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**The Green Economic Recovery: Wind Energy  
Tax Policy After Financial Crisis and the  
American Recovery and Reinvestment Tax Act  
of 2009**

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*[A] green, renewable energy economy isn't some pie-in-the-sky, far-off future, it is now. It is creating jobs, now. . . . And it can create millions of additional jobs and entire new industries if we act now.*<sup>1</sup>

Government actors, as well as the public at large, are beginning to realize the old argument that we must choose between environmental responsibility and prosperity is a false dichotomy. The American Recovery and Reinvestment Tax Act of 2009 (ARRTA) explicitly embraces renewable energy as a growing industry with great potential

<sup>1</sup> Senator Barack Obama, A Serious Energy Policy for Our Future, Remarks at a 2008 Presidential Campaign Event in Las Vegas, Nevada (June 24, 2008), available at [http://www.barackobama.com/2008/06/24/remarks\\_of\\_senator\\_barack\\_obam\\_81.php](http://www.barackobama.com/2008/06/24/remarks_of_senator_barack_obam_81.php).

to rebuild the flagging economy.<sup>2</sup> The wind energy industry is a major player in renewable energy production, and its success is vitally important to overcoming the obstacles the United States faces during the current recession. The government incentives and the unique financing arrangements that were built around those incentives have driven a successful expansion of the industry over the past four years.<sup>3</sup> This success shows that the wind energy industry is well positioned to play a key role in creating high-paying American jobs, promoting a sustainable low-carbon society, and fighting climate change. However, the fallout from the collapse of the U.S. financial sector has had a disproportionately negative effect on the wind energy industry.<sup>4</sup> The mixture of tightening credit markets, huge losses in the financial sector, and plunging energy prices has exposed the shortcomings of using tax credits to spur development in renewable energy and has brought the emerging multi-billion dollar wind energy industry to a standstill.<sup>5</sup> Accordingly, the outlook for wind energy development in 2009 and beyond is mired in uncertainty.<sup>6</sup>

As a relatively young industry, wind energy is especially susceptible to the market downturn because it cannot continue to grow without financial backing. Since 2000, that financial backing has been encouraged by high fossil fuel prices and generous tax incentives for the production of renewable energy.<sup>7</sup> The drop in fossil fuel prices and the astronomical losses suffered by the financial sector during the recession have eliminated the short-term incentives for investors and energy producers to build more renewable energy infrastructure.<sup>8</sup> As a result, “shovel-ready” wind projects, like T.

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<sup>2</sup> See Pub. L. No. 111-5, 123 Stat. 115. AARTA is also known as Division B of the American Recovery and Reinvestment Act of 2009, which is commonly referred to as ARRA or “the Stimulus Bill.”

<sup>3</sup> AM. WIND ENERGY ASS’N, ANOTHER RECORD YEAR FOR NEW WIND INSTALLATIONS 1 (2008), available at [http://www.awea.org/pubs/factsheets/Market\\_Update.pdf](http://www.awea.org/pubs/factsheets/Market_Update.pdf).

<sup>4</sup> Clifford Krauss, *Alternative Energy Suddenly Faces Headwinds*, N.Y. TIMES, Oct. 21, 2008, at B1.

<sup>5</sup> See *id.*

<sup>6</sup> AM. WIND ENERGY ASS’N, WIND ENERGY FOR A NEW ERA: AN AGENDA FOR THE NEW PRESIDENT AND CONGRESS 2 (2008), available at [http://newwindagenda.org/documents/Wind\\_Agenda\\_Report.pdf](http://newwindagenda.org/documents/Wind_Agenda_Report.pdf).

<sup>7</sup> AM. WIND ENERGY ASS’N, *supra* note 3, at 1.

<sup>8</sup> See Krauss, *supra* note 4.

Boone Pickens' ambitious 8000-megawatt (MW) wind farm in Texas, are languishing and the industry is shedding jobs.<sup>9</sup>

In December 2008, Congress attempted to thaw the credit markets and prop up faltering banks by approving an infusion of \$700 billion into the economy through the Emergency Economic Stabilization Act of 2008 (the Bailout Bill).<sup>10</sup> While it is debatable whether this effort will pay off in the long term, it is certain that with nearly half of the Troubled Asset Relief Program (TARP) money spent<sup>11</sup> there has been little improvement in the lending practices of the recipient banks.<sup>12</sup> Even if banks did turn the lending spigots back on, the wind industry would be an unlikely recipient of such loans as long as traditional energy prices remain low and banks continue to record losses, rendering new wind projects economically unviable.

In the absence of legislative action, the industry would almost certainly be facing imminent collapse. With the passage of ARRTA, wind energy producers have reason to breathe easier. While ARRTA accomplishes a laundry list of wind industry requests,<sup>13</sup> it only temporarily sweetens the pot of government incentives available to investors and developers, and ultimately it fails to address the long-term problems caused by the fossil fuel market fluctuations that are at the heart of the crisis.

This Note explores the weaknesses that the recession has exposed in the United States' current renewable energy tax policy and evaluates the 111th Congress' legislative response to those weaknesses. In doing so, this Note looks at the major U.S. renewable energy tax policies of the last thirty years and investigates the effects

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<sup>9</sup> Ryan Randazzo, *Oil Billionaire Revises Plan to Reduce Foreign Oil Imports*, ARIZ. REPUBLIC, Nov. 12, 2008, <http://www.azcentral.com/arizonarepublic/business/articles/2008/11/12/20081112biz-pickens1112.html>.

<sup>10</sup> Pub. L. No. 110-343, §§ 101, 115, 122 Stat. 3765, 3767, 3780 (to be codified at 12 U.S.C. §§ 5211, 5225).

<sup>11</sup> See David Barstow & Mike McIntire, *Calls for Clarity in New Bailout for U.S. Banks*, N.Y. TIMES, Feb. 10, 2009, at B1.

<sup>12</sup> Joe Nocera, *First Bailout Formula Had It Right*, N.Y. TIMES, Jan. 24, 2009, at B1.

<sup>13</sup> See American Recovery and Reinvestment Tax Act of 2009, Pub. L. No. 111-5, sec. 1101(a), § 45(d)(1), 123 Stat. 115, 319 (extending the Production Tax Credit for wind to December 31, 2012); *id.* sec. 1102(a), § 48(a)(5)(A)(ii), 123 Stat. at 319-20 (allowing a taxpayer to elect a thirty percent investment tax credit in lieu of the PTC); *id.* sec. 1261(b)(1)(A)-(B), § 382, 123 Stat. at 342-43 (reversing I.R.S. Notice 2008-83, 2008-42 I.R.B. 905); *id.* sec. 1603(a)-(b)(2)(A), § 48, 123 Stat. at 364-66 (allowing a taxpayer to elect a government grant in lieu of the PTC and the ITC in the amount of the thirty percent ITC created by section 1102 of ARRTA).

of those federal policies on the wind energy industry. The focus on wind is not an endorsement to pursue wind energy over all other forms of renewable energy; rather, it is meant as a case study on how federal tax policy has effected one industry and how it can better encourage growth in that industry.<sup>14</sup>

Part I outlines the current state of the wind energy industry, its potential to grow, and the difficulties presented by the financial crisis, the recession, and fluctuations in prices for traditional sources of energy. Part II discusses the history, successes, and limitations of the federal renewable energy tax policies of the past thirty years, including a discussion of the Production Tax Credit (PTC) and the key renewable energy sections of ARRTA. Part III suggests a comprehensive renewable energy policy that complements the significant accomplishments in ARRTA and clears the way for the wind industry to become a major player in the U.S. energy market.

## I

### THE BENEFITS, CHALLENGES, AND POTENTIAL OF THE U.S. WIND INDUSTRY

From 2004 to 2008, the United States added record amounts of new wind energy capacity, putting it ahead of Germany as the world leader in wind energy.<sup>15</sup> This successful expansion of the industry has been driven by high fossil fuel prices and congressional extension of the PTC, which has made wind energy more competitive with traditional sources of energy and has drawn financing to wind projects.<sup>16</sup> U.S. wind energy capacity increased by fifty percent in 2008 alone;<sup>17</sup> however, it still only makes up 1.5 percent of the nation's total electricity production.<sup>18</sup> While it will never be able to fulfill all of the energy needs of the United States, wind energy could play a major role in the U.S. energy portfolio.

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<sup>14</sup> Many of the principles discussed in this Note could also apply to other forms of renewable energy. However, wind energy is unique in that it is closer than any other renewable energy technology to being competitive with traditional power plants.

<sup>15</sup> Press Release, Am. Wind Energy Ass'n, U.S. and China in Race to the Top of Global Wind Industry (Feb. 2, 2009), *available at* [http://www.awea.org/newsroom/releases/us\\_and\\_china\\_race\\_to\\_top\\_of\\_wind\\_energy\\_02Fed09.html](http://www.awea.org/newsroom/releases/us_and_china_race_to_top_of_wind_energy_02Fed09.html).

