUND INFORMATION ON TAX EXPENDITURE ANALYSIS AND HISTORICAL SURVEY OF TAX EXPENDITURE ESTIMATES 10–12 (2015) (“Internal Revenue Service (‘IRS’) statistics from recent tax returns are used to develop projections of the tax credits, deductions, and exclusions that will be claimed (or that will be denied in the case of negative tax expenditures) under the present-law baseline. These IRS statistics show the actual usage of the various tax expenditure provisions. In the case of some tax expenditures, such as the earned income credit, there is evidence that some taxpayers are not claiming all of the benefits to which they are entitled, while others are filing claims that exceed their entitlements. The tax expenditure calculations in the annual reports are based on projections of actual claims under the various tax provisions, not the potential tax benefits to which taxpayers are entitled. . . . The Treasury uses a different methodology for the estimation of tax expenditures. Among other differences, the Treasury identifies tax expenditures with respect to a reference tax law baseline as well as a normal income tax law baseline. Reference law tax expenditures are limited to special exceptions from a generally provided tax rule. Provisions under the reference law baseline are generally tax expenditures under the normal income tax law baseline, but the reverse is not always true. Also, under the Treasury methodology, each tax expenditure is measured by the difference between the tax liability under present law and the tax liability that would result if the tax expenditure provision were repealed and taxpayers were prohibited from taking advantage of any of the remaining tax expenditure provisions that apply to the income or the expenses associated with the repealed tax expenditure. . . . The Treasury estimates may also differ as a result of different data sources and different projections of incomes and expenses among other reasons.”); *see also* OFFICE OF MGMT. & BUDGET, *supra* note 397, at 219 (“Identification and measurement of tax expenditures depends crucially on the baseline tax system against which the actual tax system is compared. The tax expenditure estimates presented in this document are patterned on a comprehensive income tax, which defines income as the sum of consumption and the change in net wealth in a given period of time. An important assumption underlying each tax expenditure estimate reported below is that other parts of the Tax Code remain unchanged. The estimates would be different if tax expenditures were changed simultaneously because of potential interactions among provisions. For that reason, this document does not present a grand total for the estimated tax expenditures. Tax expenditures relating to the individual and corporate income taxes are estimated for fiscal years 2014–2024 using two methods of accounting: current revenue effects and present value effects. The present value approach provides estimates of the revenue effects for tax expenditures that generally involve deferrals of tax payments into the future.”).

406. U.S. GOV’T ACCOUNTABILITY OFFICE, *supra* note 69, at 5.

returns, information returns, or other tax forms.⁴⁰⁷ Even when the information is reported, the Department of the Treasury cannot disaggregate the data because the forms do not require taxpayers to report each type of tax benefit under a separate line item. Instead, the expenditures that are reported are grouped with other deductions and special provisions.⁴⁰⁸ There is a significant difference in the way the data are collected for fossil fuels and renewable energy tax expenditures. While specific information is not generally collected for fossil fuel subsidies,⁴⁰⁹ data associated with renewable energy subsidies is frequently both reported on a form and identified under a separate line item.⁴¹⁰ Consequently, while the Department of the Treasury and the IRS have generally accurate information with which to update their annual estimated revenue costs for subsidies for renewables, this is not the case for fossil fuels.

F. Location and Volatility

The subsidies for fossil fuels and renewables differ in their location within the tax code and their function in the tax equation. The subsidies for fossil fuels are scattered throughout the income

407. *See id.* at 5, app. II.

408. *See id.*

409. *See id.* app. II. The fossil fuel tax expenditures that are listed on a form but *did not* provide a particular line item for taxpayers to fill out include: (1) excess of percentage over cost depletion (fuels), (2) exception from passive loss limitations for working interests in oil and gas properties, (3) exclusion of interest on energy facility bonds, (4) exclusion of interest on public purpose state and local bonds, (5) expensing of research and experimentation expenditures (normal tax method), (6) expensing of exploration and development costs and fuels, (7) deferral of gain from dispositions of transmission property to implement FERC requirements, (8) temporary fifty percent expensing for equipment used in the refining of liquid fuels, (9) natural gas distribution pipelines treated as fifteen-year property, (10) amortization of geological and geophysical expenditures over two years, and (11) capital gains treatment of royalties on coal. The fossil fuel tax expenditures that are listed on a form and *include* a particular line item for taxpayers to fill out include: (1) credits for investment in clean coal facilities, (2) credits for industrial carbon dioxide capture and sequestration, and (3) deduction for United States' production activities. *See id.*

410. *See id.* The renewable energy tax expenditures that were included on a form, but *did not* have their own line items were: (1) credits for holding clean renewable energy bonds, and (2) qualified energy conservation bonds. The renewable energy tax expenditures that are listed on a form that *include* a particular line item include: (1) credits for increasing research activities, (2) alternative fuel production credits, (3) energy production credits, (4) energy investment credits, (5) alcohol fuel credits, (6) biodiesel and small agri-biodiesel producer credits, and (7) credits for investment in clean coal facilities. *See id.*

tax and incorporated in a wide variety of code sections used to calculate taxable income.⁴¹¹ Even when some fossil fuel subsidies are targeted for removal, elimination of all fossil fuels would require a comprehensive effort. Many of the exclusions, deductions, special rates, and other provisions are broadly available.⁴¹² Depriving fossil fuel industries of these tax expenditures would require carve-outs to exclude the fossil fuel industry from benefits provided to other industries, creating even more complexity.

