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## Tax Benefits, Property Rights, and Mandates: Considering the Future of Government Support for Renewable Energy

Alexandra Klass  
University of Minnesota Law School, [aklass@umn.edu](mailto:aklass@umn.edu)

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# **Tax Benefits, Property Rights, and Mandates: Considering the Future of Government Support for Renewable Energy**

Alexandra B. Klass\*

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\* Professor of Law, University of Minnesota Law School. I received helpful comments on earlier drafts of this Article from Lincoln Davies, Shi-Ling Hsu, Joseph Tomain, and Hannah Wiseman.

**TAX BENEFITS, PROPERTY RIGHTS, AND MANDATES: CONSIDERING THE  
FUTURE OF GOVERNMENT SUPPORT FOR RENEWABLE ENERGY**

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INTRODUCTION

Taxes and energy are subject to constant partisan debate. Both are at play in politically-charged discussions about the government's role in promoting renewable energy, particularly wind energy. Since 1992, the federal government has granted a production tax credit ("PTC") (currently 2.3¢ per kilowatt/hour ("kWh")) for production of certain renewable energy. The credit initially focused on wind, closed-loop biomass, and poultry-waste energy resources. In 2004, Congress expanded the program to include open-loop biomass, geothermal, and several other renewable energy sources. With this support, the wind energy industry has begun to take off. By 2011, installed wind capacity exceeded forty-five gigawatts ("GWs"), accounting for about four percent of U.S. installed electricity capacity, three percent of total U.S. generation, and more than ten percent of total generation in several states.<sup>1</sup> In 2012 alone, the industry added over thirteen GWs of wind energy, surpassing the previous record of ten GWs in 2010.<sup>2</sup>

Yet, unlike the significant tax benefits for fossil fuels, which have been in place for many decades, the PTC has never been a permanent part of the tax code. Instead, it was created with set expiration dates, and will expire on those dates unless Congress specifically reauthorizes it. This resulted in the PTC expiring at the end of 1999, 2001, and 2003, while almost expiring in

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<sup>1</sup> *Wind Energy Tax Credit Set to Expire at the End of 2012*, U.S. ENERGY INFO. ADMIN. (Nov. 21, 2012), <http://www.eia.gov/todayinenergy/detail.cfm?id=8870> [hereinafter EIA, WIND ENERGY TAX CREDIT]; *Shares of Electricity Generation from Renewable Energy Sources Up in Many States*, U.S. ENERGY INFO. ADMIN. (April 9, 2012), <http://www.eia.gov/todayinenergy/detail.cfm?id=5750>.

<sup>2</sup> *AWEA U.S. Wind Industry Annual Market Report 2012: Rankings*, AM. WIND ENERGY ASS'N (May 2013), <http://awea.files.cms-plus.com/FileDownloads/pdfs/AWEA%20U%20S%20%20Wind%20Industry%20Annual%20Market%20Rankings%202012.pdf> (reporting that 13,131 MW of wind energy was installed in 2012); Matthew Wald, *The Wind Industry Gets to Draw Another Breath*, N.Y. TIMES (Jan. 3, 2013), <http://green.blogs.nytimes.com/2013/01/03/the-wind-industry-gets-to-draw-another-breath> (discussing extension of PTC through 2013).

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numerous other years, including 2012, each time leading to significant discussions about the government's role in using tax benefits as part of its federal energy policy.<sup>3</sup> Although Congress extended the deadline for one more year as part of the "fiscal cliff" budget negotiations in January 2013,<sup>4</sup> this temporary fix means only that the debates over the long-term use of tax benefits to encourage renewable energy will continue.

Stepping back from the current debates over the PTC for a moment, it is important to recognize that the government provides assistance for energy development and production in numerous ways. State and federal governments have offered direct subsidies, tax breaks, and research and development grants to the energy industry for over a century supporting coal, oil, natural gas, nuclear, and, more recently, wind and solar energy and biofuels. These financial incentives have provided billions of dollars in support for energy development companies for engaging in various energy-related activities and a corresponding reduction of billions of dollars of revenue to the government.

Beyond this direct financial support, however, governments have also supported energy development through favorable property rights benefits and through mandates that require the use or production of certain forms of energy.<sup>5</sup> With regard to property rights, such benefits can be just

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<sup>3</sup> See, e.g., Matthew L. Wald, *Developers of Wind Farms Run a Race Against the Calendar*, N.Y. TIMES (Dec. 27, 2012), <http://www.nytimes.com/2012/12/28/science/earth/wind-farm-developers-race-against-end-of-tax-credit.html>.

<sup>4</sup> See Wald, *supra* note 3; American Taxpayer Relief Act of 2012, H.R. 8 (2013).

<sup>5</sup> This essay acknowledges but does not discuss other forms of government support for energy sectors such as environmental laws and regulations which encourage the use of particular forms of energy through imposing emissions limits; statutory accommodations or exceptions for oil, gas, and other fossil fuel development in environmental protection statutes which that do not exist for renewable energy development; or tort liability limits that reduce energy industry exposure to catastrophic events. Examples of these types of support include Corporate Average Fuel Economy (CAFE) standards for automobiles; oxygen requirements for automobile fuels under the Clean Air Act, exceptions to

as important as tax breaks to energy developers as they attempt to secure the land, resources, and infrastructure necessary to develop the designated energy source. These include the rule of capture and unitization laws governing oil and gas production; eminent domain authority in many states for coal, oil, and gas, and electricity infrastructure development; and, more recently, in a few states, solar easements that trump competing land uses. These property rights benefits all provide a measure of legal certainty to energy developers that their proposed energy-related land use will prevail over adverse claims. Such certainty is critical to creating time-lines for development, attracting investors, and encouraging energy developers to engage in the preferred energy-related activity in the first place.

With regard to mandates, in 2005, Congress created a federal Renewable Fuels Standard (“RFS”) which requires gasoline blenders to use a designated amount of ethanol and other biofuels—in 2012, over

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environmental permitting requirements for oil, gas, and other fossil fuel development projects under the Clean Air Act, Clean Water Act, and other pollution control statutes; and the liability limits for tort claims against certain industry sectors such as those contained in the Price-Anderson Act (nuclear accidents) and the Oil Pollution Act and the Trans-Alaska Pipeline Authorization Act (oil spills). *See* ENVIRONMENTAL LAW INSTITUTE, ESTIMATING U.S. GOVERNMENT SUBSIDIES TO ENERGY SOURCES: 2002-2008 25-27 (2009), *available at* [http://www.elistore.org/Data/products/d19\\_07.pdf](http://www.elistore.org/Data/products/d19_07.pdf); Uma Outka, *Environmental Law and Fossil Fuels: Barriers to Renewable Energy*, 65 VAND. L. REV. 1680, 1699-1710 (2012) (discussing statutory exceptions and accommodations for fossil fuels in environmental protection statutes). This essay also does not discuss the significant tax incentives and subsidies that are now available for energy efficiency and conservation measures, which have become a major part of developing energy policy by reducing the need for energy generation in the first place. *See* MOLLY F. SHERLOCK, CONGRESSIONAL RESEARCH SERVICE, ENERGY TAX POLICY: HISTORICAL PERSPECTIVES ON AND CURRENT STATUS OF ENERGY TAX EXPENDITURES 19 (2011), *available at* <http://www.leahy.senate.gov/imo/media/doc/R41227EnergyLegReport.pdf> (discussing tax benefits for energy efficiency and conservation incentives) [hereinafter SHERLOCK, ENERGY TAX POLICY]; Umair Irfan, *U.S. Efficiency Spending Projected to Double, Offset Most Demand Increases*, CLIMATEWIRE, Jan. 18, 2013 (reporting on increased state and federal spending on efficiency programs nationwide and the growing role of efficiency in offsetting expected energy demand growth).

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thirteen billion gallons—in the gasoline that they place on the market. Moreover, in recent years, many states have imposed renewable portfolio standards (“RPS”) to require electric utilities to procure a designated amount of renewable electricity as part of their electric generation portfolios. There have also been unsuccessful efforts in Congress to create a federal RPS to create more certainty in investment for renewable electricity sources. These mandates create a designated market for renewable electricity and biofuels, thus representing another way that governments can support certain energy sectors and provide a level of certainty for market actors.

This essay will explore the history of tax benefits, property rights benefits, and mandates for energy development for the purpose of gaining insights on how such incentives can best be used to encourage the development of renewable energy. In doing so, this essay starts from the premise that supporting the development of renewable energy is desirable and that, at least at the current time, market conditions and past government support for fossil fuel development make it unlikely renewables can be more than a small percentage of the country’s energy use without some form of continued government support. Creating new opportunities for wind, solar, and other renewable energy development will provide alternatives to existing fossil fuel use, which in turn can promote energy independence, energy reliability, and reduce CO<sub>2</sub> and other greenhouse gas (“GHG”) emissions that contribute to climate change.

Even with these assumptions in place, there is still the question of how much support is too much and for too long. At some point, it may not be worth the tax dollars lost to support energy industries that cannot stand on their own. Similar questions arise with regard to property rights incentives. While granting additional property rights to energy companies will encourage energy development, at what point does the burden on property owners and environmental resources become too great to support the development of the favored energy sources? Finally, with energy sector mandates, questions arise regarding the role of government in

attempting to influence markets, and whether such mandates, if desirable at all, work best on a state level or a federal level. While this essay does not attempt to determine precisely where that balance should be set for any of these government incentives, it evaluates some of the likely benefits and drawbacks of various approaches.

Part I of this essay describes some of the tax preferences and other financial incentives the U.S. government has historically provided to the energy sector, including to fossil fuel development, renewable fuels (particularly ethanol), and renewable electricity sources. It compares and contrasts the varying types and levels of support for these energy sectors, and concludes that the tax preferences and other financial support provided to date to renewable electricity do not provide the same level of continuity for investment purposes and long-term growth as the support provided to the fossil fuel and biofuels industries. Notably, this part of the essay focuses primarily on tax benefits as opposed to direct government subsidies and research and development grants. While direct subsidies and grants to the energy industry remain important, in recent years, tax benefits have taken a more central role in financially supporting the energy industry. For instance, in 1999, financial support for the energy industry was sixty percent direct spending and grants and forty percent tax benefits.<sup>6</sup> But, by 2007, those percentages were reversed, with more than sixty percent of support coming from tax benefits and less than forty percent coming from direct spending.<sup>7</sup> Moreover, a significant amount of

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<sup>6</sup> RICHARD W. CAPERTON & SIMA J. GANDHI, CENTER FOR AMERICAN PROGRESS, AMERICA'S HIDDEN POWER BILL: EXAMINING FEDERAL ENERGY TAX EXPENDITURES 6-7 and Figures 1 and 2 (April 2010), *available at* <http://www.americanprogress.org/wp-content/uploads/issues/2010/04/pdf/energytaxexpenditures.pdf>.

<sup>7</sup> CAPERTON & GANDHI, *supra* note 6, at 19-20. Although a higher percentage of government support for the energy industry is now made up of tax benefits, certain energy sectors such as traditional coal development and nuclear development still receive significant direct spending benefits and more modest tax benefits, although the nuclear industry is eligible for significant future tax benefits for new reactors built after 2005. *Id.* at 7 (showing the different forms of government support for coal, refined coal, petroleum liquids, nuclear, renewables, electricity, end use, and conservation). *See also* SHERLOCK *supra* note 5, at 2 (discussing production tax credit available for new nuclear reactors).



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the direct subsidies and grants for renewable energy were funded by the American Recovery and Reinvestment Act of 2009 (“ARRA”) and, as those funds are spent, direct subsidies in this area have decreased significantly, leaving tax benefits the most significant component of government financial support for the industry.<sup>8</sup>

Part II turns to property rights incentives, and discusses the long-time property rights benefits states have conveyed to oil, gas, and other natural resource developers as well as to electric utilities to encourage the development and use of energy resources. These benefits include: (1) the common law rule of capture and subsequent enactment of unitization statutes in the oil and gas industries; (2) split-estate laws granting mineral rights holders priority over surface rights holders; (3) eminent domain authority in a few states granted to natural resource development companies to facilitate infrastructure development to extract natural resources such as coal, gas, oil, and metals; and (4) eminent domain authority in virtually all states granted to electric utilities to build electric generation facilities and transmission lines. This Part explains first how these property rights incentives have in general not been similarly granted to renewable energy companies such as wind developers, but that some

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As a recent example, Department of Energy-funded research and development played a large role in helping create the technologies that have enabled the use of hydraulic fracturing to access significant shale oil and gas resources. *See, e.g.*, U.S. DEPT. OF ENERGY, NATIONAL ENERGY TECHNOLOGY LABORATORY, SHALE GAS: APPLYING TECHNOLOGY TO SOLVE AMERICA’S ENERGY CHALLENGES (2011), *available at* [http://www.netl.doe.gov/technologies/oil-gas/publications/brochures/Shale\\_Gas\\_March\\_2011.pdf](http://www.netl.doe.gov/technologies/oil-gas/publications/brochures/Shale_Gas_March_2011.pdf).

<sup>8</sup> *See* CONG. BUDGET OFFICE, FEDERAL FINANCIAL SUPPORT FOR THE DEVELOPMENT AND PRODUCTION OF FUELS AND ENERGY TECHNOLOGIES (2012), *available at* [http://www.cbo.gov/sites/default/files/cbofiles/attachments/03-06-FuelsandEnergy\\_Brief.pdf](http://www.cbo.gov/sites/default/files/cbofiles/attachments/03-06-FuelsandEnergy_Brief.pdf); JESSE JENKINS, ET AL., BEYOND BOOM & BUST: PUTTING CLEAN TECH ON A PATH TO SUBSIDY INDEPENDENCE 19-20 (2012), *available at* [http://thebreakthrough.org/blog/Beyond\\_Boom\\_and\\_Bust.pdf](http://thebreakthrough.org/blog/Beyond_Boom_and_Bust.pdf) (showing decrease in ARRA spending on clean technology from a high of \$25 billion in 2009 down to \$2.3 billion in 2013 virtually eliminated by 2014).

states have attempted to create wind easements and solar easements to provide more certainty to renewable energy developers and users through property law. This Part suggests that policymakers should use caution in conveying new property rights incentives to renewable energy developers to avoid upsetting existing certainty in property law and also to avoid a situation where the burdens of such changes fall too heavily on a small and discrete number of landowners.