<sup>16</sup> AM. WIND ENERGY ASS'N, *supra* note 3, at 1.

<sup>17</sup> Press Release, Am. Wind Energy Ass'n, *supra* note 15.

<sup>18</sup> AM. WIND ENERGY ASS'N, U.S. WIND ENERGY INSTALLATIONS TOP 20,000 MW 2 (2008), *available at* <http://www.awea.org/pubs/factsheets/20GW.pdf>.

According to a study by the U.S. Department of Energy (DOE), wind could make up as much as twenty percent of the country's energy portfolio.<sup>19</sup> The DOE estimated it would take approximately twenty-three years to reach the twenty percent mark.<sup>20</sup> Based on the gains of the last few years, the United States is already ahead of the DOE's projections.<sup>21</sup> The pursuit and accomplishment of twenty percent wind energy would yield huge environmental and economic benefits for the United States.

### A. *Environmental Benefits of Wind*

Wind energy is one of the cleanest ways to produce electricity.<sup>22</sup> The turbines on a wind machine have zero emissions,<sup>23</sup> and the manufacturing, installation, and maintenance of the components of a wind machine have a relatively low environmental impact, making it a clean technology even when measured against other renewables.<sup>24</sup>

When it comes to wind energy's environmental superiority over fossil fuels, there simply is no comparison. As of 2007, the United States derived 48.5% of its electricity from coal, 21.6% from natural gas, 19.4% from nuclear, 5.8% from hydroelectric, 1.6% from petroleum, and only 2.5% from renewable sources (around half of which is produced from wind).<sup>25</sup> Deriving so much electricity from

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<sup>19</sup> ENERGY EFFICIENCY & RENEWABLE ENERGY, U.S. DEP'T OF ENERGY, 20% WIND BY 2030, at 7 (2008), available at [http://www.20percentwind.org/20percent\\_wind\\_energy\\_report\\_revOct08.pdf](http://www.20percentwind.org/20percent_wind_energy_report_revOct08.pdf).

<sup>20</sup> *Id.*

<sup>21</sup> AM. WIND ENERGY ASS'N, *supra* note 18, at 2 (announcing that in 2008 wind energy capacity in the United States had surpassed the 25,000 MW mark); ENERGY EFFICIENCY & RENEWABLE ENERGY, *supra* note 19, at 7 (showing a chart predicting that U.S. wind energy capacity would reach 25,000 MW between 2010 and 2012); MAUREEN HAND ET AL., U.S. DEP'T OF ENERGY, POWER SYSTEM MODELING OF 20% WIND-GENERATED ELECTRICITY BY 2030, at 2 (2008), available at <http://www.nrel.gov/docs/fy08osti/42794.pdf> ("Providing 20% of projected U.S. electricity demand by 2030 would require 305 [gigawatts] of wind technology producing 1200 [terawatt-hours] annually . . . . Assuming wind turbine size increases from [the 2007] average of 1.6 MW to roughly 3 MW, this would result in around 100,000 wind turbines.")

<sup>22</sup> ENERGY EFFICIENCY & RENEWABLE ENERGY, *supra* note 19, at 105.

<sup>23</sup> AM. WIND ENERGY ASS'N, WIND ENERGY BASICS 4 (2009), available at [http://www.awea.org/newsroom/pdf/Wind\\_Energy\\_Basics.pdf](http://www.awea.org/newsroom/pdf/Wind_Energy_Basics.pdf).

<sup>24</sup> Robert Monroe, *Potent Greenhouse Gas More Prevalent in Atmosphere than Previously Assumed*, U.C. SAN DIEGO NEWS CENTER (U.C. San Diego, San Diego, Cal.), Oct. 23, 2008, <http://ucsdnews.ucsd.edu/newsrel/science/10-08GreenhouseGas.asp>.

<sup>25</sup> ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, ELECTRIC POWER ANNUAL 2007, at 2-3 (2009), available at <http://www.eia.doe.gov/cneaf/electricity/epa/epa.pdf>.

burning fossil fuels creates six billion metric tons of carbon dioxide annually, among other harmful greenhouse gas emissions.<sup>26</sup> In 2008, wind energy displaced the equivalent of 28.7 million tons of coal, 90 million barrels of oil, or 530 billion cubic feet of natural gas and prevented up to 34 million metric tons of carbon dioxide from being emitted into the atmosphere.<sup>27</sup>

If wind energy were to make up twenty percent of the U.S. energy supply, the United States could meet its energy needs while avoiding annual emissions of approximately 825 million metric tons of carbon dioxide.<sup>28</sup> According to the DOE projection, a cumulative 7.6 billion metric tons of carbon dioxide would be prevented over the twenty-three year construction phase leading up to twenty percent wind.<sup>29</sup>

## ***B. Economic Benefits of Wind***

### *1. Jobs and Economic Activity*

Wind energy in the United States has the potential to be a major contributor to the nation's energy portfolio and in doing so create hundreds of thousands of new jobs and billions of dollars of economic activity.<sup>30</sup> Wind has proven to be successful in countries like Denmark, Spain, and Germany where wind energy makes up twenty-one percent, twelve percent, and seven percent of annual electricity generation, respectively.<sup>31</sup> In the European Union, the wind energy industry supports over 150,000 workers; that number is expected to more than double by 2020 as the EU works toward the goal of twenty percent renewable energy.<sup>32</sup>

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<sup>26</sup> ENERGY EFFICIENCY & RENEWABLE ENERGY, *supra* note 19, at 14.

<sup>27</sup> AM. WIND ENERGY ASS'N, *supra* note 18, at 1.

<sup>28</sup> ENERGY EFFICIENCY & RENEWABLE ENERGY, *supra* note 19, at 13.

<sup>29</sup> *Id.* at 14.

<sup>30</sup> *See id.* at 204–05.

<sup>31</sup> EUR. WIND ENERGY ASS'N, WIND AT WORK: WIND ENERGY AND JOB CREATION IN THE EU 23 (2009), available at [http://www.ewea.org/fileadmin/ewea\\_documents/documents/publications/Wind\\_at\\_work\\_FINAL.pdf](http://www.ewea.org/fileadmin/ewea_documents/documents/publications/Wind_at_work_FINAL.pdf).

<sup>32</sup> GLOBAL WIND ENERGY COUNCIL, GLOBAL WIND 2007 REPORT 34, 58 (2008), available at [http://www.gwec.net/fileadmin/documents/test2/gwec-08-update\\_FINAL.pdf](http://www.gwec.net/fileadmin/documents/test2/gwec-08-update_FINAL.pdf). On a particularly blustery day in November 2008, Spain set the single day record for producing wind energy by deriving forty-three percent of the electricity used on that day from wind. Posting of Matthew McDermott to TreeHugger, <http://www.treehugger.com/files/2008/11/spanish-wind-power-record-43-percent-electric-demand.php> (Nov. 25, 2008).

In 2008, wind energy created revenue of over \$30 billion globally.<sup>33</sup> In the United States, the wind industry channeled an investment of \$17 billion into the economy and directly employed 85,000 workers.<sup>34</sup> These numbers were up from \$3 billion in profits and 36,000 workers in 2006.<sup>35</sup> Building more wind projects would provide a major boost to the U.S. manufacturing industry,<sup>36</sup> which has lost over four million jobs over the last ten years.<sup>37</sup> Consequently, there is a ready and capable workforce that has experience manufacturing similar products as well as empty factories that could easily be retrofitted to manufacture wind towers, turbines, and blades.<sup>38</sup>

If wind energy was to make up twenty percent of the U.S. energy mix, the wind industry could support as many as 500,000 jobs<sup>39</sup> and \$27 billion in economic activity annually just from operating the wind turbines.<sup>40</sup> Beyond the wealth created from producing and selling wind energy, the construction phase leading to twenty percent wind would produce approximately \$944 billion in economic activity.<sup>41</sup> Finally, increased use of wind energy would alleviate the demand on fossil fuels, lowering the cost of fossil fuels and saving Americans \$128 billion annually in electricity costs.<sup>42</sup>

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<sup>33</sup> JOEL MAKOWER ET AL., CLEAN EDGE, CLEAN ENERGY TRENDS 2008, at 2 (2008), available at <http://www.cleandedge.com/reports/pdf/Trends2008.pdf>.

<sup>34</sup> Press Release, Am. Wind Energy Ass'n, Wind Energy Grows by Record 8300 MW in 2008 (Jan. 27, 2009), available at [http://www.awea.org/newsroom/releases/wind\\_energy\\_growth2008\\_27Jan09.html](http://www.awea.org/newsroom/releases/wind_energy_growth2008_27Jan09.html).