In contrast, tax credit provisions are appended to the front of the Internal Revenue Code and remain separate from the structural parts of the tax code used to measure income. Tax credits are simply subtracted from tentative tax liability to determine the amount of tax to be paid. Tax credit provisions are easily excised or allowed to lapse without ramifications to the effective functioning of the income tax system.⁴¹³ Historically, the tax credit provisions have also been more volatile⁴¹⁴ and more likely to be subject to expiration, repeal, reinstatement, and revision than other more “embedded” subsidies.

VI. PROPOSALS FOR REFORM

In recent years, proposals for tax reform have included plans to expand fossil fuel tax subsidies,⁴¹⁵ to eliminate fossil fuel tax subsidies,⁴¹⁶ to expand subsidies to renewables,⁴¹⁷ to eliminate the

411. See U.S. DEP’T OF THE TREASURY, PROGRESS REPORT ON FOSSIL FUEL SUBSIDIES 3–7 (2015).

412. *Id.*

413. For example, the PTC, addressed earlier, has “expired and been renewed numerous times” with no sign of such activity impacting the overall functioning of the U.S. tax system. See *Renewable Electricity Production Tax Credit (PTC)*, *supra* note 215; see also DATABASE ST. INCENTIVES FOR RENEWABLES & EFFICIENCY, *supra* note 230.

414. In the period leading up to the passage of the Tax Reform Act of 1986, John Witte examined the volatility of assorted tax expenditures. At the time, capital gains treatment for coal royalties had never been modified since it was passed in 1951 and the ITC was subject to the most modifications for the time it had been in place. See WITTE, *supra* note 241, at 312.

415. See EXPAND Act, Energy Exploration and Production to Achieve National Demand Act, H.R. 3895, 113th Cong. (2014).

416. See End Big Oil Tax Subsidies Act of 2013; H.R. 609, 113th Cong. (2013); Repeal Big Oil Tax Subsidies Act, S. 2204, 112th Cong. (2012).

417. Press Release, U.S. Senate Comm. on Fin., Baucus Unveils Proposal for Energy Tax Reform (Dec. 18, 2013), <http://www.finance.senate.gov/newsroom/chairman/release/?id=3a90679c-f8d0-4cb6-b775-ca559f91ebb4> [<http://perma.cc/R5P5-YJK7>].

remaining tax subsidies to renewables,⁴¹⁸ and to extend to renewables the tax benefits currently available to fossil fuels.⁴¹⁹ This Part reviews each of the proposals based on their likely transaction costs, information costs, technological risk, legislative risk, successful passage into law, and longevity.

In January 2014 Representative Jeff Duncan, a Republican from South Carolina, introduced the EXPAND Act.⁴²⁰ First, the Act would repeal the energy tax credits.⁴²¹ While the repeal of tax credits under the EXPAND Act gives the appearance of even-handedness because tax credits are used to subsidize both renewable energy and fossil fuels, all of the other embedded subsidies for fossil fuels would remain intact.⁴²²

Second, the Act would permit taxpayers to deduct immediately the full cost of property used in the production of energy in the taxable year in which the property is placed in service.⁴²³ The EXPAND Act facilitates tax sheltering activities; it provides for owners of energy properties to expense those costs immediately rather than capitalizing and depreciating them over time.⁴²⁴ This would, in effect, expand the provisions for expensing property under section 179 by removing the income and investment limitations for energy properties. The provisions allowing property owners to expense the capital costs of energy facilities benefit fossil fuel investors preferentially. While both renewable energy and

418. For example, House Bill 1569, The New Fair Deal Busting America's Rigid Outdated & Needless Subsidies Act of 2013, sponsored by Representative Mike Pompeo of Kansas, proposed to eliminate the tax credits for energy and use the savings to achieve a flat tax rate for corporations. The tax credits covered a wide variety of production methods, but they eliminated the main form of subsidy for renewables while leaving the bulk of subsidies for fossil fuels unscathed. New Fair Deal Busting America's Rigid Outdated & Needless Subsidies Act of 2013, H.R. 1569, 113th Cong. (2013); *see also* Energy Freedom and Economic Prosperity Act of 2014, S. 2279, 113th Cong. (2014).