Part III considers mandates in the energy industry. These include: (1) state RPSs for renewable electricity; (2) the federal RFS that benefits the biofuels industry; and (3) California's Low Carbon Fuel Standard ("LCFS") regulations that mandate use of an increasing amount of fuels with lowered GHG emissions each year in the state. This Part explores how the federal RFS has provided significant benefits to the biofuels industry while at the same time often has worked at cross-purposes with environmental protection and climate change goals, and has created instability in corn and related food markets. It compares the federal RFS for biofuels with the lack of a similar mandate at the federal level for renewable electricity, and discusses the potential benefits associated with a federal RPS for electricity.

Finally, Part IV considers the important role certainty and continuity play in efforts to support renewable energy development. This Part looks at the various tools lawmakers have used to support energy development and considers which tools provide more and less optimal levels of certainty with reference to past successes and failures in other energy sectors. Ultimately, this essay concludes that the continuity and relative certainty associated with certain types of tax benefits and mandates may be the best means of providing long-term support to renewable energy markets. Property rights incentives, on the other hand, should be used more sparingly to provide benefits to particular energy sectors or markets, but may be best used to create the nationwide, physical networks such as electric transmission grid expansions necessary for those markets to exist.

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## I. TAX PREFERENCES FOR ENERGY DEVELOPMENT

Since the early part of the twentieth century, and accelerating in the 1970s, Congress has used the tax code to encourage certain types of energy development by providing “tax expenditures,” defined as “federal revenue losses (reduced government receipts) associated with tax provisions allowing for special exemptions, deductions, credits, income deferrals, or reduced rates.”<sup>9</sup> Tax expenditures do not include direct subsidies to energy industries, such as subsidies provided by the U.S. Department of Energy for coal exploration, construction of nuclear facilities, conservation, or energy efficiency programs.<sup>10</sup> Tax expenditures and other tax benefits (such as excise tax credits for biofuels which are not technically “tax expenditures”) for the energy industry totaled over \$20 billion in 2011, which is, and historically has been, about two percent of total U.S. tax expenditures.<sup>11</sup> In general, the United States has used tax benefits to first support development of domestic fossil fuel and nuclear production for nearly a century and, more recently, to support the development of domestic renewable energy.<sup>12</sup> Until 2005, virtually all energy-related tax expenditures and benefits went toward stimulating

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<sup>9</sup> Congressional Budget and Impoundment Act of 1974, Pub. L. No. 93-344, 88 Stat. 297 (1974); SHERLOCK, ENERGY TAX POLICY, *supra* note 5, at 12.

<sup>10</sup> See SHERLOCK, ENERGY TAX POLICY, *supra* note 5, at 12; CAPERTON & GANDHI, *supra* note 6, at 19-20 and Figures 5 and 6.

<sup>11</sup> This 2011 number for energy-related tax expenditures does not include \$3.5 billion in funding for the U.S. Department of Energy for energy technology and energy efficiency programs but does include nearly \$7 billion in excise tax breaks for ethanol and biodiesel generators even though excise tax reduction are not technically within the definition of “tax expenditures.” CONG. BUDGET OFFICE, *supra* note 7. See also SHERLOCK, ENERGY TAX POLICY, *supra* note 5, at 13 (showing energy tax expenditures as a percentage of total tax expenditures).

<sup>12</sup> CAPERTON & GANDHI, *supra* note 6, at 19 (using 2007 numbers); CONG. BUDGET OFFICE, *supra* note 8, at 5; EIA, EXECUTIVE SUMMARY, DIRECT FINANCIAL INTERVENTIONS AND SUBSIDIES IN ENERGY IN FISCAL YEAR 2010, xii-xiv (2011), available at <http://www.eia.gov/analysis/requests/subsidy/> (hereinafter EIA, EXECUTIVE SUMMARY).

domestic oil and gas production with the amount claimed by renewable energy almost negligible.<sup>13</sup>

In recent years, tax benefits for renewable energy have surpassed that of fossil fuel production. For instance, in 2011, the breakdown of tax expenditures and other tax-related benefits within the energy sector was as follows: sixty-eight percent to renewable energy (including ethanol and biodiesel), fifteen percent to fossil fuels, ten percent to energy efficiency programs, four percent to nuclear energy,<sup>14</sup> and two percent to other.<sup>15</sup> These numbers can be misleading, however, because they do not take into account the decades of continued tax benefits the federal government provided to the fossil fuel and nuclear industries, which helped those industries become the dominant economic and political forces they are today.<sup>16</sup> For instance, one study shows that over the period of years the federal government has supported the oil and gas industry, the average annual subsidy for that industry sector was nearly \$5 billion, for nuclear,

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<sup>13</sup> SHERLOCK, ENERGY TAX POLICY, *supra* note 5, at 16.

<sup>14</sup> While tax benefits to the nuclear energy sector are currently lower than those for renewable energy, the Energy Policy Act of 2005 created a production tax credit for new nuclear facilities that commence construction by 2014, for eight years of operation, in an amount equivalent to that offered to wind facilities, resulting in a potential tax benefit to the nuclear industry of up to \$6 billion depending on how many new facilities commence construction by the deadline. *See U.S. Nuclear Power*, WORLD NUCLEAR ASS'N (updated Sept. 2013), [http://www.world-nuclear.org/info/inf41\\_US\\_nuclear\\_power\\_policy.html](http://www.world-nuclear.org/info/inf41_US_nuclear_power_policy.html); Felicity Carus, *Nuclear Projects Still in Line for Federal Billions*, AOL ENERGY.COM (June 8, 2011), <http://energy.aol.com/2011/06/08/nuclear-projects-still-in-line-for-federal-billions/>; Peter Saba, *New Nuclear Projects? The Status of Key Financing Incentives*, ELEC. LIGHT & POWER (March 1, 2007), <http://www.elp.com/articles/print/volume-85/issue-2/sections/generation/new-nuclear-projects-the-status-of-key-financing-incentives.html>.

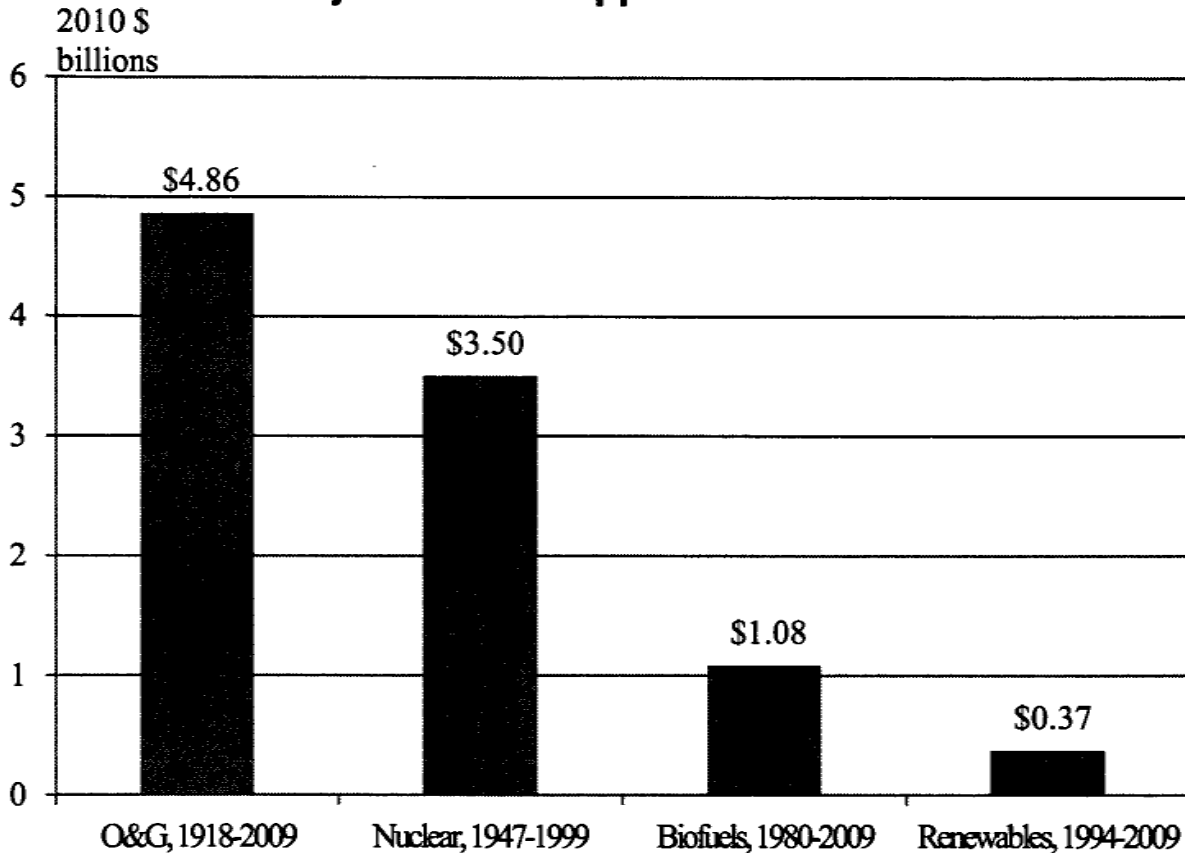
<sup>15</sup> CONG. BUDGET OFFICE, *supra* note 8, at 5.

<sup>16</sup> NANCY PFUND & BEN HEALY, DBL INVESTORS, WHAT WOULD JEFFERSON DO? THE HISTORICAL ROLE OF FEDERAL ENERGY SUBSIDIES IN SHAPING AMERICA'S ENERGY FUTURE 29-33 (2011), *available at* <http://www.dblinvestors.com/documents/What-Would-Jefferson-Do-Final-Version.pdf>; *see also* Shi-Ling Hsu, *Capital Rigidities, Latent Externalities*, 51 HOUSTON L. REV. \_\_ (forthcoming 2014) (discussing tax and other financial benefits for energy industries).

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the average annual subsidy was \$3.5 billion, for biofuels, the average annual subsidy was just over \$1 million, and for other renewables, the average annual subsidy was \$0.37 billion.<sup>17</sup>

**Historical Average of Annual Energy Subsidies:  
A Century of Federal Support**



Moreover, this discrepancy is evident even when one considers only the past decade as opposed to many decades of support for traditional energy development. Taking into account tax expenditures, other tax benefits, and subsidies, fossil fuels received \$72 billion from 2002-2008,

<sup>17</sup> PFUND & HEALY, *supra* note 16. In order to obtain the annual averages for these figures, the report used a date range of 1918-2009 for oil and gas, 1947-1999 for nuclear, 1980-2009 for biofuels, and 1994-2009 for renewables. *Id.* at 29.

while tax benefits and subsidies for renewable fuels totaled far less, at \$29 billion, with almost half of that amount going to ethanol production.<sup>18</sup> Thus, while the percentage of tax benefits associated with renewable energy today exceeds tax expenditures associated with fossil fuel development, it is important to consider the breakdown of tax benefits by industry over the entire history of such benefits to answer critical questions about “what it takes” to support a desirable energy sector and how long that support should continue.

The discussion below includes an analysis of tax benefits granted to the oil and gas industry, other fossil fuels, biofuels, and renewable energy. It concludes with a discussion of the importance of long-term financial support for these industries in order to create the markets and infrastructure necessary to support these industry sectors on a long-term basis.

#### A. *Oil, Gas, and other Fossil Fuel Tax Benefits*

For more than fifty years, federal energy tax policy focused almost exclusively on supporting domestic oil and gas production, with virtually no tax expenditures for renewable energy. Tax expenditures for oil and gas development began in 1916 by allowing oil and gas companies to fully deduct intangible drilling costs (“IDCs”) and dry hole costs in the first year rather than being capitalized and depreciated over time.<sup>19</sup> In 1926, Congress added the “percentage depletion” deduction, which allows oil companies to deduct a percentage of revenue (currently fifteen percent per year for the first 1,000 barrels per day) generated from a well even if that amount exceeds the well’s total value.<sup>20</sup> This allows oil companies to take deductions as long as a well is producing oil—without regard to how

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<sup>18</sup> ENVIRONMENTAL LAW INSTITUTE, ESTIMATING U.S. GOVERNMENT SUBSIDIES TO ENERGY SOURCES: 2002-2008 at 3 (2009), *available at* [http://www.elistore.org/Data/products/d19\\_07.pdf](http://www.elistore.org/Data/products/d19_07.pdf) [hereinafter ELI].

<sup>19</sup> IRC § 617 (2013); ELI, *supra* note 18, at 7.

<sup>20</sup> IRC § 613; ELI, *supra* note 18, at 7; CAPERTON & GANDHI, *supra* note 6, at 7-9.

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much or whether the well is still declining in value.<sup>21</sup> From 1977 until the mid-1980s, tax expenditures associated with IDCs and percentage depletion ranged from \$5 billion to over \$10 billion per year in inflation adjusted dollars.<sup>22</sup> In the late 1980s, many of the energy tax expenditures, including those for oil and gas, were repealed but were later reinstated and remain in the tax code today.<sup>23</sup> Tax expenditures for IDCs and percentage depletion totaled approximately \$2 billion in 2007 and approximately \$2.5 billion in 2010.<sup>24</sup>

Throughout the 1990s and 2000s, Congress provided additional, significant tax expenditures for other fossil fuels. For instance, in 1980, Congress enacted the unconventional fuels tax credit to stimulate production of synthetic fuels using domestic deposits of oil, gas, and coal.<sup>25</sup> Congress expanded the credit in later legislation, including in the Energy Policy Act of 1992.<sup>26</sup> While the technologies available to take advantage of this credit were not widespread in the 1980s, by the 1990s, producers of coal bed methane gas and tight sands gas began to claim the credit.<sup>27</sup> Revenue losses associated with the unconventional fuel tax credit increased steadily every year and, in 2007 totaled \$4.5 billion.<sup>28</sup> Because of perceived abuses of the credit, the Energy Policy Act of 2005 phased it out, and non-expired incentives for unconventional fuels are now claimed as part of the general business credit and subject to limitations.<sup>29</sup>

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<sup>21</sup> IRC § 613; CAPERTON & GANDHI, *supra* note 6, at 9.

<sup>22</sup> SHERLOCK, ENERGY TAX POLICY, *supra* note 5, at 15-17.

<sup>23</sup> SHERLOCK, ENERGY TAX POLICY, *supra* note 5, at 3; CONG. BUDGET OFFICE, *supra* note 8, at 3 (showing expiration date or lack thereof for various tax preferences).