<sup>35</sup> ROGER BEZDEK, AM. SOLAR ENERGY SOC'Y, RENEWABLE ENERGY AND ENERGY EFFICIENCY: ECONOMIC DRIVERS FOR THE 21ST CENTURY 24 (2007), available at <http://www.ases.org/images/stories/ASES-JobsReport-Final.pdf>.

<sup>36</sup> MAYORS CLIMATE PROT. CTR., U.S. CONFERENCE OF MAYORS, U.S. METRO ECONOMIES: CURRENT AND POTENTIAL GREEN JOBS IN THE U.S. ECONOMY 13 (2008), available at <http://www.usmayors.org/pressreleases/uploads/GreenJobsReport.pdf>.

<sup>37</sup> Stephen Manning, *Profiting from Upscale Goods: U.S. Still Leads World in Higher-End Manufacturing*, COLUMBUS DISPATCH (Ohio), Feb. 21, 2009, available at [http://www.dispatch.com/live/content/business/stories/2009/02/21/make\\_nothing\\_nation.ART\\_ART\\_02-21-09\\_C8\\_UQD01UT.html?sid=101](http://www.dispatch.com/live/content/business/stories/2009/02/21/make_nothing_nation.ART_ART_02-21-09_C8_UQD01UT.html?sid=101).

<sup>38</sup> MAYORS CLIMATE PROT. CTR., *supra* note 36, at 13.

<sup>39</sup> ENERGY EFFICIENCY & RENEWABLE ENERGY, *supra* note 19, at 209.

<sup>40</sup> *Id.* at 205.

<sup>41</sup> *Id.* at 204.

<sup>42</sup> HAND ET AL., *supra* note 21, at 5.



## 2. *Competitiveness with Traditional Power Plants*

The technology for converting wind into electricity has existed for over one hundred years, but it was not until the past three decades that advancements in technology have allowed it to be viable on a commercial scale.<sup>43</sup> With technological advances lowering the price of installation and improving the efficiency of wind machines, wind energy is currently the closest of all renewables to being cost competitive with traditional sources of electricity.<sup>44</sup>

When considering the price of producing wind energy compared with producing energy with coal, natural gas, or nuclear power three economic factors should be considered: (1) the cost per MW of building new capacity, (2) the cost per MW of the fuel used to produce electricity, and (3) the cost per MW of operations and maintenance of the energy facilities.<sup>45</sup> By considering these expenses in terms of how much they would cost per MW of new capacity, a direct comparison between energy sources is possible.<sup>46</sup> As with most renewables, the biggest cost per MW of wind energy installed is the initial investment in building and connecting new capacity to the grid because, once established, a wind farm has few maintenance costs and absolutely no fuel costs.<sup>47</sup>

The inverse is true for coal and natural gas. The price tag for building a new coal- or natural-gas-fired power plant is relatively low compared to the amount of MWs of capacity that power plant adds to the grid; however, maintenance and operational costs for a fossil-fuel-based power plant are slightly more expensive per MW than wind.<sup>48</sup> Finally, the biggest cost per MW of energy production for coal- and

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<sup>43</sup> ENERGY EFFICIENCY & RENEWABLE ENERGY, *supra* note 19, at 28.

<sup>44</sup> See Natural Resources Defense Council, Solar Power, <http://www.nrdc.org/air/energy/renewables/solar.asp> (last visited May 5, 2009); Natural Resources Defense Council, Wind Power, <http://www.nrdc.org/air/energy/renewables/wind.asp> (last visited May 5, 2009).

<sup>45</sup> See ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, INTERNATIONAL ENERGY OUTLOOK 2006 (2006), [http://www.eia.doe.gov/oiaf/archive/ieo06/special\\_topics.html](http://www.eia.doe.gov/oiaf/archive/ieo06/special_topics.html); INT'L ENERGY AGENCY, WORLD ENERGY OUTLOOK 2004, at 195 (2004), available at <http://www.iea.org/textbase/nppdf/free/2004/weo2004.pdf>.

<sup>46</sup> For instance, if it costs \$100 million to install, operate, and maintain a 100 MW wind farm for ten years and \$150 million to produce the same amount of electricity over that period at a natural-gas-fired power plant, it would be more economical to install the wind farm than operate the natural-gas-fired plant.

<sup>47</sup> INT'L ENERGY AGENCY, *supra* note 45, at 195.

<sup>48</sup> *Id.*

natural-gas-fired power plants is the purchase of the fuel that the plant burns to create electricity.<sup>49</sup>

Nuclear, while much more expensive in terms of the overall cost of building the power plant, is much closer to wind in how the costs of building new capacity are broken down per MW.<sup>50</sup> A nuclear plant produces much more electricity than a new wind energy installation, so building a new nuclear plant actually costs a little less than wind in terms of the cost of each MW of electricity produced.<sup>51</sup> But overall, developing and operating new wind capacity is less expensive than developing and operating new nuclear capacity<sup>52</sup> because nuclear is much more expensive to operate and has higher fuel costs than wind.<sup>53</sup>

Eventually wind energy will be cheaper to produce, even considering startup costs, than any traditional source of energy because the fuels that traditional power plants rely on will continue to increase in price, while wind energy will continue to become more efficient and cheaper to produce. However, in the short term, as long as wind's competitiveness with coal and natural gas is subject to drastic swings in the cost of fuel, the industry will not be able to sustain the growth that is necessary to stabilize energy prices and wean the United States from these carbon-emitting energy sources. In order to build the wind industry, government will have to insulate it from the market influences created by volatile fossil fuel prices.

### *C. Challenges for the Wind Energy Industry*

#### *1. Efficiency, Grid Access, and Intermittency*

Wind energy technology is mature and ready for mass production; however, there are challenges and drawbacks facing the industry which, if overcome, would make it an even more attractive alternative to traditional energy sources.

First, as mentioned above, improvements in wind machine efficiency would vastly increase the viability of the industry and the practicality of a major investment in wind energy. In addition, technological improvements in the efficiency of the electrical grid and

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<sup>49</sup> *Id.*

<sup>50</sup> *Id.*

<sup>51</sup> *Id.*

<sup>52</sup> *Id.*

<sup>53</sup> *Id.*

expansion of energy storage options would allow more of the wind energy that is produced to be used. While significant amounts of wind energy can be plugged into the current electrical grid,<sup>54</sup> access to the grid at many of the best potential wind energy producing sites is limited.<sup>55</sup> Wind farms are often sited in rural areas far from the largest electricity users and traditional power plants.<sup>56</sup> This poses two problems: (1) when siting a wind farm, a developer faces the additional hurdle of connecting it to the grid,<sup>57</sup> and (2) as a result of the electrical current traveling longer distances to reach energy users, wind energy experiences increased “line loss” during transmission.<sup>58</sup>

Finally, wind machines only produce electricity when the wind is blowing. The intermittency of wind energy poses a problem because utilities cannot count on an exact amount of energy production.<sup>59</sup> Another issue is that the timing of production of wind energy cannot be controlled by utilities in order to maximize power production during peak usage.<sup>60</sup> There are currently no practical ways to store the energy produced, but not used, during times of high production and low energy usage.<sup>61</sup> Research and development into storage options would greatly improve the usefulness of wind energy.

## *2. Environmental Concerns and Local Opposition*

Despite the value that wind farms bring to rural communities—jobs, property taxes, cheap power—wind farm developers often experience opposition from communities near proposed wind farm sites.<sup>62</sup> This opposition stems from various concerns, such as degradation of local stakeholders’ views,<sup>63</sup> impact on migrating birds,<sup>64</sup> and suspicion over potential adverse health effects caused by

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<sup>54</sup> ENERGY EFFICIENCY & RENEWABLE ENERGY, *supra* note 19, at 77.

<sup>55</sup> *See id.* at 95.

<sup>56</sup> *See id.* at 116.

<sup>57</sup> Matthew L. Wald, *Hurdles (Not Financial Ones) Await Electric Grid Update*, N.Y. TIMES, Feb. 7, 2009, at A11.

<sup>58</sup> ENERGY EFFICIENCY & RENEWABLE ENERGY, *supra* note 19, at 93–94.

<sup>59</sup> *Id.* at 75.

<sup>60</sup> *See* Mark Svenvold, *Wind-Power Politics*, N.Y. TIMES, Sept. 14, 2008, § MM (Magazine), at 77.

<sup>61</sup> *See* Ken Belson, *Air Storage Is Explored for Energy*, N.Y. TIMES, Aug. 26, 2008, at B1.

<sup>62</sup> ENERGY EFFICIENCY & RENEWABLE ENERGY, *supra* note 19, at 105.

<sup>63</sup> *Id.* at 106.