419. *See* Master Limited Partnerships Parity Act, H.R. 1696, 113th Cong. (2013).

420. *See* EXPAND Act, Energy Exploration and Production to Achieve National Demand Act, H.R. 3895, 113th Cong. (2014).

421. *See id.* (noting that if this bill passed, Title XI would repeal several energy tax credits).

422. Similarly, the Energy Freedom and Economic Prosperity Act of 2014 proposed to repeal the provisions for energy-only tax credits. *See* Energy Freedom and Economic Prosperity Act of 2014, S. 2279 113th Cong. (2014). EFEP, proposed by Mike Lee, a Republican from Utah, proposed to amend the Internal Revenue Code to repeal tax credits for energy and use the savings to reduce the existing corporate tax rates by uniform percentage. *See id.*

423. *See id.* § 617.

424. *See id.*

fossil fuel investors may employ pass-through structures that would allow the flow-through of losses, the passive activity rules differ for each industry. Investors with working interests in the oil and gas industry have exemptions from the passive activity loss rules, so their investors may immediately use these losses to offset their ordinary income.⁴²⁵ In contrast, the passive activity loss rules would suspend losses from expensing equipment for the renewable energy industry until an investor has gains from other passive activities to be offset or until the investor terminates her interest.⁴²⁶

As mentioned above, accelerated depreciation and expensing may yield a negative tax rate, interfere with the efficient allocation of capital, and create deadweight loss by diverting resources to activities that are not socially beneficial. First, remaining tax preferences for fossil fuels, along with the subsidies in this bill, if enacted, would continue to contribute to health and environmental harms, including climate change.⁴²⁷ Second, even without taking into account the health and environmental impacts, providing additional subsidies to oil and gas equipment purchases would likely produce few economic gains for the revenue cost and result in additional waste. The current glut in the oil and gas markets⁴²⁸ has reduced prices in the United States but not produced widespread economic gains.⁴²⁹

The legislation contains no sunset provisions,⁴³⁰ so it would generate little legislative uncertainty. Representative Duncan suggests that the legislation avoids “picking winners and losers,”⁴³¹

425. See I.R.C. § 469(c)(3) (Supp. 2014).

426. See I.R.C. §§ 469(a), (b), (g) (Supp. 2014).

427. The EXPAND Act also proposes to eliminate moratoria and restrictions on energy exploration, renew and extend gas leases, limit actions to conserve coastal lands, expedite refinery permitting, exempt the Keystone XL pipeline from the permitting process, streamline the process for nuclear energy, construct the Yucca Mountain repository for radioactive waste, and limit the regulatory scope of the Endangered Species Act of 1973, the Clean Air Act, and the Solid Waste Disposal Act. Finally, Congress and administrative agencies would be barred from including the social costs of pollution in their analyses. See EXPAND Act, Energy Exploration and Production to Achieve National Demand Act, H.R. 3895, 113th Cong. (2014).

428. Krauss, *supra* note 115 (describing the growing 1 million barrel per day oil glut).

429. See Binyamin Appelbaum, *This Time, Cheaper Oil Does Little for the U.S. Economy*, N.Y. TIMES (Jan. 21, 2016), <http://www.nytimes.com/2016/01/22/business/energy-environment/this-time-cheaper-oil-does-little-for-the-us-economy.html> [<https://perma.cc/24UY-TBRK>].

430. See H.R. 3895 (containing no expiration dates).

431. See Press Release, Jeff Duncan, U.S. Congressman, Duncan Introduces the All-of-the-Above Energy Bill (Jan. 17, 2014), <http://jeffduncan.house.gov/press-release/duncan->

but unless Congress makes affirmative decisions about the minimum qualifications for the projects that will receive the tax benefits, it cannot limit the technological risk or evaluate whether the proposal is cost effective or beneficial. Furthermore, without guidance on the kinds of projects that will qualify for the deduction, the IRS will be unable to administer the program.⁴³² At best, the proposal will commit taxpayer funds to inefficient and ineffective projects; at worst, it provides an expansive opportunity for fraud.

Subsidies for fossil fuels have also recently come under Congressional scrutiny. In 2012, Senators Bob Menendez and Harry Reid introduced the Repeal Big Oil Tax Subsidies Act.⁴³³ The bill proposed to terminate a handful of the tax subsidies for the fossil fuel industry, including the application of the foreign tax credit to royalties and other funds paid to foreign sovereigns for oil and gas extraction and production rights, and the domestic production deduction for coal, oil and gas, expensing of intangible drilling and development costs, the deduction for tertiary injectants, and the percentage depletion allowance for oil and gas interests.⁴³⁴ While the bill identified a number of the larger subsidies, it failed to include the exemption from the corporate tax for natural resources publicly traded partnerships under section

introduces-all-above-energy-bill-expand-act [<http://perma.cc/4669-WXT2>]; *see also* Nicolas Loris, *10 Ways the EXPAND Act Would Take the Energy Market in the Right Direction*, HERITAGE FOUND. (Feb. 4, 2014), <http://www.heritage.org/research/reports/2014/02/10-ways-the-expand-act-would-take-the-energy-market-in-the-right-direction> [<http://perma.cc/GJ7H-GVZA>].