<sup>24</sup> EIA, EXECUTIVE SUMMARY, *supra* note 12, at xii-xiv.

<sup>25</sup> IRC § 45K; SHERLOCK, ENERGY TAX POLICY, *supra* note 5, at 17-18; ELI, *supra* note 18, at 7.

<sup>26</sup> SHERLOCK, ENERGY TAX POLICY, *supra* note 5, at 17-18.

<sup>27</sup> *Id.*

<sup>28</sup> *Id.*

<sup>29</sup> *Id.*

B. *Renewable Fuels Tax Benefits*

The biggest change in energy tax benefits in recent years is the increase in government revenue losses for ethanol, biodiesel, other biofuels, and alternative fuels. Notably, the biggest tax benefit in this category prior to 2010 was associated with “black liquor,” which is a process by which paper mills mix conventional fuels (such as diesel) and a byproduct of the pulping process as an energy source for the mill.<sup>30</sup> Congress did not have black liquor in mind when it created a tax credit for alternative fuels mixtures.<sup>31</sup> Instead, Congress had hoped to create incentives for companies producing liquid motor fuels from biomass.<sup>32</sup> Nevertheless, the paper mills claimed the bulk of the credits, which totaled \$2.5 billion in the first half of 2009.<sup>33</sup> Later legislation eliminated paper mills’ ability to take advantage of the credit in 2010.<sup>34</sup>

More significant and long term, however, are the excise tax credits and other tax benefits for the production of biofuels, which have provided significant financial support to the biofuels industry.<sup>35</sup> Over the past thirty years, tax incentives for alcohol fuels, including ethanol and biodiesel, increased steadily, with revenue losses at over \$1.5 billion in 2004, over \$2.5 billion in 2005, over \$6 billion in 2010, and nearly \$7 billion in 2011.<sup>36</sup> The primary vehicle for the biofuels tax preference has been the Alcohol Credit for Fuel Excise Tax, also known as the Volumetric Ethanol Excise Tax Credit (“VEETC”).<sup>37</sup> Until January 2012, VEETC offered ethanol blenders, primarily large oil companies, a tax credit of forty-five

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<sup>30</sup> SHERLOCK, ENERGY TAX POLICY, *supra* note 5, at 19.

<sup>31</sup> *Id.*

<sup>32</sup> *Id.*

<sup>33</sup> *Id.*

<sup>34</sup> *Id.* at 19-20.

<sup>35</sup> *Id.* at 23.

<sup>36</sup> *Id.* at 23; EIA, EXECUTIVE SUMMARY, *supra* note 12 at xiii-xiv; ELI, *supra* note 18, at 21-22 (discussing credits); CONGRESSIONAL BUDGET OFFICE, *supra* note 8, at 3 (2011 figures).

<sup>37</sup> ELI, *supra* note 18, at 21; IRC § 6426(b) (2013).



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cents for every gallon of pure ethanol they blended with gasoline.<sup>38</sup> Estimates are that VEETC cost taxpayers \$5.7 billion in 2011 and over \$11 billion during the period 2002-2008.<sup>39</sup> Moreover, these numbers do not include ongoing U.S. Department of Agriculture subsidy payments to farmers who use their corn to produce ethanol, which totaled nearly \$5 billion for the period 2002-2008.<sup>40</sup> Notably, the biggest beneficiaries of the biofuels tax preferences and other subsidies were a few, very large agricultural companies, particularly Archer Daniels Midland, which produced more than 1 billion gallons of ethanol in 2006, representing over twenty percent of total U.S. ethanol production that year.<sup>41</sup>

While Congress allowed the bulk of the tax credits for biofuels to expire at the end of 2011, this action did not meet significant resistance from the biofuels industry primarily because of the federal renewable fuel standard (“RFS”).<sup>42</sup> The RFS, which Congress included in the Energy Policy Act of 2005 and revised in the Energy Independence and Security Act of 2007, required 9 billion gallons of renewable fuel be blended in gasoline 2008, more than 13 billion gallons in 2012, and increasing each year up to 36 billion gallons in 2020.<sup>43</sup> Thus, even without the tax credit,

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<sup>38</sup> ELI, *supra* note 18, at 21-22.

<sup>39</sup> *Id.* at 3, 23; U.S. ENERGY INFO. ADMIN., BIOFUELS ISSUES AND TRENDS 26-27 (2012), available at <http://www.eia.gov/biofuels/issuestrends/pdf/bit.pdf>; Tom Murse, *Understanding the Ethanol Subsidy*, ABOUT.COM, June 15, 2011, <http://usgovinfo.about.com/od/moneymatters/a/The-Federal-Ethanol-Subsidy.htm>.

<sup>40</sup> ELI, *supra* note 18, at 23.

<sup>41</sup> Roberta F. Mann & Mona L. Hymel, *Moonshine to Motorfuel: Tax Incentives for Fuel Ethanol*, 19 DUKE ENVTL. L. & POL’Y FORUM 43, 72 (2009).

<sup>42</sup> Robert Pear, *After Three Decades, Tax Credit for Ethanol Expires*, N.Y. TIMES, Jan. 1, 2012 (reporting on expiration of biofuels tax credit at end of 2011, noting that the industry did not put up much of a fight, and fact that ethanol industry had enjoyed a “triple crown” of federal support because of the RFS, tax credit, and tariff on imported ethanol which protected the domestic ethanol industry), <http://www.nytimes.com/2012/01/02/business/energy-environment/after-three-decades-federal-tax-credit-for-ethanol-expires.html>.

<sup>43</sup> BOSSELMAN ET AL., ENERGY, ECONOMICS AND THE ENVIRONMENT 1086-87 (3d ed. 2010); RANDY SCHNEPF & BRENT D. YACOBUCCI, CONG. RESEARCH SERVICE, R40155,

biofuels producers have a guaranteed market for their product.<sup>44</sup> The RFS, as well as the role of use or purchase mandates in supporting energy production, is discussed in more detail in Part III. Moreover, as part of the fiscal cliff budget negotiations completed in January 2013, Congress restored expired tax credits for ethanol produced from non-food sources, such as corn stalks and for biodiesel, providing additional support to those energy sectors.<sup>45</sup>

The tax expenditures and RFS for biofuels are controversial not only because of the significant amount of tax breaks and other support they provide for the industry, but because of concerns regarding the environmental impacts of corn-based ethanol, which constitutes over ninety percent of the feedstock of U.S. ethanol production.<sup>46</sup> While corn-based ethanol is “renewable” in the sense that corn is not a finite resource like oil, coal, or natural gas, numerous studies have shown that the CO<sub>2</sub> and other GHG emissions associated with the life-cycle production of corn-based ethanol are significant and in some cases approach that of

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RENEWABLE FUEL STANDARD (RFS): OVERVIEW AND ISSUES 2-4 (2012), *available at* <http://www.fas.org/sgp/crs/misc/R40155.pdf>; Mann & Hymel, *supra* note 41, at 52-53; Pear, *supra* note 42; John H. Cushman, Jr., *In Drought, a Debate Over Quota for Ethanol*, N.Y. TIMES, Aug. 16, 2012 (reporting on RFS, the number of gallons required to be used each year, and impact on corn-related markets and industries), [http://www.nytimes.com/2012/08/17/business/energy-environment/ethanol-quota-debated-by-corn-farmers-and-meat-](http://www.nytimes.com/2012/08/17/business/energy-environment/ethanol-quota-debated-by-corn-farmers-and-meat-industry.html?_r=0&adxnnl=1&adxnnlx=1356208777-8ME2y36sGtYPFMmUFBnfWQ)

[industry.html?\\_r=0&adxnnl=1&adxnnlx=1356208777-8ME2y36sGtYPFMmUFBnfWQ](http://www.nytimes.com/2012/08/17/business/energy-environment/ethanol-quota-debated-by-corn-farmers-and-meat-industry.html?_r=0&adxnnl=1&adxnnlx=1356208777-8ME2y36sGtYPFMmUFBnfWQ).  
<sup>44</sup> See BIOFUELS ISSUES AND TRENDS, *supra* note 39, at 26 (stating that “high petroleum prices, record ethanol production, the saturation of the gasoline pool with ethanol a robust [renewable fuels] mandate, and a need to reduce federal tax expenditures all contributed to the expiration of the credit.”).

<sup>45</sup> See Bloomberg News, *Tax Credit Extension Boosts Wind Power Industry*, STAR TRIBUNE, Jan. 2, 2013, *available at* <http://www.startribune.com/business/185492552.html?clmob=y&c=n&refer=y>.

<sup>46</sup> See *Renewable Fuels: Regulations and Standards*, EPA.GOV, <http://www.epa.gov/otaq/fuels/renewablefuels/regulations.htm> (showing proposed percentage requirements of different types of biofuels for applicable years); Mann & Hymel, *supra* note 40, at 46.

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gasoline.<sup>47</sup> Moreover, with a significant amount of the nation's corn crop requiring conversion to ethanol to meet the federal mandate, food prices have increased significantly, particularly in light of recent droughts.<sup>48</sup> As much as half of the nation's corn crop was used to produce ethanol in 2012 to meet the RFS.<sup>49</sup> This has caused the food industry, some states, environmentalists, and others to seek relief from the RFS mandate which, in November 2013, the U.S. EPA granted to a limited extent for the first time.<sup>50</sup> Through additional federal mandates, Congress has attempted to encourage the development of technologies to produce cellulosic ethanol and other advanced biofuels, which are more environmentally-friendly and will not impact the nation's food supply, but these efforts have not resulted in any significant decreased reliance on corn-based ethanol to meet the mandate.<sup>51</sup>

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<sup>47</sup> Mann & Hymel, *supra* note 41, at 46; David Tillman & Jason Hill, *Corn Can't Solve Our Problem*, THE WASHINGTON POST, March 25, 2007, <http://www.washingtonpost.com/wp-dyn/content/article/2007/03/23/AR2007032301625.html> (reporting on research showing the adverse environmental impacts of biofuels produced from corn as compared to biofuels produced from grasses and other feedstocks); BOSSELMAN ET AL., *supra* note 43, at 1090-91 (discussing climate change impacts of biofuels); Arnold W. Reitze, Jr., *Biofuels—Snake Oil for the Twenty-First Century*, 87 OR. L. REV. 1183, 1203-11 (2008) (discussing adverse environmental impacts of ethanol production).

<sup>48</sup> John Cushman, Jr., *In Drought, A Debate Over Quota for Ethanol*, N.Y. TIMES, Aug. 16, 2012, <http://www.nytimes.com/2012/08/17/business/energy-environment/ethanol-quota-debated-by-corn-farmers-and-meat-industry.html>; Matthew L. Wald, *E.P.A. Upholds Federal Mandate for Ethanol in Gasoline*, N.Y. TIMES, Nov. 16, 2102, <http://www.nytimes.com/2012/11/17/business/energy-environment/epa-upholds-ethanol-standard-on-use-in-gasoline.html>.

<sup>49</sup> Wald, *supra* note 48.

<sup>50</sup> See U.S. EPA, EPA Proposes 2014 Renewable Fuel Standard, 2015 Biomass-Based Diesel Volume (Nov. 2013), at <http://www.epa.gov/otaq/fuels/renewablefuels/documents/420f13048.pdf>; U.S. EPA, Renewable Fuels: Regulations and Standards, at <http://www.epa.gov/otaq/fuels/renewablefuels/regulations.htm>.

<sup>51</sup> See Andrew Childers, *D.C. Circuit Dismisses Portions of Lawsuit Challenging 2011 Renewable Fuel Standard*, 43 BNA ENV'T. REP. 3259 (2012) (reporting on lawsuit by

C. *Production Tax Credits and Investment Tax Credits for Renewable Energy*

Congress first enacted the renewable energy production tax credit (“PTC”) as part of the 1992 Energy Policy Act to replace incentives for wind energy development enacted in the 1970s. The PTC is a tax credit based on annual production of electricity from eligible resources.<sup>52</sup> The initial PTC was 1.5 cents per kWh for the first ten years of output from plants entering service by December 31, 1999, and included an annual adjustment for inflation.<sup>53</sup> The PTC credit is currently valued at 2.3 cents per kWh for wind and geothermal.<sup>54</sup> The original PTC applied only to tax-paying owners of new wind plants and some biomass power plants, but the American Jobs Creation Act of 2004 expanded the PTC to geothermal, waste energy, and some hydropower facilities.<sup>55</sup> Until December 2012, the PTC was claimed on tax returns for ten years beginning with the year the facility is placed in service.<sup>56</sup> As part of the fiscal cliff budget deal in January 2013, Congress extended the PTC beyond its expiration date of December 31, 2012, to December 31, 2013, but, unlike the prior PTC, project need only begin construction in 2013 rather than be placed in service that year, thus extending the timeline for eligible projects well beyond December 2013.<sup>57</sup>

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petroleum industry against EPA over EPA’s refusal to waive the cellulosic ethanol requirements of the RFS).

<sup>52</sup> IRC § 45(a) (2013).

<sup>53</sup> U.S. Dept. of Energy, Renewable Energy Production Tax Credit, ENERGY.GOV., <http://energy.gov/savings/renewable-electricity-production-tax-credit-ptc>.

<sup>54</sup> *Id.* See also Nick Juliano, *IRS Boosts Value of PTC for Wind, Geothermal*, E&E NEWS, April 3, 2013, available at <http://www.eenews.net/eenewspm/2013/04/03/10>.

<sup>55</sup> U.S. Dept. of Energy, Renewable Energy Production Tax Credit, ENERGY.GOV., <http://energy.gov/savings/renewable-electricity-production-tax-credit-ptc>.

<sup>56</sup> See FORREST MIDLER, NIXON PEABODY LLP, THE 10-MINUTE GUIDE TO TAX CREDITS AND GRANTS FOR RENEWABLES (2011), available at [http://www.nixonpeabody.com/files/milder\\_renewables\\_credits\\_and\\_grants\\_APR2011.pdf](http://www.nixonpeabody.com/files/milder_renewables_credits_and_grants_APR2011.pdf); JENKINS, ET AL., *supra* note 8, at 23-25.