<sup>64</sup> *Id.*

wind machines.<sup>65</sup> The “not in my backyard” effect should be taken seriously because, if not handled with care, local government could prevent a wind farm from being built by denying permits at the local level.<sup>66</sup>

Wind farm developers should take care to limit the amount of perceived damage to local communities. If the developer does so, the preceding arguments should not be very persuasive. For instance, windmills are responsible for far fewer bird deaths annually than domestic cats or buildings.<sup>67</sup> Additionally, if wind energy helps us to avoid some of the most damaging effects of global warming, it would in turn likely save the lives of more birds and other animals than would be killed by wind farms.<sup>68</sup> As for visual concerns, most people would agree that a row of wind machines is far more attractive than the smoke stacks of a coal-fired power plant and the smog created by generating fossil-fuel-based power.

## II

### FEDERAL SUPPORT FOR RENEWABLE ENERGY PAST AND PRESENT

Growth and profitability in the wind energy industry is impacted by a set of internal and external factors. The major internal factor is the cost of installing new wind energy, determined by the interplay of the cost of manufacturing and constructing wind machines and the amount of energy those machines are capable of producing. As mentioned above, the initial investment costs in a wind project are the biggest expense in producing wind energy. Increases in U.S. wind manufacturing capacity and innovations in design, materials, and turbine efficiency will help bring those costs down by producing more energy per dollar invested. In turn, the price of wind energy will come down and become more competitive with traditional sources of electricity. These internal factors are mostly under the control of the industry but can be helped along with government investment in research and development.

The external factors impacting the industry are mostly outside the control of the industry and need government incentives and support to overcome. The most serious external factors that currently determine

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<sup>65</sup> Richard Cockle, *Wind Whips Up Health Fears*, OREGONIAN, Aug. 10, 2008, at B4.

<sup>66</sup> See ENERGY EFFICIENCY & RENEWABLE ENERGY, *supra* note 19, at 106.

<sup>67</sup> *Id.* at 111–12.

<sup>68</sup> *Id.* at 107.

whether it is financially wise to invest in wind energy are: (1) the price of fuel for traditional power plants; (2) the availability and desirability of tax incentives and other government support for investing in wind; and (3) the regulatory and technological hurdles, such as the FERC approval process, local political pressures, grid access, and availability of long-term wind studies of the proposed site.

All of these factors impact the most critical factor of all, access to capital to build new wind projects. The price of fuel for traditional power plants has fluctuated dramatically since the 1970s.<sup>69</sup> When fossil fuel prices are up, wind is able to compete, but when fossil fuel prices are down, it cannot. As mentioned above, new wind capacity is capital intensive and requires a significant portion of that money up front. When wind is competitive, capital is more plentiful and cheaper to obtain. But when new wind capacity is more expensive to build than a new fossil-fuel-fired power plant, it is difficult to find financing and wind projects are not built. Government can better control these external factors than the industry. It is important that the government tips the scale to allow the wind industry to avoid the starts and stops caused by volatility of fossil fuel prices so that the industry has a chance to succeed before the country encounters its next crisis.

#### ***A. Renewable Energy Tax Policy 1978 to 1992***

In order to find a solution to propel the industry through the recession, it is important to analyze the successes and shortcomings of the last thirty years of federal renewable energy policies. The energy crises of the 1970s, the mix of tax and energy policies that followed, and the rise and fall of the California wind industry in the early 1980s provide an excellent example of how government support, financial woes, and volatile prices for traditional energy impact the renewable energy industry.

The debate over renewable energy first became a part of the national political discussion after the OPEC Embargo of 1973 and the Iranian Revolution in 1979 showed Americans the vulnerability created by reliance on foreign oil for much of their energy needs.<sup>70</sup> This new awareness, coupled with the spike in fossil fuel prices and the economic turmoil that followed, sparked the federal government

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<sup>69</sup> ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, ANNUAL ENERGY REVIEW 2007, at 194–97, 216–17 (2008), available at <http://www.eia.doe.gov/emeu/aer/pdf/aer.pdf>.

<sup>70</sup> ROBERT W. RIGHTER, WIND ENERGY IN AMERICA 294 (1996).

to deploy tax incentives and open up energy markets dominated by utilities to encourage investment in renewable energy production.<sup>71</sup> It also prompted state governments to take action, most notably in California.<sup>72</sup> Investors and businesses took advantage of the federal and state incentives in California, which produced a short-lived boom of newly installed wind energy capacity from 1981 to 1985.<sup>73</sup> In many ways, the federal and state policies were not well conceived which led to abuses and the eventual expiration of the incentives.

### 1. *The National Energy Act of 1978*

In the late 1970s, consumers were suffering from high fuel costs, and experts were predicting that prices would not let up in the foreseeable future. The new national focus on energy policy led Congress to pass the National Energy Act of 1978 (NEA).<sup>74</sup> The NEA contained two important pieces of legislation that greatly affected the rise of the California wind industry in the 1980s: the Energy Tax Act of 1978 (ETA),<sup>75</sup> which provided tax incentives for new investment in renewable energy technology, and the Public Utility Regulatory Policies Act of 1978 (PURPA),<sup>76</sup> which created a guaranteed market and price structure for nonutility producers of renewable energy.<sup>77</sup>

The ETA greatly reduced subsidies and tax deductions that favored the production of oil and gas and introduced a windfall profits tax for oil companies that had benefited from rising oil prices.<sup>78</sup> At the same time the ETA used tax policy to discourage energy production by traditional sources of energy, it added tax incentives for investment in renewable energy producing facilities.<sup>79</sup> The business investment tax credit (ITC), originally enacted in 1962, allowed businesses to deduct

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<sup>71</sup> *See id.* at 197–98.

<sup>72</sup> *Id.* at 295.

<sup>73</sup> *Id.*

<sup>74</sup> Pub. L. Nos. 95-617 to 95-621, 92 Stat. 3117–3411 (codified as amended in scattered sections of 5, 12, 15, 16, 19, 23, 26, 31, 33, 40, 42, and 49 U.S.C.); *see also* CRC HANDBOOK OF ENERGY EFFICIENCY 671 (Frank Kreith & Ronald E. West eds., 1997).

<sup>75</sup> Pub. L. No. 95-618, 92 Stat. 3174 (codified as amended in scattered sections of 26 U.S.C.).

<sup>76</sup> Pub. L. No. 95-617, 92 Stat. 3117 (codified as amended at 16 U.S.C. §§ 2601–2645).

<sup>77</sup> PAUL GIPE, WIND ENERGY COMES OF AGE 30–31 (1995).

<sup>78</sup> CONG. RESEARCH SERV., LIBRARY OF CONG., ENERGY TAX POLICY, at CRS-4 (2004), available at [http://assets.opencrs.com/rpts/IB10054\\_20040220.pdf](http://assets.opencrs.com/rpts/IB10054_20040220.pdf).

<sup>79</sup> *Id.*

a credit of ten percent of the amount of new investment against their tax liability.<sup>80</sup> While any business was eligible to claim the ITC, the ETA made investment in certain categories of renewable and nontraditional energy producing facilities, including wind, eligible for an additional ten percent business ITC.<sup>81</sup>

A credit on an investment effectively lowers the price of purchasing an asset and increases the rate of return to the investor when that asset begins to produce income.<sup>82</sup> For instance, assuming a thirty-four percent corporate tax rate, a ten percent credit would increase the rate of return over ten years by twelve percent.<sup>83</sup> This favorable tax treatment is roughly equivalent to lowering that business's tax rate—as to the income created by that item—by fifteen percent.<sup>84</sup> The ETA provided renewable energy companies with an even more attractive deal by offering a combined twenty percent tax credit for new investments in renewable energy technology, which considerably reduced start-up costs.

The other important piece of legislation for renewable energy companies that was passed as part of the NEA was PURPA, which guaranteed independent producers a market and a “fair” price for the power they produced. Before PURPA, electric utilities had a monopoly on the production and transmission of electricity in the United States.<sup>85</sup> Congress understood that encouraging businesses to invest in renewable energy producing facilities would not be effective if utilities proved unwilling to allow these new energy producers to hook up to the grid or refused to purchase the power at a fair price.<sup>86</sup> Therefore, PURPA required utilities to purchase all of the power generated by independently owned renewable energy plants and required them to pay a price equal to the utility's avoided cost—the cost the utility would have had to expend to meet the same energy need.<sup>87</sup>

The Federal Energy Regulatory Commission (FERC) is the federal agency that regulates interstate transmission of electricity in the

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<sup>80</sup> JOSEPH A. PECHMAN, *FEDERAL TAX POLICY* 160 (5th ed. 1987).

<sup>81</sup> CONG. RESEARCH SERV., *supra* note 78, at CRS-4.

<sup>82</sup> PECHMAN, *supra* note 80, at 161.

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

<sup>84</sup> *Id.*

<sup>85</sup> RIGHTER, *supra* note 70, at 199.

<sup>86</sup> *Id.*

<sup>87</sup> GIPE, *supra* note 77, at 31.