432. The IRS has been under regular attack for its administrative failures in recent years. *See* Stephen Ohlemacher, *Bipartisan Investigation Cites Management Flaws at IRS*, YAHOO! NEWS (Aug. 5, 2015, 5:27 PM), <http://news.yahoo.com/bipartisan-investigation-cites-management-flaws-irs-202056639—finance.html> [<https://perma.cc/9KJL-37CH>]; Stephen Ohlemacher, *IRS: Computer Breach Bigger than First Thought; 334K Victims*, BUS. INSIDER (Aug. 17, 2015, 6:06 PM), <http://www.businessinsider.com/ap-irs-computer-breach-bigger-than-first-thought-334k-victims-2015-8> [<http://perma.cc/Y5BC-YMR3>]; *Senate Probe into IRS Targeting of Tea Party Groups Issues Mixed Report*, REUTERS (Aug. 5, 2015, 8:40 PM), <http://www.reuters.com/article/2015/08/06/us-usa-congress-irs-idUSKCN0QB01N20150806> [<http://perma.cc/JEP3-ZC86>]; Andrew Taylor & Stephen Ohlemacher, *Staff Cuts Take Toll on IRS Tax Enforcement Efforts*, PIONEER PRESS (June 17, 2015), http://www.twincities.com/business/ci_28331036/staff-cuts-take-toll-irs-tax-enforcement-efforts [<http://perma.cc/HVM9-B4LV>]; *see also* Philip T. Hackney, *Should the IRS Never 'Target' Taxpayers? An Examination of the IRS Tea Party Affair*, 49 VAL. U. L. REV. 453 (2015) (providing a detailed discussion of the issues).

433. Repeal Big Oil Tax Subsidies Act, S. 2204, 112th Cong. (2012).

434. *See id.*

7704(c).⁴³⁵ Even if the bill were enacted, the income tax would remain littered with over a dozen other fossil fuel subsidies. The variety of embedded subsidies for fossil fuels makes the delivery of comprehensive reform difficult.⁴³⁶

435. *See id.* (failing to mention or address the natural resources publicly traded partnerships carve out from section 7704(c)).

436. Recently, however, Vermont Senator Bernie Sanders and Minnesota Representative Keith Ellison have sponsored the End Polluter Welfare Act of 2015. *See* End Polluter Welfare Act of 2015, S. 1041, 114th Cong. (2015); End Polluter Welfare Act of 2015, H.R. 1030, 114th Cong. (2015). The bill proposes to end the tax subsidies for oil, natural gas, and coal and includes a far more exhaustive list of the fossil fuel subsidies to be eliminated. The Act amends the Internal Revenue Code to limit or repeal provisions that incentivize investment in fossil fuels. The Act terminates tax credits under section 43 (relating to enhanced oil recovery credit), section 45I (relating to credit for producing oil and natural gas from marginal wells), section 45K (relating to credit for producing fuel from a nonconventional source), and section 45Q (relating to credit for carbon dioxide sequestration). It prevents the certification of any new credits under section 48A (relating to qualifying advanced coal project credit) or section 48B (relating to qualifying gasification project credit). It eliminates deductions under section 193 (deduction for tertiary injectants), section 199 (deduction of a percentage of income for oil, natural gas, and coal production activities), section 263(c) (expensing of intangible drilling and development costs), section 468 (for mining and solid waste reclamation and closing costs), section 613 (percentage depletion for coal and hard mineral fossil fuels), section 613A (percentage depletion for oil and natural gas properties), and section 617 (relating to the deduction and recapture of certain mining exploration expenditures). It reinstates the passive activity loss rules for working interests in oil and natural gas property by terminating section 469(c)(3) and eliminates a safe harbor for arbitrage activities for prepaid natural gas contracts under section 148(b)(4). It eliminates a number of beneficial timing provisions, including section 39(a)(3) (relating to five-year carryback for the marginal oil and natural gas well production credit), section 168(e)(3) (relating to class life of natural gas gathering lines), section 461(i)(2) (allowing acceleration of deductions for spudding of oil or natural gas wells), section 169 (relating to amortization of pollution control facilities), and section 179B (relating to deduction for capital costs incurred in complying with Environmental Protection Agency sulfur regulations). The amendment to section 167(h) extends the cost recovery period from two years to seven to eleven. It eliminates last-in first-out accounting practices for inventories of coal, oil, and gas under section 472 and section 473. It addresses preferential rates. It eliminates capital gains treatment for royalties from coal under section 631 and eliminates use of the foreign tax credit for sums paid to foreign sovereigns in connection with oil, natural gas, and coal extraction and production. The Act also repeals the corporate income tax exemption for publicly traded partnerships with qualifying income and gains from activities relating to fossil fuels and eliminates accelerated depreciation for property that is receiving a tax subsidy for fossil fuel production. The bill would also change a number of the excise taxes on gasoline and create additional new taxes. Based on the number of industries that currently enjoy these subsidies and the current composition of Congress, however, this bill is likely to suffer the same fate as the Repeal Big Oil Tax Subsidies Act and die in Congress. GovTrack.us estimates that the bill has a two percent chance of being enacted. *See S. 1041: End Polluter Welfare Act of 2015*, GOVTRACK, <https://www.govtrack.us/congress/bills/114/s1041> [<https://perma.cc/93RJ-KKKW>] (last visited Jan. 4, 2016).