<sup>57</sup> Bloomberg News, *Tax Credit Extension Boosts Wind Power Industry*, STAR TRIBUNE, Jan. 2, 2013; See Ari Natter, *Bill to Avert “Fiscal Cliff” Extends Tax Credit for Wind*

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The legislation also reinstated an ARRA provision that allows qualified sources to take the PTC as a thirty percent investment tax credit (“ITC”) for the year the facility is placed in service, which helps off-shore wind projects and other projects where developers lack a history of operations, requiring them to take a significant discount when monetizing the PTC.<sup>58</sup> A thirty percent ITC currently supports solar projects that are put in service by the end of 2016, and the same deadlines apply to receive a thirty percent grant under the Section 1603 grant program so long as the solar project commences construction between 2009 and 2011 and is placed in service by the end of 2016.<sup>59</sup> To date, the tax expenditures associated with solar projects have been significantly more modest than those associated with wind projects to date, totaling just over \$120 million for solar as compared with just over \$1 billion for wind in 2010, based on the much larger number of wind projects in service.<sup>60</sup> Once direct government expenditures through grants and research and development (through programs which have now mostly expired) are added to tax expenditures, however, the amounts are just over \$1 billion for solar development and nearly \$5 billion for wind development.<sup>61</sup>

The PTC or ITC generally covers thirty percent of the cost of the project.<sup>62</sup> The PTC and ITC support wind development and other

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*Power, Other Energy Incentives*, DAILY ENVT. REP., 02-DEN A-2, Jan. 3, 2013, [http://news.bna.com/deln/DELNWB/split\\_display.adp?fedfid=29009074&vname=dennotallissues&jd=a0d5w3y9n0&split=0](http://news.bna.com/deln/DELNWB/split_display.adp?fedfid=29009074&vname=dennotallissues&jd=a0d5w3y9n0&split=0); Wald, *supra* note 2.

<sup>58</sup> Natter, *supra* note 57; MIDLER, *supra* note 56, at 1, 3 (discussing PTC and ITC); Wald, *supra* note 2 (discussing PTC and ITC options).

<sup>59</sup> See Midler, *supra* note 55, at 1; JENKINS, ET AL., *supra* note 8, at 27-29.

<sup>60</sup> See EIA, EXECUTIVE SUMMARY, *supra* note 12, at xiii-xiv. The government also supports the nuclear industry through, among other programs, a PTC of 1.8 cents per KWh for the first 6,000 MW of new nuclear capacity and a total of \$22.8 billion in authorized loans under the Section 1703 DOE Loan Guarantee Project, of which \$10.3 billion had been committed as of April 2012. See JENKINS, ET AL., *supra* note 8, at 29.

<sup>61</sup> EIA, EXECUTIVE SUMMARY, *supra* note 12, at xiii-xiv.

<sup>62</sup> Brad Plumer, *The Fiscal Cliff Deal Helped Wind Power. But Our Wind Policy is Still Insane*, THE WASHINGTON POST, Jan. 3, 2013,

renewable development by increasing the financial return on wind energy investment and allowing wind plants to price generation more competitively.<sup>63</sup> According to one study, as of 2012, the PTC brought the cost of wind-generated electricity to an estimated range of \$33-65 per megawatt-hour (“MWh”), depending on the quality of the wind resource, which was competitive with new gas-fired generation.<sup>64</sup> Without the PTC, however, the cost of wind-generated electricity ranges from \$60-90 per MWh, making wind energy competitive with gas-fired generation only in the best wind regimes and with good transmission access.<sup>65</sup>

Until 2005, revenue losses associated with the cost of the PTC were negligible. By 2005, however, Congress had expanded the list of technologies eligible for the credit, rising oil prices spurred investments in renewables, and more and more states had enacted renewable portfolio standards, requiring utilities to procure increasing amounts of wind energy and other sources of renewable energy for electricity production.<sup>66</sup> In 2006, the PTC resulted in \$2.1 billion in tax expenditures, accounting for twenty-three percent of total energy-related tax expenditures.<sup>67</sup> In 2011, the PTC and other tax credits specific to renewable energy development remained at \$2.1 billion, with the bulk of that amount supporting wind energy.<sup>68</sup> Under the AARA eligible renewable energy developers could receive a Section 1603 grant in lieu of tax credits, allowing PTC-eligible

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<http://www.washingtonpost.com/blogs/wonkblog/wp/2013/01/03/the-fiscal-cliff-deal-helped-wind-power-but-our-wind-policy-is-still-insane/> (stating that the PTC typically covers up to 30 percent of the cost of a project).

<sup>63</sup> EIA, WIND ENERGY TAX CREDIT, *supra* note 1.

<sup>64</sup> JENKINS, ET AL., *supra* note 8, at 23.

<sup>65</sup> *Id.*

<sup>66</sup> SHERLOCK, ENERGY TAX POLICY, *supra* note 5, at 18.

<sup>67</sup> *Id.*

<sup>68</sup> CONG. BUDGET OFFICE, *supra* note 8, at 3. For 2011 and 2012 data on estimated revenue costs associated with energy tax provisions benefitting the fossil fuel, renewables, and energy efficiency industry sectors, see MOLLY F. SHERLOCK, CONG. RESEARCH SERVICE, R41953, ENERGY TAX INCENTIVES: MEASURING VALUE ACROSS DIFFERENT TYPES OF ENERGY RESOURCES 6-8 (2012), *available at* <http://www.fas.org/sgp/crs/misc/R41953.pdf>.

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projects to receive a one-time payment from the Treasury Department in lieu of tax benefits.<sup>69</sup> This was a significant benefit to new start-up facilities, which did not yet have a significant tax burden they needed to offset.<sup>70</sup> As of March 31, 2011, \$6.9 billion had been paid out in Section 1603 grants, but these grants only applied to projects that were placed in service or where construction was commenced by December 31, 2011.<sup>71</sup> The Congressional Joint Committee on Taxation has estimated that the PTC will cost the U.S. government \$6.8 billion for the five-year period from 2011 to 2015 for projects in place before the end of 2012.<sup>72</sup> It is

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<sup>69</sup> SHERLOCK, ENERGY TAX POLICY, *supra* note 5, at 18-19. *See also* MARK BOLINGER ET AL., NATIONAL RENEWABLE ENERGY LABORATORY, PTC, ITC, OR CASH GRANT? AN ANALYSIS OF THE CHOICE FACING RENEWABLE POWER PROJECTS IN THE UNITED STATES (2009), *available at* <http://eetd.lbl.gov/ea/emp/reports/lbnl-1642e.pdf>, (discussing relative benefits of the PTC, ITC, and cash grants for various types of renewable energy projects).

<sup>70</sup> SHERLOCK, ENERGY TAX POLICY, *supra* note 5, at 18-19. EIA, EXECUTIVE SUMMARY, *supra* note 12; EIA, WIND ENERGY TAX CREDIT, *supra* note 1.

<sup>71</sup> EIA, WIND ENERGY TAX CREDIT, *supra* note 1. Congress also granted Investment Tax Credits (“ITC”) under I.R.C. § 48, which provide a tax credit for a percentage of the cost of eligible renewable energy project property purchases for solar, small wind, and geothermal projects between 2009 and 2013. Different types of projects must either commence construction or be placed in service by particular deadlines (i.e., large wind projects must be completed by December 31, 2012; solar projects must be completed by December 31, 2016) and, according to those deadlines, eligible projects may opt to receive the Section 1603 direct cash grant instead of claiming the ITC. *See* Roberta F. Mann & E. Margaret Rowe, *Taxation*, in *THE LAW OF CLEAN ENERGY: EFFICIENCY AND RENEWABLES* 145, 149 (Michael B. Gerrard, ed. 2011); Craig A. Kline, *Solar*, in *THE LAW OF CLEAN ENERGY: EFFICIENCY AND RENEWABLES* 391, 393-94 (Michael B. Gerrard, ed. 2011).

<sup>72</sup> Diane Cardwell, *Energy Tax Breaks Proposed, Despite Waning Support for Subsidies*, N.Y. TIMES, Jan. 26, 2012, <http://www.nytimes.com/2012/01/27/business/energy-environment/clean-energy-projects-face-waning-subsidies.html?pagewanted=all>; Nick Juliano, *Crux of PTC Phaseout Plan—Cost—Proves Elusive*, E&E NEWS, Dec. 17, 2012, <http://www.eenews.net/EEDaily/2012/12/17/archive/1?terms=juliano+crux+of+ptc> (discussing various cost estimates of continuing PTC beyond 2012).

estimated that the extension of the PTC through December 2013 will raise that cost to \$12 billion over ten years.<sup>73</sup>

Unlike the tax preferences for fossil fuels described above, the PTC has never been a permanent part of the tax code. Instead, it was created with set expiration dates, and expires on those dates unless Congress specifically reauthorizes it.<sup>74</sup> This resulted in the PTC expiring at the end of 1999, 2001, and 2003, and it has almost expired, saved by last minute legislation, in numerous other years, including in 2012.<sup>75</sup> Each time, most of the debate in Congress has focused on whether the wind industry should remain reliant on government support, the cost of the tax benefits, and the impact of the PTC's expiration on wind energy jobs, the renewable energy economy, climate change, and domestic energy independence.<sup>76</sup>

Particularly with regard to wind energy, these expiration cycles have had a significant impact on project investment, wind energy jobs, and technology development, with wind energy investments increasing significantly in the twelve months leading up to the PTC expiration and

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<sup>73</sup> Natter, *supra* note 56.

<sup>74</sup> EIA, WIND ENERGY TAX CREDITS, *supra* note 1; Merrill Jones Barradale, *Impact of Public Policy Uncertainty on Renewable Energy Investment: Wind Power and the PTC*, 38 ENERGY POLICY 7698, 7699-7700 (2010).

<sup>75</sup> EIA, WIND ENERGY TAX CREDITS, *supra* note 1.

<sup>76</sup> See, e.g., Nick Juliano, *With Deadline Looming, PTC Backers Focus on Eligibility Requirements*, E&E NEWS, Dec. 10, 2012, <http://www.eenews.net/EEDaily/2012/12/10/2>; Diane Cardwell, *Energy Tax Breaks Proposed, Despite Waning Support for Subsidies*, N.Y. TIMES, Jan. 26, 2012, <http://www.nytimes.com/2012/01/27/business/energy-environment/clean-energy-projects-face-waning-subsidies.html?pagewanted=all>; Diane Cardwell, *Tax Credit in Doubt, Wind Power Industry is Withering*, N.Y. TIMES, Sept. 20, 2012, <http://www.nytimes.com/2012/09/21/business/energy-environment/as-a-tax-credit-wanes-jobs-vanish-in-wind-power-industry.html?pagewanted=all>; Juliet Eilperin, *Unusual Coalitions Clash Over Wind Energy Tax Credit*, THE WASHINGTON POST, Sept. 20, 2012, [http://articles.washingtonpost.com/2012-09-20/national/35495033\\_1\\_wind-energy-wind-power-wind-project](http://articles.washingtonpost.com/2012-09-20/national/35495033_1_wind-energy-wind-power-wind-project); AWEA FACT SHEET, FEDERAL PRODUCTION TAX CREDIT FOR WIND ENERGY, [http://www.awea.org/issues/federal\\_policy/upload/PTC-Fact-Sheet.pdf](http://www.awea.org/issues/federal_policy/upload/PTC-Fact-Sheet.pdf).



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then dropping significantly after that time.<sup>77</sup> Not only does the pending expiration of the PTC on a regular basis lead to uncertainty in investment in the industry, research has also shown that the uncertainty itself, more than the lack of the PTC in “off” years and the pending expiration in other years drives investment volatility and hurts the industry.<sup>78</sup> For instance, clean energy investment in the U.S. fell nearly a third in 2012 compared with 2011, with the drop in wind energy investment largely driven by uncertainty surrounding the fate of the PTC.<sup>79</sup> While 2012 was a record year for wind installations, most of the investments in those projects came in the previous year and uncertainty over the PTC expiration in 2012 means that developers have not planned significant projects for 2013.<sup>80</sup> Moreover, uncertainty over whether the PTC will expire or will later be reinstated creates misaligned assumptions between wind generators and utilities in negotiating Power Purchase Agreements for wind.<sup>81</sup> This is

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<sup>77</sup> EIA, WIND ENERGY TAX CREDITS, *supra* note 1; Barradale, *supra* note 74, at 7769-70; EIA, *Planned Wind Turbine Additions Rise in Advance of Scheduled Expiration of Wind Tax Credit*, Dec. 19, 2012, <http://www.eia.gov/todayinenergy/detail.cfm?id=9270>.

<sup>78</sup> Barradale, *supra* note 74, at 7698-99, 7703-06. *See also* Wald, *supra* note 2; William Petrosky, *Iowa’s Wind Energy Industry Praises Including of Tax Credit in Fiscal Cliff Budget Deal*, DES MOINES REGISTER, Jan. 1, 2013 (reporting that while the extension was good news for Iowa’s wind industry, the industry needs more than a one or two year extension to provide the necessary certainty for long-term investment); Lincoln L. Davies, *Reconciling Renewable Portfolio Standards and Feed-in Tariffs*, 32 UTAH ENVTL. L. REV. 311, 341 (2012) (citing research showing that when renewable energy policies “remain in a state of constant flux, this produces ‘a very negative effect on the development of renewable energy.’”) (quoting Anotole Boute, *A Comparative Analysis of the European and Russian Support Schemes for Renewable Energy: Return on European Experience for Russia*, 4 J. OF WORLD ENERGY L. & BUS. 157, 174 (2011)).

<sup>79</sup> *See* Nick Juliano, *Policy Uncertainty Spurred 2012 Plunge in U.S. Investments*, GREENWIRE, Jan. 14, 2013, <http://www.eenews.net/Greenwire/2013/01/14/4>.