United States.<sup>88</sup> When PURPA became law, utilities sought FERC's guidance on what the law required of them.<sup>89</sup> FERC confirmed that PURPA required utilities to purchase all of the power independent producers generated.<sup>90</sup> However, FERC interpreted avoided cost as strictly reflecting the financial costs avoided by the utility.<sup>91</sup> The actual determination of avoided costs was left up to the states.<sup>92</sup> A major factor in determining avoided costs was the current and projected price for the fuels on which the utility typically relied to produce electricity.<sup>93</sup> It also included any construction or maintenance costs the utility would have to incur in order to produce the electricity itself.<sup>94</sup> This interpretation of "avoided cost" guaranteed that new wind energy would only be installed when fossil fuel prices were high enough that it would not be economically wise to build new coal- or natural-gas-fired power plants. Even worse, FERC's interpretation emphasized economics over the health and environmental benefits of wind energy generation.

## *2. Additional State-Level Tax Incentives in California During the 1980s*

In addition to the federal business and renewable ITCs, California offered up to an additional twenty-five percent state ITC for investment in new renewable energy facilities as well as a property tax exemption for property containing renewable energy generating facilities.<sup>95</sup> Altogether, the mix of federal and state tax incentives totaled a tax write-off of nearly fifty percent of the installation costs for new wind projects.<sup>96</sup>

In addition to these generous tax incentives, California took an aggressive approach in interpreting the cost-avoided rate per kilowatt-hour.<sup>97</sup> The rate established by the California Energy Commission

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<sup>88</sup> Federal Energy Regulatory Commission, What FERC Does, <http://www.ferc.gov/about/ferc-does.asp> (last visited May 5, 2009).

<sup>89</sup> See FERC Regulations Under Sections 201 and 210 of the Public Utilities Regulatory Policies Act of 1978, 18 C.F.R. §§ 292.101(b)(6), 292.302(b)-(e) (2008).

<sup>90</sup> *Id.* § 202.303.

<sup>91</sup> *Id.* § 202.304(b).

<sup>92</sup> *Id.* § 202.304(b)(3).

<sup>93</sup> *Id.* § 202.304(e).

<sup>94</sup> *Id.* § 202.304(b).

<sup>95</sup> RIGHTER, *supra* note 70, at 197.

<sup>96</sup> GIPE, *supra* note 77, at 31.

<sup>97</sup> RIGHTER, *supra* note 70, at 204.



(CEC) was three to seven times higher than that of most other states.<sup>98</sup> As a result of California's favorable avoided cost and state-level tax incentives, renewable energy producers in California were guaranteed higher returns on energy they produced and were eligible for larger tax credits for the initial investment in the facilities than in any other state.

### *3. The California Wind Boom*

Despite all of the incentives available in 1978, there was little effect on investments in new renewable energy production in California until after FERC and CEC had weighed in on avoided costs.<sup>99</sup> Without a guaranteed market and price, the investment in the young technology was too risky.<sup>100</sup> After FERC left avoided cost up to the states and CEC provided its favorable ruling, California was ripe for expansive investment in wind energy.

In the early 1980s, with ETA and PURPA in place, California was the state with the most generous tax incentives, the most generous interpretation of avoided costs, and the most aggressive regulatory agency.<sup>101</sup> In addition, CEC had already gathered much of the necessary data to aid investors in siting wind farms. The agency produced wind energy reports, which measured wind capacity in different areas of California, and provided them to potential investors.<sup>102</sup> These studies showed that California had great capacity for wind energy, and that if fully utilized, the state could produce twenty-five percent of the entire nation's energy through wind-generated electricity.<sup>103</sup>

This mix of favorable tax treatment and a guaranteed market and prices fueled a boom in the wind energy industry in California during the early 1980s.<sup>104</sup> The first wind farm was installed in 1981; by the end of the wind boom, California had installed 1304 MW of new generating capacity, representing ninety percent of installed wind

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<sup>98</sup> *Id.*

<sup>99</sup> See GIPE, *supra* note 77, at 32, 34–35.

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

<sup>101</sup> *Id.* at 30–31.

<sup>102</sup> RIGHTER, *supra* note 70, at 205.

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

<sup>104</sup> GIPE, *supra* note 77, at 34–35.

energy capacity worldwide.<sup>105</sup> However, to put it in perspective, wind power still only represented a tiny fraction of one percent of the country's electricity supply<sup>106</sup> and only about two percent of California's electricity supply in 1987.<sup>107</sup> Even though it was a small achievement in terms of energy produced, the tax incentives were successful in creating a new industry almost overnight.<sup>108</sup>

#### 4. *Shortcomings of the Wind Boom*

There were many problems with the wind boom and the policies that initiated it. First, large-scale wind technology was relatively new and untested. There were many different experimental wind machines that were sited during this time, some of which turned out to be inefficient or completely unworkable.<sup>109</sup> The technological difficulties were further exacerbated because the tax incentives drew investors that were more knowledgeable about brokering deals than siting wind machines.<sup>110</sup> In fact, the industry's growing pains might have been less pronounced if the tax incentives had been less generous or tied to results and there had been more oversight and technical assistance from the CEC. Since the tax incentives were so favorable in California in the 1980s, many projects were built primarily for the tax credits and without concern for how successful the project would be.<sup>111</sup>

Another problem that helped to cut short the wind boom was the fact that PURPA's avoided costs were tied to traditional fuel costs, and there was a precipitous drop in the cost of traditional energy sources in the mid-to-late 1980s.<sup>112</sup> The favorable rates that CEC required of utilities while the first renewable energy producers were ramping up were based on a bleak outlook for traditional energy resources, which allowed independent energy producers to receive a

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<sup>105</sup> CAL. ENERGY COMM'N, RESULTS FROM THE WIND PROJECT PERFORMANCE REPORTING SYSTEM 1, 7 (1987), available at [http://wprs.ucdavis.edu/wprs\\_reports/WPRS\\_1987.pdf](http://wprs.ucdavis.edu/wprs_reports/WPRS_1987.pdf).

<sup>106</sup> ENERGY INFO. ADMIN., *supra* note 69, at 226.

<sup>107</sup> I.Y. BORG & C.K. BRIGGS, U.S. DEP'T OF ENERGY, CALIFORNIA ENERGY FLOW IN 1987, at 16 (1989), available at <https://eed.llnl.gov/flow/pdf/UCID-18991-87.pdf>.

<sup>108</sup> GIPE, *supra* note 77, at 31.

<sup>109</sup> RIGHTER, *supra* note 70, at 227–28.

<sup>110</sup> *Id.* at 225.

<sup>111</sup> *Id.*

<sup>112</sup> *Id.* at 221–22.

high contract price for the renewable energy they produced.<sup>113</sup> When prices for traditional energy dropped steadily in the mid-to-late 1980s, the new avoided cost calculations were much lower and many independent energy producers found that their businesses were no longer profitable.<sup>114</sup>

#### *5. The Free Market Approach 1986 to 1992*

The mid-1980s were a political and economic perfect storm that froze investment in new wind capacity. President Ronald Reagan deplored government intervention into the energy markets and predicted that if energy prices remained high, the private sector would invest in renewable energy technology on its own.<sup>115</sup> This faith in the free market and the public outcry over abusive tax shelters, led Congress to allow the general business ITC and renewable energy ITC to expire in 1985.<sup>116</sup> Similarly, the California legislature allowed the state-level ITC to expire in 1986.<sup>117</sup>

Unfortunately, Reagan's prediction turned out not to be true. Just as wind energy contracts were ending and being renegotiated, fossil fuel prices dropped precipitously, creating a poor economic climate for current and potential new wind energy producers.<sup>118</sup> With low coal and natural gas prices, it became much cheaper for utilities to produce electricity using traditional sources of energy; therefore, their avoided costs when independent producers provided them with renewable energy were much lower.<sup>119</sup> With the ETA and general business ITCs gone, low fossil fuel prices driving down the avoided costs under PURPA to a point of practically guaranteeing losses, and the spigot of new capital turned off by tax reform, the wind industry was at a standstill.

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<sup>113</sup> *Id.*

<sup>114</sup> *Id.*

<sup>115</sup> Milton R. Copulos, *Reagan's Tax Revolution: Fair Play for Energy*, HERITAGE FOUND., July 10, 1985, <http://www.heritage.org/Research/EnergyandEnvironment/IB115.cfm>.

<sup>116</sup> GIPE, *supra* note 77, at 35.

<sup>117</sup> *Id.*

<sup>118</sup> RIGHTER, *supra* note 70, at 221–22.

<sup>119</sup> *Id.*

6. *Analysis of First-Generation Renewable Energy Tax Incentives*

Policymakers in the late 1970s and early 1980s provided a mix of tax credits tied to investment, regulatory protection for renewable projects, price controls, and market guarantees. This policy mix encouraged a flurry of investment in wind energy in California, but its success was marred by inefficiencies that could have been curbed with more careful policy planning.