In 2012 Senator Chris Coons of Delaware proposed the Master Limited Partnerships Parity Act to expand the definition of qualifying income to permit renewable energy projects to be financed under section 7704(c) as publicly traded partnerships.⁴³⁷ The bill would permit renewable energy businesses to gain access to the financing structures available to fossil fuels.⁴³⁸ The bill died in 2012, but was reintroduced in 2013⁴³⁹ and 2015.⁴⁴⁰ Currently, the exemption from the corporate tax under section 7704(c) is available only for publicly traded partnerships with income from “exhaustible” natural resources as defined in section 613.⁴⁴¹ The Act would eliminate this reference so that the definition of “qualified income” would include revenues from wind, solar, and other energy technologies currently subsidized under the ITC and PTC,⁴⁴² which do not otherwise qualify as “exhaustible” natural resources.⁴⁴³ By expanding the definition of “qualifying income” for publicly traded partnerships to include income from alternative energy resources, the bill seeks to allow investors in green energy to enjoy the tax shield currently enjoyed by investors in fossil fuels.⁴⁴⁴

437. S. 3275, 112th Cong. (2012) (“A bill to amend the Internal Revenue Code of 1986 to extend the publicly traded partnership ownership structure to energy power generation projects and transportation fuels, and for other purposes.”); *see also* Chris Coons, *Master Limited Partnerships Parity Act*, U.S. SENATE, <http://www.coons.senate.gov/MLP> [<http://perma.cc/HH9B-UGRW>] (last visited Nov. 28, 2015).

438. Coons, *supra* note 437. In other words, this expansion would offer renewable energy businesses the opportunity to organize under a publicly traded partnership structure and therefore receive the favorable tax consequences discussed earlier. *See id.*

439. *See* Press Release, U.S. Senator Christopher Coons, Senators Coons, Moran, Stabenow and Murkowski Re-introduce Bill to Level the Playing Field for Renewable Energy Technologies (April 24, 2013), <http://www.coons.senate.gov/newsroom/releases/release/senators-coons-moran-stabenow-and-murkowski-re-introduce-bill-to-level-the-playing-field-for-renewable-energy-technologies> [<http://perma.cc/2D7R-65E2>].

440. *See* Master Limited Partnerships Parity Act of 2015, S. 1656, 114th Cong. (2015).

441. I.R.C. § 7704(d)(1)(G) (2012).

442. This includes wind, closed-loop and open-loop biomass, geothermal, solar, municipal solid waste, hydropower, marine and hydrokinetic power, fuel cells, and geothermal heat power. The Act would also allow cellulosic biodiesel fuels to qualify. S. 1656.

443. Renewable energy *transmission* projects are currently using the publicly traded partnership form to attract capital.

444. While some advocates suggest that this would democratize the pool of renewable energy investors by allowing taxpayers to invest in publicly traded partnerships, few members of the public would actually meet the rules to become investors because of passive activity loss rules. The Tax Reform Act of 1986 introduced the passive activity loss rules. *See* I.R.C. § 469 (Supp. 2014); *see also* SHERLOCK & KEIGHTLEY, *supra* note 157, at 21. These rules prevent investors from using operating loss deductions from businesses in which they are not materially participating to offset their income from employment or other businesses in which

The bill was bolstered by a report from the Joint Committee on Taxation indicating that the revenue cost of this expansion would not be significant.⁴⁴⁵