<sup>80</sup> *Id.*

<sup>81</sup> Barradale, *supra* note 74, at 7703-06. Independent power producers which own wind and other generation sources but do not own transmission lines or serve retail customers directly, frequently sell power from the wind or other generating facility to public utilities under long-term contracts, known as Power Purchase Agreements. Generally, lenders and investors are only willing to finance wind plants after a signed Power Purchase Agreement which guarantees a revenue stream for as many as 10 to 20 years. *Id.* at 7709-

because the wind generator must assume the PTC will not be renewed for purposes of obtaining financing, resulting in it seeking a higher contract price because it cannot rely on the tax benefit. For its part, the utility must assume that the PTC will be renewed, resulting in it seeking a lower contract price because otherwise, if the PTC is reinstated, the wind generator will receive a windfall.<sup>82</sup> This results in the parties needing to wait until Congress resolves the uncertainty, leading to the boom-bust cycle in new wind construction that has been prevalent during the life of the PTC.<sup>83</sup>

#### D. Summary

As noted earlier, in 2011, sixty-eight percent of tax benefits in the energy sectors went to renewable energy (including ethanol and biodiesel), fifteen percent to fossil fuels, ten percent to energy efficiency programs, four percent to nuclear energy, and two percent to other programs.<sup>84</sup> However, what is most important is not a snapshot in time but the long-term support for various energy sectors. A review of tax benefits and other government financial support over time shows that the continuity and relative certainty of support for the fossil fuel industry since the early part of the twentieth century has helped that industry mature, supported development of physical infrastructure to move product, and created robust national markets. By contrast, the continual expiration and near-expiration of the PTC for renewable energy has not allowed the wind energy to create robust markets and develop in the same way. Data showing how investment in wind energy rises and falls with the expiration of the PTC is one illustration of this problem.<sup>85</sup> Analysis of the difficulty of wind operators and utilities in entering into Power Purchase Agreements in the wake of an expiring PTC is yet another.<sup>86</sup> Until the

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<sup>82</sup> *Id.* 7703-06.

<sup>83</sup> *Id.*

<sup>84</sup> CONG. BUDGET OFFICE, *supra* note 8, at Figure 2.

<sup>85</sup> *See* EIA, WIND ENERGY TAX CREDITS, *supra* note 1.

<sup>86</sup> *See* Barradale, *supra* note 74, at 7698-99, 7703-06.

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wind industry can count on the same continuity of tax benefits as the fossil fuel industry did for decades, it is likely premature to say that wind energy should stand on its own and has received enough government support.

Many economists on both the right and the left will argue that the most efficient and effective way to address today's current environmental harms associated with energy choices is to tax fossil fuel production or carbon emissions to internalize these costs.<sup>87</sup> Studies show that carbon taxes are highly effective in decreasing GHG emissions while simultaneously increasing government revenues.<sup>88</sup> Subsidies and tax preference for favored industries, such as wind, on the other hand, are less cost-effective methods of achieving those goals because (1) they subsidize desirable behavior that actors may have engaged in even without the subsidy or tax preference; (2) they support technologies that may not be the most effective means of achieving environmental and energy security goals; and (3) they decrease government revenues as compared to a tax on fossil fuels or carbon emissions, which would increase government revenues.<sup>89</sup> All of these arguments are completely valid. At the current time, however, there does not appear to be any appetite in Congress for a fossil fuel or carbon tax, while there are least ongoing discussions

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<sup>87</sup> See, e.g., SHI-LING HSU, *THE CASE FOR A CARBON TAX: GETTING PAST OUR HANG-UPS TO EFFECTIVE CLIMATE POLICY* 27-40, 104-114 (2011); Elizabeth Rosenthal, *Carbon Taxes Make Ireland Even Greener*, N.Y. TIMES, Dec. 27, 2012, [http://www.nytimes.com/2012/12/28/science/earth/in-ireland-carbon-taxes-pay-off.html?\\_r=0](http://www.nytimes.com/2012/12/28/science/earth/in-ireland-carbon-taxes-pay-off.html?_r=0) (discussing use of carbon taxes in Ireland other countries in Europe and the political difficulties over use of similar taxes in the United States); Coleen Jose, *"Sky Didn't Fall" After British Columbia Lowered Income Tax, Dropped Fuel Use with Carbon Tax*, GREENWIRE, July 30, 2013, at <http://www.eenews.net/climatewire/2013/07/30/stories/1059985278> (reporting on success of British Columbia's carbon tax).

<sup>88</sup> See, e.g., Eduardo Porter, *In Energy Taxes, Tools to Help Tackle Climate Change*, N.Y. TIMES, Jan. 29, 2013, <http://www.nytimes.com/2013/01/30/business/energy-tax-is-underused-tool-in-climate-change-fight.html> (reporting on benefits of carbon taxes).

<sup>89</sup> See SHERLOCK, *ENERGY TAX POLICY*, *supra* note 5, at 10-11; CONG. BUDGET OFFICE, *supra* note 8, at 1.

regarding further tax benefits for wind and other renewable energy resources.<sup>90</sup> If government money is going to be spent for tax benefits for renewable energy, some level of continuity and certainty will be critical to achieve the goals associated with promoting renewable energy.

## II. PROPERTY RIGHTS BENEFITS FOR ENERGY DEVELOPMENT

Beyond the tax-related incentives discussed in Part II, lawmakers and courts historically have used property rights to provide support for energy development. Indeed, even prior to tax benefits and other government financial support, the federal government supported the nascent energy industry through land grants at below-market prices to encourage energy exploration and economic development, beginning with the timber and coal industries in the nineteenth century.<sup>91</sup> Since that time, governments, particularly state governments, have continued to support the energy industry through property rights benefits. Notably, one of the primary goals of property law is to provide certainty in ownership so that property owners will be willing to invest capital and labor in order to increase the value of their property, including energy resources, without fear that the allocation of rights in those resources will suddenly change.<sup>92</sup> As a result, courts and legislatures have often created clear, specific rules relating to certain forms of energy development. Some of these policies and rules are discussed below.

### A. *Forced Pooling and Unitization Laws*

An early example of the use of property law to favor energy development is unitization statutes for oil and gas. In the early part of the

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<sup>90</sup> See Rosenthal, *supra* note 87.

<sup>91</sup> See PFUND & HEALY, *supra* note 16, at 13.

<sup>92</sup> See Carol Rose, *Crystals and Mud in Property Law*, 40 STAN. L. REV. 577, 591 (1988) (describing benefits of certainty in property law); Abraham Bell & Gideon Parchomovsky, *A Theory of Property*, 90 CORNELL L. REV. 531, 553-58 (2005) (describing importance of stability of property rights); Troy A. Rule, *Property Rights and Modern Energy*, 20 GEORGE MASON L. REV. 803 (2013) (describing importance of stability of property rights in context of energy development and resources).

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twentieth century, most states adopted the “rule of capture” for oil and gas, which provided that any landowner could drill on his or her own land to capture oil from a common field, even if that meant drawing oil from the neighbors’ lands as subsurface pressure in the common field drew the oil to the well.<sup>93</sup> This motivated landowners over a common oil or gas field to drill as quickly as possible in order not to lose their own resources. While courts recognized that the rule of capture was far from the best rule for the development of oil and gas resources, they often felt powerless to act in the absence of legislative action to override the common law.<sup>94</sup> The rule of capture resulted in rapid and uncontrolled production of many oil and gas fields, leading to depletion of pressure in the fields and lackluster production and waste with regard to both oil and natural gas resources.<sup>95</sup>

Many states responded to this less-than-optimal use of energy resources by creating well spacing requirements, conservation measures, and mandatory unitization or “forced pooling” laws beginning in the 1920s, which provided procedures allowing for the merger of multiple landowners’ oil and gas interests into a single unit, creating rules and standards for extraction, and governing the sharing of costs and revenues.<sup>96</sup> In many states, once a certain percentage of landowners over a common field agree to unitization, any remaining landowners will be

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<sup>93</sup> BOSSELMAN ET AL., *supra* note 43, at 252-256 (explaining rule of capture).

<sup>94</sup> *Id.*; *Barnard v. Monangahela Nat. Gas Co.*, 65 A. 801 (Pa. 1907) (“What then can the neighbor do? Nothing; only go and do likewise. He must protect his own oil and gas. He knows it is wild and will run away if it finds an opening and it is his business to keep it at home. This may not be the best rule; but neither the Legislature nor our highest court has given us any better.”).

<sup>95</sup> BOSSELMAN ET AL., *supra* note 43, at 252-256. *See also* SHARON O. FLANERY & RYAN J. MORGAN, STEPTOE & JOHNSON PLLC, OVERVIEW OF POOLING AND UNITIZATION AFFECTING APPALACHIAN SHALE DEVELOPMENT, *available at* <http://www.steptoeh-johnson.com/shared/content/A%20National%20Survey%20of%20Statutory%20Pooling%20and%20Unitization.pdf> (discussing examples of how common law rule led to waste in development).

<sup>96</sup> RICHARD C. MAXWELL ET AL., OIL AND GAS CASES AND MATERIALS 861-64, 868-73 (8<sup>th</sup> ed. 2007) (describing range of pooling and unitization laws).

bound by the agreement, thus overriding their individual property rights in the oil and gas resources underlying their land.<sup>97</sup> These state unitization laws created a clear exception to the common law rule of capture for fugitive resources in order to provide certainty in investment, limit waste, and consequently promote the development of valuable oil and gas resources throughout the country even if the new rules in some cases overrode traditional private property rights.

### B. *Split-Estate Laws and the Dominant Mineral Estate*

Split-estate laws are another way states have allocated competing property rights to benefit energy development. Much of the land in states with subsurface energy resources is in “split-estate” ownership, meaning that one party owns the surface rights and another party owns the mineral rights.<sup>98</sup> This began in the nineteenth century, when the federal government conveyed surface rights in land for homesteading while retaining the subsurface oil, gas, and mineral interests.<sup>99</sup> Over time, both surface interests and mineral interests have been conveyed to different private parties, resulting in inevitable disputes.<sup>100</sup> In many states in the West, as much as half the land is in split estate.<sup>101</sup> Until recently, state law generally provided that the mineral estate was the “dominant” estate and the mineral owner had the right to use that portion of the surface estate necessary to reasonably develop the severed mineral interests.<sup>102</sup> Moreover, the mineral owner was not liable for surface damage in the absence of negligence or a contractual agreement to pay damages. This gave the mineral interest owner significant power over the surface owner, which resulted in decades of damage to crops, livestock, vegetation, and

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<sup>97</sup> *Id.*

<sup>98</sup> See Alexandra B. Klass, *The Frontier of Eminent Domain*, 79 U. COLO. L. REV. 652, 685-86 (2008).

<sup>99</sup> *Id.*

<sup>100</sup> *Id.* at 686.

<sup>101</sup> *Id.* at 685.

<sup>102</sup> *Id.* at 686.

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other environmental resources.<sup>103</sup> While judicial and statutory adoption of the “reasonable accommodation” doctrine has softened somewhat the power of mineral rights owners, the law remains heavily weighted in favor of subsurface resource development.<sup>104</sup>

Moreover, with the massive increase in coal-bed methane (“CBM”) development in the 1990s, new disputes arose because of the land-intensive nature of CBM development. Unlike oil wells, which could often be relegated to limited portions of the surface owner’s property, CBM development requires the discharge of millions of gallons of groundwater into surface streams and ditches to release the methane gas.<sup>105</sup> The water, which is quite saline, can interfere with the surface owner’s use of the land and harm crops, hayfields, and other ranchlands.<sup>106</sup> Although a few states have since placed limits on surface water discharges,<sup>107</sup> the fact remains that property rights in subsurface resource-rich parts of the country are heavily weighted to allow the development of energy resources even at the expense of competing surface and environmental resources. While the split estate laws have provided significant certainty to energy developers for over a century, the costs associated with that certainty have been borne primarily by surface owners and the environment. By contrast, to date, there are very limited, if any property rights benefits granted to renewable energy developers who may wish to develop wind or solar resources against the wishes of landowners with competing surface interests.

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<sup>103</sup> *Id.*

<sup>104</sup> *Id.* at 686-87.

<sup>105</sup> *Id.* at 681-83.

<sup>106</sup> *Id.*

<sup>107</sup> See JOHN A. VEIL, ARGONNE NAT’L LAB., REGULATORY ISSUES AFFECTING MANAGEMENT OF PRODUCED WATER FROM COAL BED METHANE WELLS (2002), available at <http://www.evs.anl.gov/pub/doc/cbm-prod-water-rev902.pdf>.

C. *Eminent Domain Authority for Private Natural Resource and Energy Development*

A similar story exists in the context of eminent domain law. The Fifth Amendment to the U.S. Constitution and similar provisions in virtually all state constitutions recognize the right of the government to take private property for a “public use” and that “just compensation” must be provided.<sup>108</sup> Local, state, and federal governments may exercise the power of eminent domain and in most states that power is also delegated to railroads, public utilities, and other quasi-public entities for projects designed for public use such as railroad lines or power lines.<sup>109</sup> Moreover, in many states in the Interior West, drafters of those states’ constitutions also granted eminent domain authority to private energy and natural resource development companies to ensure the full development of these states’ rich natural resources such as coal, oil, gas, and precious metals.<sup>110</sup> For instance, the constitutions of Colorado, Idaho, Wyoming, and Arizona provide that private property may be taken for private natural resource development uses, including the creation of reservoirs, ditches, and drains for private agricultural, mining, milling, or sanitary purposes.<sup>111</sup> Statutes in these and other resource-rich states in the region specifically grant eminent domain authority in connection with mining, oil, gas, and other natural resource development even if these projects will never be used by the public.<sup>112</sup> The rationale behind these constitutional and statutory provisions is to use state property rights to encourage the production of energy and other natural resources, and provide a level of certainty in investment to resource development companies.<sup>113</sup> With the right of eminent domain, resource development companies have significant

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<sup>108</sup> See U.S. CONST. amend. V (“... nor shall private property be taken for public use without just compensation.”); Klass, *The Frontier of Eminent Domain*, *supra* note 98, at 654-57.

<sup>109</sup> See Alexandra B. Klass, *Takings and Transmission*, 91 N.C. L. REV. 1079 (2013).

<sup>110</sup> Klass, *The Frontier of Eminent Domain*, *supra* note 98, at 657-59.

<sup>111</sup> *Id.* at 657-58.

<sup>112</sup> *Id.* at 659.

<sup>113</sup> *Id.* at 657-61.



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negotiating power over easements and access rights, because if the landowner attempts to drive a hard bargain or refuse access, the development company may enlist the courts to take the property.<sup>114</sup>

Even more widespread than the eminent domain rights granted to natural resource companies in Interior West states are eminent domain rights granted to public utilities to construct not only transmission lines but power plants.<sup>115</sup> Notably, utilities rarely construct wind facilities and other renewable energy facilities, preferring instead to enter into Power Purchase Agreements with private renewable energy developers.<sup>116</sup> This means that eminent domain authority is available for the construction of coal, nuclear, and natural gas facilities that public utilities generally build but that eminent domain authority is not available for the construction of wind, solar, and geothermal facilities even if the power generated from those facilities may better meet modern energy goals relating to resource conservation, energy independence, and climate change. The legal disputes that arise over the siting of wind farms and other renewable energy facilities often result in significant delays, lack of necessary investment, and uncertainty associated with renewable energy development.<sup>117</sup> These barriers to renewable energy development exist to a much lesser extent for traditional power plant development, in part

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<sup>114</sup> *Id.* at 660-61.