Because the combination of state and federal tax credits were so generous and were tied to investment but not results, they encouraged abusive tax planning rather than wise business planning. The abuse of tax credits might have been limited if the government had created standards and required oversight of wind projects in order to qualify for the credits. PURPA, in combination with high fossil fuel prices, created a temporary market for wind energy, but it failed to sustain that market when traditional energy costs were low. Government tax incentives dried up before the industry had evolved to a point where it was profitable without government support, cutting off the flow of investors.

Initially, investors were hesitant to start taking advantage of the tax credits, likely due to the uncertainty surrounding the commercial viability of wind technology and the open questions regarding the interpretation of PURPA. Once FERC ruled on the legal aspects, the planning and construction phases of commercial-scale wind projects created an additional delay to the electricity coming online. Although the tax credits expired in the mid-1980s, PURPA remains in effect today. However, it was amended in the Energy Policy Act of 2005 to the disfavor of independent producers of renewable energy.<sup>120</sup> Congress lifted the requirement to purchase energy produced by qualified facilities in what FERC determines to be a “competitive wholesale market” where the facility would have nondiscriminatory access to sell the electricity it produces.<sup>121</sup> This change was especially significant given the timing and market conditions. The amendment was passed amidst rising fossil fuel prices when the utilities’ avoided costs would be at their highest and therefore most beneficial to independent renewable energy producers.

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<sup>120</sup> Pub. L. No. 109-58, sec. 1253(a), § 824a-3(m)(1)(B), 119 Stat. 594, 967–68.

<sup>121</sup> See 16 U.S.C. § 824a-3(m)(1)(B)(ii) (2006).

### ***B. Renewable Energy Tax Policy 1992 to Present***

In the early 1980s, the renewable energy ITC proved that with high fossil fuel prices and a growing economy, tax incentives could encourage investment in wind energy. Between 1986 and 1992, a time of low fossil fuel prices (except for a brief increase during the Persian Gulf War), a slumping economy, and no tax incentives for renewable energy, the industry failed to produce much new wind energy capacity.<sup>122</sup> Since 1992, the federal government's primary source of support for renewable energy has come in the form of the Production Tax Credit (PTC).<sup>123</sup> When combined with advances in wind energy technology, the PTC has been successful at creating sustained growth in the industry during times of rising fossil fuel prices and economic stability. However, the PTC is ill equipped to sustain growth when fossil fuel is cheap and the economy is in recession.

#### *1. The Production Tax Credit*

The PTC, which was created by the Energy Policy Act of 1992,<sup>124</sup> offers taxpayers a credit of 1.5 cents per kilowatt-hour of electricity (adjusted for inflation)<sup>125</sup> (1) "produced by the taxpayer," (2) "from qualified energy resources," (3) "at a qualified facility," (4) "during the 10-year period beginning on the date the facility was originally placed in service," and (5) "sold by the taxpayer to an unrelated person during the taxable year."<sup>126</sup> Congress drafted the PTC with the tax credit abuses of the wind boom in mind and designed it to avoid the frivolous tax shelters that many wind farms became during that period. Congress changed the nature and incentive structure of the old renewable energy tax incentives by imposing several limitations on taxpayer's eligibility for the PTC and most importantly by requiring renewable energy facilities to produce electricity over an extended period of time in order to receive the full benefit of the credit. The subparts below describe the elements of the PTC and their importance with regard to wind energy projects.

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<sup>122</sup> ENERGY EFFICIENCY & RENEWABLE ENERGY, *supra* note 19, at 6.

<sup>123</sup> See I.R.C. § 45(a) (2006).

<sup>124</sup> Pub. L. No. 102-486, sec. 1914, §§ 38, 39, 45, 106 Stat. 2776, 3020-23.

<sup>125</sup> The inflation-adjusted credit for wind energy was 2.1 cents per kilowatt-hour at the end of 2008. *Inflation Adjustment Bumps PTC Up to 2.1 Cents/kWh*, WIND ENERGY WKLY. (Am. Wind Energy Ass'n, Wash., D.C.) June 20, 2008.

<sup>126</sup> I.R.C. § 45(a).

*a. Qualified Energy Sources*

Originally, the PTC only applied to wind and closed-loop biomass energy facilities,<sup>127</sup> but Congress has added new qualifying energy sources over the years. Today, the PTC is available for renewable energy facilities that produce electricity from wind, biomass, geothermal, solar, small irrigation power, municipal solid waste, qualified hydropower production, and marine and hydrokinetic renewable energy.<sup>128</sup>

*b. Production and Sale Requirements*

Instead of tying the tax credits to the cost of the initial investment in renewable energy, Congress made receipt of tax credits dependent upon the production and sale of electricity from renewable projects.<sup>129</sup> In order to determine the amount of tax credit the taxpayer is eligible to receive, he must multiply the inflation-adjusted PTC rate by the amount of energy, measured in kilowatt-hours, produced at the qualifying facility and sold to an unrelated party during the tax year.<sup>130</sup> This means that electricity produced but not sold—such as when a wind energy facility produces electricity that is not needed to fulfill demand and is therefore not sold to a utility to be distributed—does not count as energy produced for the purposes of calculating the PTC. Additionally, only sales to “unrelated persons” are eligible for the PTC.<sup>131</sup> Section 45(e)(4) defines “related persons” as “persons [that] would be treated as a single employer under the regulations prescribed under section 52(b),”<sup>132</sup> which include employees of business entities that are held under common control.<sup>133</sup>

The production and sale requirements encourage investment in successful wind projects because a wind farm that is inefficient or nonfunctional creates little or no tax benefit to the taxpayer. Additionally, the PTC spreads the tax credits out over a ten-year period.<sup>134</sup> This delay encourages investors to build lasting wind farms that will continue generating electricity for at least ten years, but it

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<sup>127</sup> Energy Policy Act of 1992, sec. 1914, § 45(c)(1)(A)–(B), 106 stat. at 3022.

<sup>128</sup> I.R.C. § 45(c).

<sup>129</sup> *Id.* § 45(a)(2)(A)(ii)–(a)(2)(B).

<sup>130</sup> *Id.* § 45(a).

<sup>131</sup> *Id.* § 45(a)(2)(B).

<sup>132</sup> *Id.* § 45(e)(4).

<sup>133</sup> I.R.C. § 52(b)(1) (2006).

<sup>134</sup> I.R.C. § 45(a)(2)(A)(ii).

also creates some risk for investors counting on deriving the full benefit of the PTC over the entire eligibility period. The PTC is contingent on continued operation of the facilities and the actual production levels of the facilities. Because wind energy output varies significantly, it is difficult to project anticipated production over ten years and therefore hard to calculate the anticipated value of the PTC.

*c. Sunset Clause and Placed-in-Service Limitation*

Congress built a sunset clause<sup>135</sup> into the PTC to keep it from becoming an entrenched, permanent subsidy. Originally, Congress limited the facilities that would qualify to those placed in service for the first time after December 31, 1993, but before July 1, 1999.<sup>136</sup> In order to ensure the continued availability of the PTC, Congress has extended the sunset date through legislation, typically for only one or two years at a time.<sup>137</sup> Between 1999 and 2004, Congress allowed the PTC to lapse three times by failing to extend the eligibility window before the scheduled sunset date.<sup>138</sup> Since 2004, the PTC has enjoyed a streak of continuous extensions,<sup>139</sup> including a one-year extension passed as a rider to the Bailout Bill.<sup>140</sup> Finally, thanks to a provision

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<sup>135</sup> *Id.* § 45(d)(1).

<sup>136</sup> Energy Policy Act of 1992, Pub. L. No. 102-486, sec. 1914, § 45(c)(3), 106 Stat. 2776, 3022.

<sup>137</sup> The PTC expired as scheduled on July 1, 1999. In December 1999, the PTC extension was tacked onto a bill, and the PTC was renewed until the end of 2001. Ticket to Work and Work Incentives Improvement Act of 1999, Pub. L. No. 106-170, sec. 507, § 45, 113 Stat. 1860, 1922. The PTC was again allowed to expire on January 1, 2002. In March 2002, the PTC was extended through December 31, 2003. Job Creation and Worker Assistance Act of 2002, Pub. L. No. 107-147, sec. 603, § 45, 116 Stat. 21, 59. The eligibility for the tax credit was explicitly extended to any new renewable energy production that commenced during the lapse in the PTC. *Id.* The PTC was allowed to expire again on January 1, 2004, and was not extended again until October 2004, which pushed the sunset date to December 31, 2005. Working Families Tax Relief Act of 2004, Pub. L. No. 108-311, sec. 313, § 45, 118 Stat. 1166, 1181. In August 2005, the PTC extension was included in the Energy Policy Act of 2005, which extended the credits for two years, expiring on December 31, 2007. Pub. L. No. 109-58, sec. 1301, § 45, 119 Stat. 594, 986-87. In December 2006, Congress extended the PTC for an additional year ending on December 31, 2008. Tax Relief and Health Care Act of 2006, Pub. L. No. 109-432, sec. 201, § 45, 120 Stat. 2922, 2944.