The Master Limited Partnerships Parity Act would be an improvement over the current tax credit regime in terms of liquidity, marketability, information costs, transaction costs, and legislative certainty for renewable energy investors. However, while the publicly traded partnership form would be valuable for providing long-term financing after renewable energy facilities have already been constructed, and operating and the key risks have passed, the form is not designed to provide start-up capital to renewable energy projects when it is needed, from concept through the completion of the construction process. Furthermore, questions associated with technology risk remain for several types of subsidized energy facilities. While wind and solar power have reduced their technology risk over time, a number of the technologies included in that proposed legislation have not. The bill currently includes support for clean coal and carbon sequestration.⁴⁴⁶ These are untested, unproven technologies with

they are actively engaged. *See* I.R.C. § 469. Publicly traded partnerships have fostered investment in passive activities; consequently, the use of losses passed through to investors may have been limited by the passive activity loss rules. Losses can be netted against the income of other passive activities, but unused losses must be carried forward and they cannot be netted against investment interest. *See* I.R.C. § 469. Working interests in oil and gas businesses enjoy an exemption from the passive activity loss rules. *See id.*

445. *See* STAFF OF JOINT COMM. ON TAXATION, JCS-3-10, ESTIMATES OF FEDERAL TAX EXPENDITURES FOR FISCAL YEARS 2010–2014, at tbl.1 (Dec. 15, 2010). Currently, the revenue loss associated with publicly traded partnerships serving the fossil fuel energy industry is estimated to be \$7.8 billion for the period between 2012 and 2017. The budgetary cost of the ITC, PTC, and ARRA section 1613 grant-in-lieu program is \$8.5 billion for that period. *See* Felix Mormann, Dan Reicher & Mark Muro, *Clean Energy Scores a Success with the Master Limited Partnership Parity Act*, BROOKINGS (Dec. 19, 2013), <http://www.brookings.edu/research/opinions/2013/12/19-clean-energy-mormann-reicher-muro> [<https://perma.cc/YL7P-U8GN>] (“Last month, the JCT gave the MLP Parity Act a big leg up by scoring its revenue impact at just \$307 million over 5 years and \$1.3 billion over 10 years. By way of comparison, the JCT forecasts existing fossil energy MLPs to cost the federal budget \$6.7 billion and tax credit support for renewable energy to cost \$12.6 billion over the next five years. . . . [L]ooking at JCT’s scoring for the second five-year period, the projected cost to tax payers of \$993 million suggests that clean energy MLPs could have a market capitalization of nearly \$60 billion after a decade.”).

446. *See* Master Limited Partnerships Parity Act of 2015, S. 1656, 114th Cong. (2015). The change from prior versions of the bill was presumably to enhance the appeal of the bill to the fossil fuel industry and increase its likelihood of passage. Compare *id.*, with Master Limited Partnerships Parity Act, S. 3275, 112th Cong. (2012).

risks that have not been fully investigated.⁴⁴⁷ Their inclusion in the publicly traded partnership financing regime would be completely at odds with the original scope of the pass-through provisions. New rules that allow mutual funds to invest in publicly traded partnerships would expose a far greater swath of small investors to risks that they may not be able to evaluate and losses they may not be prepared to accept. Furthermore, pooling the risks associated with these different forms of energy innovation may not limit risk, but spread contagion.⁴⁴⁸

Finally, the legislation would align the interests of renewable energy advocates and fossil fuel energy supporters. While the bill may appear as a second best solution to the thorny problems associated with developing renewable energy, it would not level the playing field. Renewable energy continues to compete with fossil fuels. Even if investment in renewables could be stimulated with publicly traded partnership structures, they would remain at a disadvantage based on the lengthy period that fossil fuels have had to establish themselves and achieve their current market capitalization. By aligning the interests of renewables and fossil

447. See ANSOLABEHERE ET AL., *supra* note 192, at 57–58 (“Liability of CO₂ capture and geological sequestration can be classified into operational liability and post-injection liability. . . . Post-injection liability, or the liability related to sequestered carbon dioxide after it has been injected into a geologic formation, presents unique challenges due to the expected scale and timeframe for sequestration. The most likely sources of post-injection liability are groundwater contamination due to subsurface migration of carbon dioxide, emissions of carbon dioxide from the storage reservoir to the atmosphere (i.e., non-performance), risks to human health, damage to the environment, and contamination of mineral reserves. Our understanding of these risks needs to be improved in order to better assess the liability exposure of operators engaging in sequestration activities.”).