<sup>115</sup> See Hannah Wiseman & Lindsay Grisamer, *Formulating a Law of Sustainable Energy: The Renewables Component*, 28 PACE ENVTL. L. REV. 827, 849-850 (2011) (citing numerous state statutes granting eminent domain authority to public utilities in connection with building power plants and transmission lines); See Klass, *Takings and Transmission*, *supra* note 109 (discussing eminent domain authority for utilities and in some cases, private merchant transmission companies, to construct transmission lines).

<sup>116</sup> Wiseman & Grisamer, *supra* note 115, at 849-50.

<sup>117</sup> Alexandra B. Klass, *Property Rights on the New Frontier: Climate Change, Natural Resources Development, and Renewable Energy*, 38 ECOLOGY L.Q. 63, 107 (2011) (citing numerous court cases involving challenges to wind developments for alleged environmental, aesthetic, and human health adverse impacts); See also Alexandra B. Klass, *Renewable Energy and the Public Trust Doctrine*, 45 U.C. DAVIS L. REV. 1021 (2012) (discussing high-profile land use disputes over wind and solar facilities).

because utilities tend to own those facilities and are thus able to exercise eminent domain authority to construct them, but do not tend to own renewable energy facilities.

Although property rights are primarily a matter of state law, the federal government has, on occasion, also created property rights benefits in the form of nationwide eminent domain authority to facilitate energy development. For instance, in 1938, Congress passed the Natural Gas Act (“NGA”), which created a federal review, siting, and permitting structure for interstate natural gas pipelines.<sup>118</sup> In centralizing such authority, Congress stated that “[t]he business of transporting and selling natural gas for ultimate distribution to the public is affected with a public interest, and that Federal regulation in matters relating to the transportation of natural gas and sale thereof in interstate and foreign commerce is necessary in the public interest.”<sup>119</sup> The process for federal siting of interstate natural gas pipelines involves acquiring a Certificate of Public Convenience and Necessity from FERC, which then grants the pipeline owner eminent domain authority.<sup>120</sup> In doing so, federal law overrides any state authority to the contrary, thus assuring pipeline operators, users, and investors that necessary pipelines can be built to meet regional and national demand with far less ability by individual property owners, states, or local

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<sup>118</sup> 15 U.S.C. § 717 (2006).

<sup>119</sup> Donald H. Gaucher, *Federal Jurisdiction Over Natural Gas*, 1 HOUS. L. REV. 29, 31 (1963-1964).

<sup>120</sup> Robert R. Nordhaus & Emily Pitlick, *Carbon Dioxide Pipeline Regulation*, 30 ENERGY L.J. 85, 88-89 (2009) (citing 15 U.S.C. § 717f(c)-(h) (2006)). “A pipeline operator cannot engage in the transportation or sale of natural gas, or service, construct, extend, or acquire a natural gas pipeline without obtaining a certificate of public convenience and necessity from the FERC. The FERC will issue such a certificate only if required by the present or future public convenience and necessity. The FERC may impose conditions on the certificate and has the power to determine the service area to be covered. Perhaps the most valuable tool in the [Natural Gas Act] is the right of eminent domain granted to the holder of a certificate of public convenience and necessity. These provisions from Section 7 of the [Natural Gas Act], combined with Section 4 (rates and charges) and Section 5 (fixing rates and charges), have led the courts to repeatedly interpret the [Natural Gas Act] as providing for exclusive and preemptive federal siting of interstate natural gas pipelines.” *Id.*(internal quotation marks omitted).

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governments to delay or prevent the pipeline. Notably, although there are good arguments to be made that similar federal siting and eminent domain authority for interstate electric transmission lines would go a long way toward overcoming current obstacles to modernizing the transmission grid to transport renewable energy, authority over interstate transmission lines still rests squarely with the states.<sup>121</sup>

D. *Developments in State Property Rights Relating to  
Wind and Solar Energy*

While states so far have not expanded eminent domain rights or attempted to adopt unitization or forced pooling laws to facilitate renewable energy development, some states have modified long-standing laws governing easements to accomplish this goal. For instance, throughout the U.S. there generally has been no right on the part of a property owner to prevent his or her neighbor from developing his or her property in ways that interfere with access to sunlight. This makes it difficult for landowners to confidently invest in solar energy installations, because they cannot prevent neighbors from planting trees or constructing buildings or other structures that might interfere with the necessary sunlight to power the installations.<sup>122</sup> In recent years, however, some states, notably California, New Mexico, Wisconsin, Wyoming, Massachusetts, and Iowa have enacted laws that allow landowners who

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<sup>121</sup> See Alexandra B. Klass & Elizabeth Wilson, *Interstate Transmission Challenges for Renewable Energy: A Federalism Mismatch*, 65 VAND. L. REV. 1801 (2012); Klass, *Takings and Transmission*, *supra* note 109; Jim Rossi, *The Trojan Horse of Electric Power Transmission Line Siting Authority*, 39 ENVTL. L. 1015, 1019-22 (2009) (discussing state siting statutes, certificates of need, and eminent domain authority for transmission lines); *Piedmont Envtl. Council v. FERC*, 558 F.3d 304, 313-15 (4<sup>th</sup> Cir. 2009), *cert. denied*, 130 S. Ct. 1138 (2010) (invalidating FERC rule that would override some state siting decisions for transmission lines on grounds that the rule was beyond FERC's authority under the Energy Policy Act of 2005).

<sup>122</sup> Many states now recognize voluntary solar easement agreements that run with the land to provide solar energy users a level of certainty in investment. See Klass, *Property Rights on the New Frontier*, *supra* note 117, at 97.

install solar panels to (1) enjoin later actions by neighbors that would shade the solar panels; (2) obtain damages from neighbors for actions that shade solar panels; or (3) enjoin later actions by neighbors that would shade the solar panels in exchange for payment of compensation determined by a government entity.<sup>123</sup>

With regard to wind energy, some states have attempted to overcome local resistance to wind turbines by creating state-wide siting processes that override local zoning approvals, or state laws that create uniform standards governing height restrictions or setbacks.<sup>124</sup> The goal of these state laws is to create more certainty in wind development and avoid some of the NIMBY (“not in my backyard”) opposition that can have a more significant influence in local government proceedings than in a centralized, state-led process.<sup>125</sup> For instance, in Wisconsin, the state Public Service Commission (“PSC”) had adopted rules to take effect in March 2011 that would provide state-wide minimum setbacks from neighboring property boundaries and residences for wind turbines in order to provide more certainty to wind developers in the state.<sup>126</sup> When Republican Governor Scott Walker was elected in 2010, however, he expressed support for the larger set-back requirements favored by opponents to wind energy, suspended the PSC rules, and sent the issue back to the state legislature. Ultimately, when the legislature failed to act in 2012, the PSC rules took effect in March 2012.<sup>127</sup> During the

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<sup>123</sup> See Troy A. Rule, *Shadows on the Cathedral: Solar Access Laws in a Different Light*, 2010 U. ILL. L. REV. 851, 860 (2010) (describing state statutes); See Klass, *Property Rights on the New Frontier*, *supra* note 117, at 97.

<sup>124</sup> See Klass, *Property Rights on the New Frontier*, *supra* note 117, at 106-13.

<sup>125</sup> *Id.*

<sup>126</sup> Richard A. Kessler, *Wisconsin Adopts Wind Turbine Siting Rules Sought By Industry*, RECHARGE (Mar. 19, 2012), [http://www.rechargenews.com/business\\_area/politics/article307650.ece](http://www.rechargenews.com/business_area/politics/article307650.ece); Clay Barbour, *With Legislative Session Ended, Wind Turbine Placement Rules Take Effect*, WIS. STATE J. (Mar. 16, 2012), [http://host.madison.com/news/local/govt-and-politics/with-legislative-session-ended-wind-turbine-placement-rules-take-effect/article\\_e65e6566-6eed-11e1-8808-0019bb2963f4.html](http://host.madison.com/news/local/govt-and-politics/with-legislative-session-ended-wind-turbine-placement-rules-take-effect/article_e65e6566-6eed-11e1-8808-0019bb2963f4.html).

<sup>127</sup> Barbour, *supra* note 126.

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suspension of the rules, however, it was reported that “the regulatory uncertainty prompted three developers to either suspend or cancel plans for wind farms in the state.”<sup>128</sup>

With regard to wind rights themselves, some states, such as North Dakota and South Dakota have expressly prohibited any severance of wind rights from the surface estate, as compared with subsurface oil, gas, and coal resources which have historically been severed from the surface estate and freely conveyed for development purposes.<sup>129</sup> Colorado by contrast, expressly allows such severance and other states have judicial decisions that imply such severance is valid.<sup>130</sup>

These changes in state law result in a realignment of property rights between neighbors as well as a realignment of authority between local and state governments. The goal of this realignment in virtually every case is to create more certainty of investment in wind and solar development. With additional clarity as to property rights and government authority, projects can be built with the knowledge that the courts will uphold rights to access wind and solar resources.

### E. *Summary*

Despite the long history of state governments using property rights to favor traditional energy development, there are many reasons to be cautious about using these same tools to promote renewable energy. As an initial matter, the eminent domain authority, split estate laws, and other property rights granted to energy developers resulted in significant abuse

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<sup>128</sup> Kessler, *supra* note 126.

<sup>129</sup> See *Property Rights on the New Frontier*, *supra* note 117, at 108; Ernest E. Smith & Becky H. Diffen, *Winds of Change: The Creation of Wind Law*, 5 TEX. J. OF OIL, GAS & ENERGY L. 165, 177 (2010).

<sup>130</sup> See Smith & Diffen, *supra* note 129, at 176-81 (discussing cases and Colorado severance statute); K.K. DuVivier, 49 WASHBURN L.J. 69, 97-98 (2009) (discussing cases).

of private property rights and environmental resources. One need only look at the legacy of environmental degradation left by mining, oil, and gas development throughout the country that was supported by state legislatures and courts in part through abundant property rights protections. Split estate laws throughout the West allowed mineral developers to interfere with private surface uses, damaging farming and ranching interests in the name of energy development whether it be traditional oil and natural gas development or, more recently, more land-intensive CBM development.<sup>131</sup> Indeed, some states have cited this history in expressly prohibiting the severance of wind rights from the surface estates, wishing to protect surface owners even if it means making wind resource development more difficult in some cases.<sup>132</sup>

When property rights are used to encourage energy development, the burdens of such development fall most heavily on a few landowners who happen to be neighbors or surface owners in close proximity to the resource. Granting enhanced property rights to energy development necessarily diminishes the property rights of others with competing property interests. While trumping the property interests of one part of the community to benefit another may be justified at times, the question arises whether there are alternatives that allow the burdens of energy development to be distributed more equally. There is a good argument that tax benefits and other financial incentives, with burdens that are distributed among all taxpayers nationwide, can provide financial benefits energy developers can use to engage in voluntary transactions with competing property interests, rather than using the trump of superior property rights such as eminent domain authority.

This is not to say that property rights should remain completely static in the face of the need to accommodate renewable energy development. Laws that clarify existing rights—such as making clear that voluntary wind and solar easements will be upheld by the courts, or that

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<sup>131</sup> See Klass, *The Frontier of Eminent Domain*, *supra* note 98, at 681-98 (describing surface impacts of CBM development and split-estate laws in the West).

<sup>132</sup> See DuVivier, *supra* note 130, at 97.

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create an administrative system to transfer rights to wind or solar access to those entities that would make best use of the resource along with a determination of appropriate compensation to the neighbor—may facilitate renewable energy development without creating inappropriate burdens on neighbors.<sup>133</sup> Moreover, when the issue is creating a physical network rather than a market for a product, property laws may have to play a larger role. It would have been extremely difficult to construct the national network of pipelines that transports natural gas in the United States without the Natural Gas Act's transfer of authority over siting, permitting, and eminent domain from the states to the federal government. Likewise, there are good arguments that Congress's failure to do so for interstate electric transmission lines has limited the country's ability to create the infrastructure necessary to transport sufficient amounts of renewable energy from resource-rich areas of the country to population centers.<sup>134</sup>

But it would be a mistake to simply argue that today's renewable energy developers should be given the same property rights benefits that were given to traditional energy developers in the past to level the playing field. While this argument has significant merit in the context of tax and other financial benefits, where the burdens are spread more broadly across the country, it raises more significant concerns in the context of property rights, when other private property and environmental protection concerns provide a significant counterweight. While it is desirable to repeat past successes, the country's history of conveying property rights to re-balance energy development with environmental protection and competing property rights is generally not considered one of those successes. As a result, caution in this area is necessary.

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<sup>133</sup> See Troy A. Rule, *Property Rights and Modern Energy*, 20 GEO. MASON L. REV. 803 (2013).

<sup>134</sup> See Klass & Wilson, *supra* note 121.

III. MANDATES: STATE RENEWABLE PORTFOLIO STANDARDS AND THE  
FEDERAL RENEWABLE FUEL STANDARD

Federal or state requirements that mandate the use of a particular energy technology or fuel can provide certainty to an industry sector. While a mandate does not provide direct financial support through tax benefits or advantages in court like a property rights benefit, it provides a guaranteed market for a particular product. Two examples of mandates in the energy sector are state RPSs for electricity and the federal and state mandates for renewable fuels. This Part considers each in turn.

A. *State RPSs and the Debate over a National RPS*

In recent years, states have taken an active role in developing their own policies to promote renewable energy in the absence of a comprehensive federal policy in this area. Historically, very little electricity produced in the United States was generated from renewable energy sources. From 1989 to 2004, non-hydropower renewable energy generated just 2% to 2.5% of all electricity produced. Most of this electricity was generated from biomass combustion, municipal solid waste, and geothermal energy, with solar and wind comprising a small fraction. After 2005, however, growth in renewable energy—primarily wind power—increased significantly, with non-hydropower renewable energy in 2011 generating over 5% of all electricity nationwide and well over 10% in several states.<sup>135</sup>

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<sup>135</sup> See Frequently Asked Questions: What is U.S. Electricity Generation by Energy Source?, EIA.GOV (June 2012), <http://www.eia.gov/tools/faqs/faq.cfm?id=427&t=3>; *Electric Power Monthly*, EIA.GOV (July 2012), [http://www.eia.gov/electricity/monthly/epm\\_table\\_grapher.cfm?t=epmt\\_1\\_1](http://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_1_1); Dan Seif, *Renewable Energy Supplies 5% US Electricity, Has Anyone Noticed?*, SUSTAINABLEBUSINESS.COM NEWS, (June 29, 2012), <http://www.sustainablebusiness.com/index.cfm/go/news.display/id/23832> (citing EIA data); *Shares of Electricity Generation from Renewable Energy Sources Up in Many States*, EIA.GOV (April 9, 2012), <http://www.eia.gov/todayinenergy/detail.cfm?id=5750>.