<sup>138</sup> AM. WIND ENERGY ASS'N, WIND ENERGY PRODUCTION TAX CREDIT (PTC): LONG-TERM, FULL VALUE EXTENSION 1 (2008), *available at* [http://www.awea.org/legislative/pdf/PTC\\_FactSheetOctober2008.pdf](http://www.awea.org/legislative/pdf/PTC_FactSheetOctober2008.pdf).

<sup>139</sup> *Id.*

<sup>140</sup> Energy Improvement and Extension Act of 2008, Pub. L. No. 110-343, secs. 101-103, §§ 45, 48, 122 Stat. 3765, 3808-11. During 2008, both the House and the Senate sponsored bills that included an extension for the PTC but those bills failed. Martin

in ARRTA, the eligibility window for the PTC currently extends through December 31, 2012.<sup>141</sup>

Congress also made the PTC available only to newly built facilities that began producing electricity during the period that the PTC was in place.<sup>142</sup> This “placed in service” limitation was intended to make the PTC an incentive to produce new electricity from newly constructed renewable energy facilities. The IRS has ruled that retrofits to wind facilities that make up eighty percent or more of the fair market value of the upgraded facility may fulfill the placed-in-service requirement and qualify for the PTC.<sup>143</sup> However, this limited interpretation of “placed in service” means that many old facilities that are lying dormant or using outdated technologies are ineligible for the PTC. These types of facilities could easily be retrofitted with new technology and begin producing energy to their maximum potential. In order to do so, a wind energy producer would need to secure financing, which would be much easier to obtain if he was able to offer the benefit of the PTC in return.

Finally, the placed-in-service limitation, in combination with the PTC’s sunset clause, creates risk and uncertainty for investors that are considering starting a project near the sunset date. If they were unable to complete the project before the sunset date and the PTC was allowed to lapse, they would be ineligible for the tax credit. As discussed below, this was a major problem after 2000.

#### *d. Qualified Facilities*

Section 45 does not define the term “qualified facility” beyond stating that it must be a facility that produces electricity from a qualified energy source, that is owned by the taxpayer, and that is originally placed in service during the period that the PTC is

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LaMonica, *Bailout Plan Bails Out Clean-Energy Sector*, CNET NEWS, Oct. 3, 2008, [http://news.cnet.com/8301-11128\\_3-10057936-54.html?tag=mncol;title](http://news.cnet.com/8301-11128_3-10057936-54.html?tag=mncol;title). Finally, a one-year extension for the wind energy PTC and notably an eight-year extension for the solar energy PTC was slipped into the Emergency Economic Stabilization Act of 2008—commonly known as “the Bailout”—and passed on October 3, 2008. Energy Improvement and Extension Act of 2008, secs. 101(a)(1), 103(a)(1), §§ 45(d), 48(a), 122 Stat. at 3808, 3811.

<sup>141</sup> American Recovery and Reinvestment Tax Act of 2009, Pub. L. No. 111-5, sec. 1101(a), § 45(d)(1), 123 Stat. 115, 319.

<sup>142</sup> I.R.C. § 45(a)(2)(A)(ii) (2006).

<sup>143</sup> Rev. Rul. 94-31, 1994-1 C.B. 16.



available.<sup>144</sup> The IRS issued a revenue ruling in 1994 stating that for wind energy “[e]ach wind turbine together with its tower and supporting pad . . . is a separate qualified facility.”<sup>145</sup> Since each wind machine is a separate qualified facility, the PTC is separately calculated for each.

*e. Eligible Taxpayers*

Only a taxpayer that produces electricity is eligible to receive the PTC.<sup>146</sup> In order to be considered a producer under section 45, a taxpayer must have an ownership interest in the qualifying facility.<sup>147</sup> This poses a problem for wind energy developers because it can take several years before a wind farm is profitable. Unless the developer has other businesses producing sufficient income to use the PTC, it provides little or no benefit to the developer during the first few years of the new wind project. This financial reality has led to complex partnership agreements that allow the developer to monetize the PTC or effectively sell the tax benefit to an investor.<sup>148</sup> By joining the developer in a partnership that owns the wind project, the investor gains an ownership interest in the qualifying facilities and earns the right to be eligible to receive the benefits of the PTC. Section 45 directs a partnership to allocate the total amount of energy production, and therefore the amount of the PTC, among the owners in proportion to their ownership interests in the gross sales of the partnership.<sup>149</sup> This means that the developer and investor can direct the bulk of the PTC to the investor by structuring the financing arrangement in the form of a partnership and allocating the investor a large percentage of the partnership. The IRS has blessed this type of arrangement for financing wind projects by creating a safe harbor when such a partnership is created, but only if the partnership agreement follows very specific criteria.<sup>150</sup> One downside of this arrangement is that the passive activity rules apply, which effectively limits potential

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<sup>144</sup> I.R.C. § 45(a)(2).

<sup>145</sup> Rev. Rul. 94-31, 1994-1 C.B. 16.

<sup>146</sup> I.R.C. § 45(a)(2)(A).

<sup>147</sup> *See id.* § 45(e)(3).

<sup>148</sup> Adam C. Kobos et al., *Stoel Rives LLP, Tax Issues, in THE LAW OF WIND 8-2 to 8-3* (4th ed. 2008), available at [http://www.agmrc.org/media/cms/WindTaxIssues\\_FFEC490A94773.pdf](http://www.agmrc.org/media/cms/WindTaxIssues_FFEC490A94773.pdf).

<sup>149</sup> I.R.C. § 45(e)(3).

<sup>150</sup> Rev. Proc. 2007-65, 2007-45 I.R.B. 967.

investors to the large corporate entities that are not subject to the passive income restrictions in section 469 of the Code.<sup>151</sup>

*f. Double-Dipping Limitation*

In another attempt to curb the tax shelter abuses during the wind boom, Congress required the PTC benefit to be reduced when a producer received certain types of state-level incentives, such as grants, tax-exempt bonds, and subsidized energy financing in addition to the PTC.<sup>152</sup> These limits prevented companies from double dipping in federal and state incentives as they did in the 1980s, but it also has taken away some important tools that allow state and local governments to compete for renewable energy businesses. However, the IRS specifically held that the PTC is not reduced based on the availability of state or local tax credits.<sup>153</sup>

*2. The PTC's Impact on the Wind Industry*

Since the PTC became effective in 1993, U.S. installed-wind capacity has increased from around 2000 MW<sup>154</sup> to over 25,000 MW.<sup>155</sup> This growth can largely be attributed to the incentive created by the PTC. But as discussed below, it would not have been as effective if not for the right mix of innovation and economic factors.

Creation of new wind energy capacity under the PTC got off to a slow start, producing very little new wind energy capacity before the PTC's first expiration in June 1999.<sup>156</sup> Between 1999 and 2004, the industry went through a series of starts and stops as the PTC was allowed to expire three times.<sup>157</sup> During that period, the addition of new capacity was likely half of what it could have been, settling at an overall capacity of around 6000 MW.<sup>158</sup> Between 2004 and 2007, total installed wind generating capacity rose to approximately 17,000

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<sup>151</sup> See I.R.C. § 469(a) (2006); Press Release, Stoel Rives LLP, Renewable Energy Law Alert: House Bill Proposes Increased Incentives for Renewable Energy Projects (Jan. 22, 2009), <http://www.stoel.com/showalert.aspx?Show=3486>.

<sup>152</sup> RYAN WISER ET AL., BERKELEY NAT'L LAB., ANALYZING THE INTERACTION BETWEEN STATE TAX INCENTIVES AND THE FEDERAL PRODUCTION TAX CREDIT FOR WIND POWER 4 (2002), available at <http://eetd.lbl.gov/ea/EMS/reports/51465.pdf>.

<sup>153</sup> Rev. Rul. 2006-9, 2006-1 C.B. 519.

<sup>154</sup> ENERGY EFFICIENCY & RENEWABLE ENERGY, *supra* note 19, at 5.

<sup>155</sup> Press Release, Am. Wind Energy Ass'n., *supra* note 34.

<sup>156</sup> ENERGY EFFICIENCY & RENEWABLE ENERGY, *supra* note 19, at 6.

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

<sup>158</sup> AM. WIND ENERGY ASS'N, *supra* note 3, at 1.