448. See, e.g., Randall Dodd & Paul Mills, *Outbreak: U.S. Subprime Contagion*, FIN. & DEV., June 2008, at 14, 15, <http://www.imf.org/external/pubs/ft/fandd/2008/06/pdf/dodd.pdf> [<https://perma.cc/UAK5-23XJ>] (“The complexity of these structured investments—which slice a security into several tranches, each with a different level of risk and sold separately—posed additional challenges for the rating process. The models used by the rating agencies, like other investors, proved to be inadequate at anticipating not only the level of individual defaults but also how defaults would occur simultaneously across housing markets in the United States. These shortcomings made it difficult to correctly quantify and differentiate credit risk tranche by tranche. Highly rated senior tranches were assumed to have little correlation with riskier, lower-rated tranches. However, as the poor quality of the loans became more apparent and securities were downgraded, tranches soon began to fall in value together. More problems occurred when the securities were distributed and traded. The vulnerability of leveraged, or thinly capitalized, investment positions and the illiquidity of many structured credit markets were exposed when trading was disrupted in a host of other markets—subprime-linked MBSs, CDOs, asset-backed commercial paper (ABCP), and credit derivatives.”).

fuels, the expansion of the publicly traded partnership regime would more deeply entrench the fossil fuel subsidies and further block the possibility of repeal. If the bill were enacted, any attempts to reform section 7704(c) and subject all publicly traded partnerships to the corporate tax would be rendered moot. The bill is not expected to pass, however.⁴⁴⁹

Finally, the Obama Administration has sought to make the production tax credit permanent and refundable.⁴⁵⁰ Refundable credits allow credit recipients to enjoy the economic benefits of the credit even when they have no tax liability.⁴⁵¹ Making the tax credit refundable would render it similar to the section 1603 grant that became available in 2009 to rescue PTC investors that lacked tax liability as a result of the 2007–08 recession. This modification could encourage increased investment and expand the pool of investors,⁴⁵² but many of the existing challenges associated with high transaction costs and information costs would remain. The at-risk rules and passive activity loss rules would also likely continue to limit many investors from using the credits.

VII. CONCLUSION: SUBSIDY STRUCTURE MATTERS

The U.S. government has been picking winners and losers among energy providers for over 100 years. Today, the federal government provides continuing support for fossil fuels even as it has created subsidies to spur investment in renewable energy to replace fossil fuels in the generation of electricity. The two sets of subsidies have produced strikingly different results in terms of facilitating investment and stimulating growth in their respective industries. The subsidies developed for the fossil fuel industry have generated extraordinary returns for investors, spurring the

449. GovTrack.us gives the bill a zero percent chance of passing into law. See S. 1656: *Master Limited Partnerships Parity Act*, GOVTRACK, <https://www.govtrack.us/congress/bills/114/s1656> [<https://perma.cc/H4KR-9YYA>] (last visited Jan. 4, 2016).

450. See *Advancing American Energy*, WHITE HOUSE, <https://www.whitehouse.gov/energy/securing-american-energy> [<https://perma.cc/7J68-VKDC>] (last visited Jan. 21, 2016) (“The President called on Congress to make the renewable energy Production Tax Credit permanent and refundable, which will provide incentive and certainty for investments in new clean energy. Instead of continuing century-old subsidies to oil companies, the President believes that we need to invest in the energy of the future.”).

451. See Lily L. Batchelder, Fred T. Goldberg, Jr. & Peter R. Orszag, *Efficiency and Tax Incentives: The Case for Refundable Tax Credits*, 59 STAN. L. REV. 23, 33 (2006).

452. See Michelle D. Laysner, *Improving Tax Incentives for Wind Energy Production: The Case for a Refundable Production Tax Credit*, 81 MO. L. REV. (forthcoming 2016).

expansion, proliferation, and growth of fossil fuel ventures. Meanwhile, the market for renewable energy tax credits has, at times, collapsed. The structure of the tax subsidies caused these divergent outcomes.

Fossil fuels firms receive a wide variety of tax subsidies. They may immediately deduct the full value of certain costs,⁴⁵³ enjoy accelerated depreciation,⁴⁵⁴ and shorter cost recovery periods for other assets,⁴⁵⁵ and claim deductions in excess of their investment through percentage depletion.⁴⁵⁶ They are allowed to treat royalty payments as foreign taxes paid, applying the foreign tax credit to offset U.S. income taxes.⁴⁵⁷ They receive special rates,⁴⁵⁸ tax credits,⁴⁵⁹ and exclusions from the application of certain rules.⁴⁶⁰ They also receive subsidies for complying with environmental laws.⁴⁶¹ Fossil fuel companies also enjoy a special exemption from the corporate tax. While, generally, publicly traded entities are subject to the corporate tax, section 7704(c) permits fossil fuel investors to enjoy pass-through taxation, avoiding the corporate “double tax.”⁴⁶² Public trading makes the investments highly liquid and minimizes information and transaction costs. The structures are permanent and lend significant legislative certainty to investors about the tax benefits they are to receive.