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More than thirty-five states now have RPSs, Renewable Energy Credits (“RECs”),<sup>136</sup> or other renewable energy goals to encourage or mandate renewable energy development and use in the state.<sup>137</sup> States and local governments have also adopted feed-in tariffs, tax incentives, and other related policies.<sup>138</sup> State RPSs usually require a specified percentage of electricity sales, measured in megawatt hours (“MWh”), or generation capacity, measured in megawatts (“MWs”), to be from renewable sources. Many RPSs require that by 2020 or 2030, fifteen percent to twenty-five percent of electricity sold in the state must be produced by a renewable energy source, with significant variation over which renewable technologies “count” and which electricity generators must participate.<sup>139</sup>

The ability to support renewable energy through state RPSs, however, is somewhat limited. Many states, particularly those without robust renewable resources, still do not have RPSs.<sup>140</sup> Other states that

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<sup>136</sup> See MIRIAM FISCHLEIN, RENEWABLE ENERGY DEPLOYMENT IN THE ELECTRIC SECTOR: THREE ESSAYS ON POLICY DESIGN, SCOPE, AND OUTCOMES 29 (2010), *available at* [http://conservancy.umn.edu/bitstream/99640/1/Fischlein\\_umn\\_0130E\\_11598.pdf](http://conservancy.umn.edu/bitstream/99640/1/Fischlein_umn_0130E_11598.pdf) (RECs allow utilities to fulfill their statutory obligations under many RPSs by purchasing the “environmental benefit” of renewable energy. RECs are tradable certificates that create a separate market for the “environmental benefit” of renewable energy. RECs can be sold with the electricity (bundled) or separately (unbundled)); Lincoln Davies, *Power Forward: The Argument for a National RPS*, 42 CONN. L. REV. 1339, 1376-79 (2010).

<sup>137</sup> See *Renewable and Alternative Energy Portfolio Standards*, CTR. FOR CLIMATE & ENERGY SOLUTIONS, <http://www.c2es.org/sites/default/modules/usmap/pdf.php?file=5907>; Lincoln L. Davies, *State Renewable Portfolio Standards: Is There a “Race” and Is It “To The Top?”*, 3 SAN DIEGO J. OF CLIMATE & ENERGY LAW 3 (2011-12).

<sup>138</sup> See DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY, FINANCIAL INCENTIVES FOR RENEWABLE ENERGY, *available at* <http://www.dsireusa.org/summarytables/finre.cfm>.

<sup>139</sup> *Id.*; see also FISCHLEIN, *supra* note 136, at 7, 21-22; Davies, *supra* note 136.

<sup>140</sup> See Database of State Incentives for Renewables and Efficiency, *Renewable Portfolio Standard Policies Map*, DSIRE (Mar. 2013), [http://www.dsireusa.org/documents/summarymaps/RPS\\_map.pdf](http://www.dsireusa.org/documents/summarymaps/RPS_map.pdf) (showing no state RPSs in most of the southeast United States or in some states in the interior west).

have RPSs often have modest goals or build loopholes and exceptions into their laws.<sup>141</sup> Currently, the nation's transmission grid is in significant need of upgrade, and since renewable electricity, unlike fossil fuels, can only be transported through electric transmission lines, the ability to move renewable energy from windy and sunny parts of the country to population centers in other parts of the country remains limited.<sup>142</sup> Despite these limitations, however, state RPSs are an example of states engaging in "policy experiments" in the face of federal inaction.<sup>143</sup> Even though climate change is a national and international problem, so far it has been the states that have been the primary actors in attempting to use their authority over electricity generation to create models that other states and, perhaps ultimately, the federal government can use to achieve a more comprehensive solution to the problem.<sup>144</sup>

So far, however, that national solution has been elusive. Many recognize that a national RPS could significantly increase renewable energy generation nationwide, particularly if accompanied by funding and incentives to upgrade the transmission grid to better carry renewable energy throughout the country. But efforts to create a national RPS have not succeeded. Most notably, in 2009, the House of Representatives adopted the American Clean Energy and Security Act of 2009 (also known as the Waxman-Markey Bill).<sup>145</sup> While the Waxman-Markey Bill was adopted by the House, it was never taken up by the Senate and has lost all momentum in Congress.<sup>146</sup> The Waxman-Markey Bill was most

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<sup>141</sup> Davies, *Power Forward*, *supra* note 136, at 1386-87; FISCHLEIN, *supra* note 136, at 7, 21-22.

<sup>142</sup> See Klass, *Takings and Transmission*, *supra* note 109, at 1083-84.

<sup>143</sup> *New State Ice v. Liebmann*, 285 U.S. 262, 310-11 (1932) (Brandeis, J., dissenting) (stating that one of the core values of our federalist system of government is that it encourages innovation because "a single state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country."); Klass & Wilson, *supra* note 121, at 1830 (discussing theories of federalism and states acting as laboratories of democracy).

<sup>144</sup> Klass & Wilson, *supra* note 121, at 1830-47.

<sup>145</sup> American Clean Energy & Security Act of 2009, H.R. 2454, 111th Cong. (2009).

<sup>146</sup> See *H.R. 2454: American Clean Energy and Security Act of 2009*, GOVTRACK.US,

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well-known for creating a federal cap-and-trade system to limit greenhouse gas emissions, but it also included major provisions relating to renewable energy and electricity transmission.<sup>147</sup> Notably, the bill would have established a national RPS, requiring that six percent of electric power come from renewable resources by 2012, and twenty percent by 2020.<sup>148</sup> The Waxman-Markey Bill would not have preempted state-level RPS requirements but, instead, would have given regulated utilities federal credits in an amount equal to the state credits that they were already earning.<sup>149</sup> Other efforts to create a federal RPS have also not been successful to date.<sup>150</sup> While there are debates over whether a national RPS is preferable to improvements in state RPSs,<sup>151</sup> the fact remains that without a federal mandate in this area, and without the ability of the transmission grid to adequately move renewable electricity throughout the country, it may be difficult for existing state RPSs to continue to drive growth in renewable energy.<sup>152</sup>

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<http://www.govtrack.us/congress/bill.xpd?bill=h111-2454> (last visited Sept. 2, 2013) (noting that the bill passed the House of Representatives but not the Senate).

<sup>147</sup> *Id.* §§ 101, 151 (as passed by House, June 26, 2009) (establishing the Combined Efficiency and Renewable Electricity Standard and creating a regional transmission planning model with FERC review).

<sup>148</sup> *Id.* § 101.

<sup>149</sup> Dustin Till, *Renewable Energy Standards—California and Congress Moving in Different Directions*, MARTEN LAW (Mar. 17, 2011), [http://www.martenlaw.com/newsletter/20110317-calif-renewable-energy-standards#\\_ftnref8](http://www.martenlaw.com/newsletter/20110317-calif-renewable-energy-standards#_ftnref8).

<sup>150</sup> *See, e.g.*, Renewable Electricity Promotion Act of 2010, S. 3813, 111th Cong. § 610(b)(1)(B) (2009) (establishing a national renewable portfolio standard of 15% by 2021); Securing America's Future with Energy and Sustainable Technologies Act, S. 559, 112th Cong. § 601 (2011) (establishing a national renewable portfolio standard of 25% by 2025). *See also* Davies, *supra* note 136, at 1364-65 (noting over two dozen national RPS proposals introduced in Congress between 1996 and 2010).

<sup>151</sup> *See* Davies, *supra* note 136 (discussing criticisms to national RPS but concluding that national RPS is desirable); Jim Rossi, *The Limits of a National Renewable Portfolio Standard*, 42 CONN. L. REV. 1425 (2010).

<sup>152</sup> *See* Lincoln L. Davies, *Reconciling Renewable Portfolio Standards and Feed-in*

**B. Renewable Fuel Mandates and Low Carbon Fuel Standards**

In contrast to the lack of a federal mandate for renewable electricity, the federal RFS, discussed briefly in Part I.B. provides precisely such a mandate for renewable fuels, which today consists primarily of corn-based ethanol. Section 1501 of the Energy Policy Act of 2005 required the EPA to establish an RFS to increase the volume of renewable fuel blended with gasoline.<sup>153</sup> The Energy Independence and Security Act of 2007 raised the renewable fuel standard requirements and created additional mandates and incentives for advanced biofuels, cellulosic biofuels, and biomass-based diesel, to address environmental and food security concerns associated with corn-based ethanol.<sup>154</sup> The RFS required nine billion gallons of renewable fuel be blended in gasoline in 2008, more than thirteen billion gallons in 2012, and increasing each year, up to thirty billion gallons in 2020, which includes twenty-one billion gallons of advance biofuels made from grains such as sorghum and wheat, sugarcane ethanol, and non-starch parts of the corn plant such as the stalk and cob and lesser amounts of cellulosic ethanol and biomass-based diesel.<sup>155</sup> In order to implement these mandates, each year the EPA

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*Tariffs*, 32 UTAH ENVTL. L. REV. 311 (2012) (discussing how feed-in tariffs can often drive renewable energy deployment more effectively than RPS and why the two mechanisms should be used together).

<sup>153</sup> Energy Policy Act of 2005 § 1501, 42 U.S.C. § 7545 (2006); BOSSELMAN, *supra* note 43, at 1086-87; Mann & Hymel, *supra* note 40, at 52.

<sup>154</sup> Energy Independence and Security Act of 2007, Pub. L. No. 110-140, 110 Cong. § 202(a)(1), 121 Stat. 1492, 1521-22 (codified as amended at 42 U.S.C. § 7545(o)(2)); BOSSELMAN, *supra* note 43, at 1086-87; Mann & Hymel, *supra* note 41, at 56-68.

<sup>155</sup> SCHNEPF & YACOBUCCI, *supra* note 43, at 2-4; Mann & Hymel, *supra* note 41, at 52-53; *See generally* John H. Cushman, Jr., *In Drought, a Debate Over Quota for Ethanol*, N.Y. TIMES, Aug. 16, 2012, at B1 (reporting on RFS and the number of gallons required to be used each year); U.S. EPA, REGULATORY ANNOUNCEMENT, EPA FINALIZES REGULATIONS FOR THE NATIONAL RENEWABLE FUEL STANDARD PROGRAM FOR 2010 AND BEYOND (2010), *available at* <http://www.epa.gov/otaq/renewablefuels/420f10007.pdf>; Ari Natter, *Liquid Fuel Independence Requires Biofuel Expansion, Petroleum Industry Says*, 44 BNA ENVT. REP. 89, (2013), *available at*

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calculates blending standards for the various biofuel categories that apply to refiners, blenders, and fuel importers based on estimated total volume of transportation fuel expected to be used in the U.S. during the upcoming year.<sup>156</sup> The agency then computes the blending percentage standard (or obligation) as the total amount of renewable fuels mandated to be used in a given year expressed as a percentage of expected total U.S. transportation fuel use.<sup>157</sup> For instance, in 2012, EPA set a total renewable fuel-blending ratio of 9.23 percent, and an advance biofuels blending ratio of 1.21 percent.<sup>158</sup>

The RFS has certainly met its goal of creating and supporting the renewable fuels industry, particularly with regard to ethanol. Although the U.S. has been blending ethanol into gasoline since the 1970s, it has only become a significant part of the gasoline pool in the last decade, bolstered significantly by the RFS.<sup>159</sup> Ethanol was a little over one percent of gasoline volume in 2001 but reached almost ten percent of gasoline volume in 2011, resulting in 12.9 billion gallons of ethanol consumption that year.<sup>160</sup> Today, nearly every gallon of gasoline in the United States contains ten percent ethanol by volume, which is the limit for gasoline usable in non-flex-fuel vehicles for pre-2001 model year automobiles. Moreover, as noted in Part I, corn and biofuel interests did not mount any significant opposition to the elimination of the excise tax credits for the industry, known as “VTEEC,” in large part because the RFS still stands to support a mandated market for their products.<sup>161</sup> Many experts in the field

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[http://news.bna.com/erln/ERLNWB/split\\_display.adp?fedfid=29084333&vname=ernotallissues&jd=a0d5y3h1f5&split=0](http://news.bna.com/erln/ERLNWB/split_display.adp?fedfid=29084333&vname=ernotallissues&jd=a0d5y3h1f5&split=0).

<sup>156</sup> SCHNEPF & YACOBUCCI, *supra* note 43, at 10.

<sup>157</sup> *Id.*

<sup>158</sup> *Id.*

<sup>159</sup> EIA, *supra* note 39, at 5.

<sup>160</sup> *Id.*

<sup>161</sup> See EIA, *supra* note 39, at 26-28 (stating that “[h]igh petroleum prices, record ethanol production, the saturation of the gasoline pool with ethanol, a robust federal RFS2 mandate, and a need to reduce federal tax expenditures all contributed to the expiration of the [VTEEC].”)Natter, *supra* note 155; SCHNEPF & YACOBUCCI, *supra* note 43, at 5

contend that the RFS must remain in place in order for renewable fuels to become more than ten percent of U.S. liquid fuels and to develop the technologies and markets for advanced biofuels.<sup>162</sup>

Arguably though, the RFS so far has not met the goal of encouraging the development of environmentally friendly fuels.<sup>163</sup> As noted in Part I.B., over ninety percent of the RFS is currently met by corn-based ethanol, which generates significant amounts of CO<sub>2</sub> and other GHG emissions, has resulted in higher corn prices, and farming practices that create a monoculture of corn with all the associated adverse land use, transportation, and other environmental impacts.<sup>164</sup> Oil companies and the auto industry also oppose the RFS on grounds that the yearly increase in mandated gallons of renewable fuels blended with gasoline will result in ethanol concentrations that will adversely impact automobile engines.<sup>165</sup> Moreover, the benefits of the RFS go to a small number of states and biofuel producers, leading to significant benefits in a few farming and

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(stating that the RFS is likely to be more significant than tax incentives in promoting renewable fuels).