In contrast, the subsidies to the renewable energy industry are far less effective in facilitating investment. The tax benefits consist of accelerated depreciation⁴⁶³ and tax credits.⁴⁶⁴ The deal structures and risks are diverse, imposing high information and transaction costs. The credit rules create lock-in by requiring investors to hold their investments for long periods and by increasing the price of exit. Because the subsidies are temporary, they impose significant

453. See I.R.C. §§ 617, 613, 179C (2012).

454. See I.R.C. § 168(e)(3)(C)(iv) (Supp. 2015).

455. See I.R.C. §§ 168(e)(3)(E)(viii), 167(h), 169(d)(5), 179A (Supp. 2015).

456. See I.R.C. § 613 (2012).

457. See I.R.C. § 901 (2012).

458. See I.R.C. § 631(c) (Supp. 2014).

459. See I.R.C. §§ 43, 45 (Supp. 2015).

460. See I.R.C. § 469 (Supp. 2014) (exceptions to passive activity losses rules); see also I.R.C. § 148 (2012) (exceptions to tax arbitrage rules).

461. See I.R.C. §§ 179B, 45H, 468 (2012).

462. See I.R.C. § 7704(c) (2012) (creating an exception from corporate treatment for certain partnerships with passive income). See *supra* note 154 and accompanying text.

463. See I.R.C. § 168 (Supp. 2015).

464. See I.R.C. §§ 45, 48 (Supp. 2015).

legislative risk and uncertainty. Temporary credit periods have undermined planning and project development and given rise to boom and bust periods, slowing the development of a U.S.-based wind-power manufacturing sector. Extraordinary measures were required to salvage tax credit programs during the recent economic downturn.

The function of the subsidy in determining tax liability and the location of the subsidy in the tax code have also affected their long-term viability, and engendered administrative bias in reporting and analysis. Tax subsidies for fossil fuels are embedded in the portions of the Internal Revenue Code that measure income. They are less visible, less reported, and less scrutinized. The agencies responsible for quantifying and analyzing these subsidies generally focus on only the largest subsidies in terms of revenue cost, ignore tax benefits based on choice of form, decline to evaluate expenditures that are not unique to the energy industry (allowing some subsidies to hide in plain sight), and fail to collect and evaluate data from the taxpayers claiming these benefits. The tax expenditures to the fossil fuel industry are permanent; some have been in place for over 100 years, and efforts to limit their effects on the tax base have had very limited success.

In contrast, the primary mechanism for funding renewables, tax credit provisions, are appended to the front of the Internal Revenue Code, they are specific to certain sectors, they are generally unrelated to other provisions of the income tax, and they are easily excised or allowed to lapse without ramifications to the effective functioning of the income tax system. Taxpayers are required to report their claims for these benefits with specificity, yielding a trove of data with which the Department of the Treasury may verify its estimates of their revenue costs.

Renewable energy sources and fossil fuels compete in the market. If the negative health and environmental externalities were internalized and factored into the price of energy, the price of fossil fuels would rise, rendering renewable energy even more competitive. Environmental policy would be best served by imposing a carbon tax and eliminating all tax expenditures for fossil fuels, although in the current political environment this is unlikely to occur. While Congress has failed to pass any significant environmental regulation in over twenty years, tax law has been

revised on an annual basis. Therefore, modifications to the current sets of tax subsidy structures may provide an avenue for progress.

When Congress uses the income tax to address market failures it should consider the sources and extent of risk and the reward that will be needed to induce private parties to share that risk. It should model the incidence of the tax subsidy. Taxes are borne mainly by those with the least elastic response to them; subsidies are enjoyed by the parties with the most flexible response to them. If, as with fossil fuel subsidies, the beneficiaries are not consumers but fossil fuel industry shareholders, the goal for the subsidy, economic growth, is not being served. Furthermore, such subsidies may generate economic waste.

Congress should also consider whether the structure of the tax subsidy creates or reduces information and transaction costs, creates lock-in, or facilitates trading and marketability. Sunsets should be reconsidered, since they may increase the risks faced by the investors. Even if the subsidies are temporary, Congress should provide sufficient time for projects to complete siting, permitting and construction, and begin operations. Furthermore, temporary legislation empowers entrenched industries to interfere with the capital formation, growth, and expansion of new technologies. Finally, Congress should require the Department of the Treasury to develop tax forms that collect data from all taxpayers claiming any energy subsidy and make the aggregate data publicly available for evaluation. Even with all the current disadvantages, many forms of renewable energy have begun to approach parity with fossil fuels in terms of cost.⁴⁶⁵ This progress may be accelerated if Congress provides a more thoughtful set of subsidies for renewable energy.

465. In recent years, wind and solar have reached parity with natural gas on a cost per BTU basis, even without subsidies. See Diane Cardwell, *Solar and Wind Energy Start to Win on Price vs. Conventional Fuels*, N.Y. TIMES (Nov. 23, 2014), <http://www.nytimes.com/2014/11/24/business/energy-environment/solar-and-wind-energy-start-to-win-on-price-vs-conventional-fuels.html> [<http://perma.cc/LFH4-4HNG>].