<sup>162</sup> See Natter, *supra* note 155 (citing EIA analyst opining that the RFS is needed to develop advanced biofuels and to get past the 10 percent level for total renewable fuels).

<sup>163</sup> See Melissa Powers, *King Corn, Will the Renewable Fuel Standard Eventually End Corn Ethanol's Reign?*, 11 VT. J OF ENVTL. L. 667, 668-674 (2010).

<sup>164</sup> BOSSELMAN, *supra* note 43, at 1090-93; Mann & Hymel, *supra* note 41, at 1090-93; Reitze, *supra* note 46 (discussing adverse environmental impacts of ethanol production).

<sup>165</sup> EIA, *supra* note 39, at 25-26 (discussing the "blend wall" of 10% ethanol in gasoline that, because of the saturation of the U.S. gasoline supply with ethanol sold as E10, has motivated the ethanol industry to seek approval for blends greater than 10% to ensure a domestic market for their product in light of slowing gasoline demand growth); Zack Colman, *House Republicans Plan to Put Fuel Standard on Trial in Next Congress*, E2 WIRE, (Dec. 15, 2012, 5:13 PM), <http://thehill.com/blogs/e2-wire/e2-wire/273047-house-gop-plans-to-put-fuel-standard-on-trial-in-next-congress> (summarizing criticism of RFS, particularly by the auto industry and oil companies); Zack Colman, *Court Denies Challenge to EPA Ethanol Ruling*, E<sup>2</sup>WIRE, (Jan. 15, 2013, 2:43 PM), <http://thehill.com/blogs/e2-wire/e2-wire/277269-court-denies-challenge-to-high-ethanol-fuel-sales> (reporting on D.C. Circuit Court of Appeals rejection of challenge by the oil and gas industry to EPA's decision to allow fuels with a 15% ethanol blend, known as E15, on the market to meet the RFS).

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ethanol producing states while most of the burdens fall on food producers and the poor who face higher food prices.<sup>166</sup> Efforts to create cost-effective processes for producing cellulosic ethanol and other advanced biofuels on a large scale have so far been unsuccessful,<sup>167</sup> although one can argue that continuing the RFS is precisely what it is needed to spur the technological developments necessary for a breakthrough in this area.<sup>168</sup> Despite the unavailability of commercial cellulosic ethanol and limited availability of additional advanced biofuels, the EPA has so far refused to waive completely the requirement for its use, resulting in penalties imposed on oil refiners for failure to meet those requirements in the RFS and litigation over those requirements.<sup>169</sup> Notably, some experts are optimistic about the growth of the cellulosic ethanol industry in 2013, noting that the first large-scale production facilities are expected to begin operation this year, and cite the RFS as critical to the growth of the industry.<sup>170</sup>

To address the environmental concerns associated with corn-based ethanol, in 2007, Congress tasked the EPA with creating a “lifecycle” analysis of GHG emissions for each category of renewable fuel in order to ensure that the lifecycle of each type of renewable fuel results in a specific

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<sup>166</sup> See Mann & Hymel, *supra* note 41, at 72-73.

<sup>167</sup> See BOSSELMAN, *supra* note 43, at 1096.

<sup>168</sup> See Natter, *supra* note 57 (citing biotechnology industry spokesman contending that the RFS, which provides a “stable, long-term policy,” is needed for the development of advanced biofuels until they can become cost-effective).

<sup>169</sup> See *American Petroleum Institute v. EPA*, 706 F.3d 474, (D.C. Cir. 2013) (rejecting EPA mandate for 2012 cellulosic ethanol use as unrealistic but upholding EPA mandate for advance biofuels for that year); see also Andrew Childers, *D.C. Circuit Dismisses Portions of Lawsuit Challenging 2011 Renewable Fuel Standard*, 43 BNA ENV'T. REP. 3259 (Dec. 18, 2012),

[http://news.bna.com/erln/ERLNWB/split\\_display.adp?fedfid=28921934&vname=ernotallissues&jd=a0d5u2r4t8&split=0](http://news.bna.com/erln/ERLNWB/split_display.adp?fedfid=28921934&vname=ernotallissues&jd=a0d5u2r4t8&split=0) (reporting on pending lawsuit by petroleum industry against EPA over EPA's refusal to waive the cellulosic ethanol requirements of the RFS).

<sup>170</sup> See Andrew Childers, *Cellulosic Ethanol Producers See Benefits for Industry From Renewables Standard*, 13 DAILY ENV. REP. A-1 (2013).

percentage reduction of GHG emissions as compared to the gasoline or diesel fuel it replaces.<sup>171</sup> A lifecycle analysis of carbon emissions for fuels includes the emissions from the production or consumption of the fuel in vehicles, the emissions associated with transporting the fuel to the source of consumption, the emissions associated with producing the fuel, and the emissions associated with changing the land use to produce the feedstock.<sup>172</sup> Despite the more recent focus on the carbon emissions associated with fuels, however, the RFS still focuses on specifying that certain types of fuels be used rather than specifically reducing the carbon emissions of the fuels used.<sup>173</sup>

The state of California has attempted to address many of the environmental protection deficiencies of the federal RFS through its Low Carbon Fuel Standard (“LCFS”) regulations. While a LCFS is similar to a RFS in that they both are market-based approaches to making changes in the transportation energy sector, the goal of the LCFS is not simply to replace fossil fuels with renewable fuels but to reduce the carbon intensity of the transportation sector as a whole.<sup>174</sup> As part of California’s Global Warming Solutions Act, also known as AB 32, the California Air Resources Board (“CARB”) developed the LCFS regulations, effective April 2010.<sup>175</sup> The LCFS regulations require oil refiners and distributors to guarantee that the mix of transportation fuels they sell in California will

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<sup>171</sup> See BOSSELMAN, *supra* note 43, at 1102-03; U.S. ENVTL. PROT. AGENCY, EPA FINALIZES REGULATIONS FOR THE NATIONAL RENEWABLE FUEL STANDARD PROGRAM FOR 2010 AND BEYOND (2010), *available at* <http://www.epa.gov/otaq/renewablefuels/420f10007.pdf>; SCHNEPF & YACOBUCCI, *supra* note 43, at 6.

<sup>172</sup> *Id.*

<sup>173</sup> See James M. Van Nostrand & Anne Marie Hirschberger, *Biofuels*, in THE LAW OF CLEAN ENERGY, *supra* note 70, at 461-62.

<sup>174</sup> *Id.* at 460-61 (citing GAIL MOSEY & CLAIRE KREYCIK, NAT’L RENEWABLE ENERGY LAB., STATE CLEAN ENERGY PRACTICES: RENEWABLE FUEL STANDARDS 7 (2008), *available at* <http://www.nrel.gov/docs/fy08osti/43513.pdf>).

<sup>175</sup> Low Carbon Fuel Standard (LCFS) 2009 — Part 2, 18-Z Cal. Regulatory Notice Reg. 656 (Apr. 30, 2010), *available at* <http://www.oal.ca.gov/res/docs/pdf/notice/18z-2010.pdf>.



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help lower GHG emissions by reducing the carbon intensity of their fuels by at least ten percent by 2020.<sup>176</sup> The LCFS regulations establish a baseline, average carbon intensity for all vehicular fuels consumed in California. They then require each supplier of vehicular transportation fuels to reduce its average carbon intensity from that baseline by set amounts each year between 2011 and 2020.<sup>177</sup> The LCFS regulations also allow suppliers to generate credits for exceeding the reduction required that year, creating the opportunity for a trading market in credits among suppliers nationwide.<sup>178</sup> The purpose of the LCFS regulations is to enable California to meet the GHG emission targets established in AB 32 as well as to encourage production of low-carbon fuels.<sup>179</sup> Like EPA, California regulations also use a “lifecycle” analysis of fuels to determine their carbon intensity.<sup>180</sup>

Through a stricter standard for renewable fuels with regard to GHG emissions, California has attempted to address many of the adverse environmental and land use effects associated with the federal RFS, and encourage the development of more environmentally friendly renewable fuels. While Midwest ethanol producers challenged the California law in 2011 on grounds that it violates the dormant Commerce Clause,<sup>181</sup> the law

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<sup>176</sup> CALIF. AIR RES. BD., ESTABLISHING NEW FUEL PATHWAYS UNDER THE CALIFORNIA LOW CARBON FUEL STANDARD: PROCEDURES AND GUIDELINES FOR REGULATED PARTIES AND FUEL PROVIDERS 1 (2010), *available at* <http://www.arb.ca.gov/fuels/lcfs/122310-new-pathways-guid.pdf>.

<sup>177</sup> *Id.*

<sup>178</sup> UNION OF CONCERNED SCIENTISTS, LOW CARBON FUEL STANDARD: REDUCING GLOBAL WARMING POLLUTION FROM CALIFORNIA’S TRANSPORTATION FUELS, (2009), *available at* [http://www.ucsusa.org/assets/documents/clean\\_vehicles/ca-low-carbon-fuel-standard-fact-sheet\\_final.pdf](http://www.ucsusa.org/assets/documents/clean_vehicles/ca-low-carbon-fuel-standard-fact-sheet_final.pdf).

<sup>179</sup> *Id.*

<sup>180</sup> CALIF. AIR RES. BD., LOW CARBON FUEL STANDARD: QUESTION AND ANSWER GUIDANCE DOCUMENT (VERSION 1.0) 2 (2011).

<sup>181</sup> *Rocky Mountain Farmers Union v. Corey*, 730 F.3d 1070 (9th Cir. 2013); EIA, BIOFUELS ISSUES AND TRENDS, *supra* note 39, at 24-25 (discussing California LCFS regulations and litigation).

itself is another example of using mandates to benefit certain energy sectors and support developing markets to meet energy policy goals.

### C. Summary

The example of the federal RFS illustrates that mandates, if in place for a sufficient period of time, can be as powerful as tax benefits and likely even more powerful than property rights in supporting and sustaining new energy sectors. Today, the ethanol industry plays a significant role in the country's energy economy and, as a result of the tax incentives that existed until 2012 and the mandates that continue to exist, has benefitted from a robust market and are a powerful lobbying force.<sup>182</sup> The adverse economic and environmental impacts associated with corn-based ethanol are a caution, however, to the use of mandates in other energy areas or, at the very least, to be aware of the unintended consequences and be nimble enough to address them when they arise. A review of the effectiveness of the federal RFS in boosting the use of renewable fuel, however, supports the argument that a national RPS for renewable electricity, if sufficiently robust, could substitute for at least some of the tax benefits that may be lost if the PTC expires or phases out over time. A federal RPS, if structured properly, could also encourage the improvements to the national electricity grid that will be critical to allowing more widespread use of renewable electricity on a nationwide basis.

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<sup>182</sup> It remains unclear how long the RFS will continue to support the biofuels industry's success. In 2013, as a result of decreasing demand for gasoline as well as drought conditions in many parts of the United States, which have led to higher corn prices, ethanol producers are facing more difficult economic conditions that they have in prior years. See John Eligon & Matthew L. Wald, *Days of Promise Fade for Ethanol*, N.Y. TIMES, Mar. 16, 2013, [http://www.nytimes.com/2013/03/17/us/17ethanol.html?partner=rss&emc=rss&\\_r=2&&pagewanted=print](http://www.nytimes.com/2013/03/17/us/17ethanol.html?partner=rss&emc=rss&_r=2&&pagewanted=print).

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### IV. THE ROLE OF CONTINUITY AND CERTAINTY IN PROMOTING RENEWABLE ENERGY

One theme that is constant in the discussion of the various tax benefits, property rights benefits, and mandates at work in the energy industry is the importance of continuity and certainty in achieving success. Tax benefits and property rights benefits to the fossil fuel industry have provided decades of virtually uninterrupted support, allowing the industry to grow, create infrastructure to support interstate markets, and become and remain dominant in the energy sector despite the environmental harms associated with such fuels. The federal RFS has provided the same market support for the biofuels industry in more recent years, so much so that valuable tax benefits were allowed to expire at the end of 2011 without significant protest by the industry because the mandate remains, at least for now, to support the market for their product.

What may be most important about certainty and continuity is the ability to invest in the physical infrastructure required to support the interstate markets for various forms of energy over time. Continued financial support for the fossil fuel industry, coupled with state property benefits in the form of permitting and eminent domain for pipelines, facilitated the creation of a complex physical network of pipelines and terminals that allows product to be moved across the country. This level of infrastructure is lacking for many forms of renewable energy, particularly wind and solar energy. Unlike traditional sources of electricity such as coal, natural gas or uranium, which can be transported by pipeline, truck, or boat, wind and solar-powered electricity can only be transported through transmission lines.<sup>183</sup> But to upgrade the transmission network to allow the long-distance transmission of wind, solar, and other renewable energy from resource-rich but population-poor regions of the country to the major cities requires money, likely a transfer of authority over siting and eminent domain to the federal government, and perhaps a

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<sup>183</sup> See Klass, *Takings and Transmission*, *supra* note 109, at 1083-84.

national RPS that creates the national market necessary to support renewable resources. Short-term financial support such as the ARRA or even the often-embattled PTC may well not provide the level of certainty and support necessary for that type of physical infrastructure investment.

### *Conclusion*

The goal of this essay is to briefly discuss the different ways the law supports the energy industry through tax benefits, property rights benefits, and mandates. This discussion shows that there are no easy solutions, but that historically, the support that provides a level of certainty and continuity over time has the most success in allowing markets to develop and encourage the construction of the physical infrastructure necessary to support those markets. Without government support in some or all of these areas, it is very unlikely renewable energy can develop as a major focus of the country's energy portfolio anytime soon. The past support for the fossil fuel industry has created markets, infrastructure, and political power that make it difficult for the renewable energy sector to compete. But in order to increase domestic energy security and address environmental goals associated with climate change, continued support for renewable energy is critical. This essay concludes that continued tax benefits that provide more certainty than the current version of the PTC, along with further discussion of a national RPS, and more centralized permitting and eminent domain authority for transmission can together provide the type of support that may succeed. Many of these policy initiatives do not have support in Congress at the present time. Nevertheless, history shows us what has worked in the past and what might work in the future, and continued pressure may result in gradual changes in some or all of these policy arenas.

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