MW.<sup>159</sup> Capacity increased by nearly fifty percent in 2008, breaking the 25,000 MW mark and powering the equivalent of almost seven million homes.<sup>160</sup> While this achievement is significant and is the most installed capacity in any country,<sup>161</sup> wind energy still only makes up 1.5 percent of the U.S. electricity supply.<sup>162</sup>

The PTC's effectiveness is best analyzed by comparing the amount of new capacity brought online during two periods: the years where the tax credit was continuously in effect and the years when the PTC was allowed to expire. However, the picture would be incomplete without looking at the other internal and external factors that contributed to those successes and failures. In general, during the years that the PTC was available, more new wind energy capacity was added to the U.S. electrical grid than during the years it was not.<sup>163</sup> This difference is clear from the sharp declines in new capacity that occurred in the years following expiration of the PTC: 2000 (ninety-three percent drop from 1999), 2002 (seventy-three percent drop from 2001), and 2004 (seventy-seven percent drop from 2003).<sup>164</sup> In comparison, during times when the PTC was continuously available, there was continuous growth in the annual total installed capacity.<sup>165</sup>

While it is clear that having the PTC is better than not having the PTC in terms of encouraging investment in new wind capacity, the analysis is a little more complicated when comparing the two periods of unbroken PTC availability. From 1992 through 1999, very little new capacity was added; however, from 2004 through 2008, record amounts of new capacity were installed every year.<sup>166</sup> The contrast is stark and determining the differences that led to slight growth in one period and record growth in the other is at the heart of determining what policy changes would better encourage the latter.

With respect to wind energy, the only major difference between the present day PTC and the PTC of the 1990s is its duration. In the

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<sup>159</sup> Press Release, Am. Wind Energy Ass'n, Installed U.S. Wind Power Capacity Surged 45% in 2007 (Jan. 17, 2008), available at [http://www.awea.org/newsroom/releases/AWEA\\_Market\\_Release\\_Q4\\_011708.html](http://www.awea.org/newsroom/releases/AWEA_Market_Release_Q4_011708.html).

<sup>160</sup> Press Release, Am. Wind Energy Ass'n., *supra* note 34.

<sup>161</sup> *Id.*

<sup>162</sup> AM. WIND ENERGY ASS'N, *supra* note 3, at 1.

<sup>163</sup> AM. WIND ENERGY ASS'N, *supra* note 138, at 1.

<sup>164</sup> *Id.*

<sup>165</sup> *Id.*

<sup>166</sup> AM. WIND ENERGY ASS'N, *supra* note 6, at 8.

1990s, the PTC was available for six years without the need of an extension by Congress. After 2004, the PTC was extended for short one- to two-year periods. Taken with the fact that most of the growth in the 1990s took place right before the first expiration of the PTC, it would seem that the threat of expiration could have prompted a sudden flurry of economic activity in the 1990s. Similarly, the successes after 2004 could be attributed to the fact that the industry was constantly working under the threat that the PTC could expire. However, these conclusions are misleading and ignore the bigger economic picture.

The duration of the credit was not the only factor, let alone the most important factor, that effected the results in these two time periods. In fact, rather than spurring on the industry with short extensions, it is likely that the short extensions have served as a disincentive for starting new projects. When a sunset date is near, a company would be better off waiting until an extension is passed before sinking money into a new project.

Another factor that likely contributed to the PTC's slow start was that developers needed to gauge the usefulness of the credits, put together financing, select sites, and build projects. Under ETA and PURPA in the 1970s and 1980s, any major installation of new capacity was delayed for approximately four years; the PTC took approximately five years to produce a significant amount of new capacity. A delay in response to new legislation seems typical in the wind industry and could explain why there was more growth in the period between 2004 and 2008 than in the 1990s.

There was also a host of economic factors that were more favorable to wind energy after 2004. First, wind machine technology had vastly improved. Compared to the machines that were being installed in the 1980s, the machines in 1998 had an average capacity that was seven to ten times higher, which made wind energy prices nearly eighty percent lower than in the 1980s.<sup>167</sup> Technology continued to improve over the next decade. The average wind machine's capacity rose from 0.5 MW in the mid-1990s<sup>168</sup> to 1.6 MW in 2006,<sup>169</sup> with the largest machines in production having a capacity of around 7.0

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<sup>167</sup> ENERGY EFFICIENCY & RENEWABLE ENERGY, *supra* note 19, at 6.

<sup>168</sup> GIPE, *supra* note 77, at 155.

<sup>169</sup> HAND ET AL., *supra* note 21, at 2; *see also* ENERGY EFFICIENCY & RENEWABLE ENERGY, *supra* note 19, at 28.

MW.<sup>170</sup> These technological improvements helped to make wind much more competitive with traditional power plants and therefore a smarter investment.

Another factor that created a better atmosphere for investing in wind energy between 2004 and 2008 was that fossil fuel prices were higher during that period, especially when compared to prices during the 1990s.<sup>171</sup> Consequently, despite rapid economic growth in the 1990s, few investors took advantage of the PTC.<sup>172</sup> It was not until energy prices began rising again in 1999 and 2000—including a spike in natural gas prices and a doubling of oil prices—that there was a corresponding increase in new wind capacity.<sup>173</sup> After a major spike in the wake of September 11, 2001, energy prices continued to rise, reaching a record high peak during the third quarter of 2008.<sup>174</sup> In 2004, traditional energy prices were high enough and wind energy prices were low enough that wind was suddenly competitive.<sup>175</sup> In July of 2008, oil prices peaked at their highest level in history, \$147 per barrel.<sup>176</sup> At the same time the country was experiencing record prices for traditional energy, the wind industry was churning out record amounts of new capacity; between 2007 and 2009, the nation's cumulative wind capacity doubled.

While the wisdom of short extensions of the PTC is doubtful, there is no denying that the PTC is capable of spurring economic growth in the wind industry when it is either able to make up the difference between traditional energy prices and wind energy prices—as it did between 2001 and 2004—or when traditional energy prices are roughly even or higher than wind energy prices—as they were between 2004 and 2008.

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<sup>170</sup> Posting of Justin Thomas to MetaEfficient, <http://www.metaefficient.com/news/new-record-worlds-largest-wind-turbine-7-megawatts.html> (Feb. 3, 2009).

<sup>171</sup> See ENERGY INFO. ADMIN., *supra* note 69, at 196, 216, 256.

<sup>172</sup> ENERGY EFFICIENCY & RENEWABLE ENERGY, *supra* note 19, at 6.

<sup>173</sup> Paul Gipe, *The Great Wind Rush of 99*, NEW ENERGY, Feb. 1999, available at <http://www.ilr.tu-berlin.de/WKA/windnet/99rush.html>.

<sup>174</sup> Jad Mouawad, *Crude Oil Falls Below \$50 a Barrel*, N.Y. TIMES, Nov. 21, 2008, at B1.

<sup>175</sup> *Rising Oil Prices Boost Renewable Energy*, ASSOCIATED PRESS, Oct. 21, 2004, available at <http://www.msnbc.msn.com/id/6271966/>.

<sup>176</sup> Mouawad, *supra* note 174.

### 3. *The American Recovery and Reinvestment Tax Act of 2009*

The economic conditions that encouraged the recent boom in wind energy capacity have evaporated with the onset of the recession. As mentioned above, lending in general is frozen. In addition, the main driver for investment in the wind industry, the PTC, is no longer desirable to lenders and investors who do not need tax credits to offset their income now that they have losses. To make matters worse, the IRS issued a Notice on September 30, 2008, that exempted financial institutions from the built-in loss limitations in I.R.C. § 382.<sup>177</sup> This change allowed a bank that purchased another bank to offset future income with any losses from loans or bad debt obtained in the merger.<sup>178</sup> Under the Notice, banks not only had their own losses to carry forward to future profitable years, but they could also easily acquire the losses of other banks for the same purpose, further reducing their appetite for purchasing tax credits like the PTC.

Finally, the demand for fossil fuel has dropped and with it the prices to purchase coal and natural gas to produce electricity. Like the rest of the country, wind energy is in trouble. ARRTA specifically addresses some of the challenges facing the wind industry, and its provisions will help the industry to weather the worst of the recession. However, permanent energy legislation is needed to secure long-term profitability in the wind energy industry.

#### *a. Production Tax Credit Extension and Alternatives*

There are three important sections in ARRTA that significantly recalibrate the effectiveness of federal support for wind energy. First, section 1101 extends the PTC for wind energy production an additional three years through the end of 2012.<sup>179</sup> Second, section 1102 allows a taxpayer to opt to take a thirty percent ITC in lieu of the PTC.<sup>180</sup> Third, section 1603 allows a qualifying taxpayer to apply to the Secretary of the Treasury for a grant in the amount of the ITC

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<sup>177</sup> I.R.S. Notice 2008-83, 2008-42 I.R.B. 905.

<sup>178</sup> Stephen L. Feldman, *Notice 2008-83: The IRS Offers Reassurance to Troubled Banks*, MORRISON & FOERSTER, Oct. 2008, <http://www.mofo.com/news/updates/files/14544.html>.

<sup>179</sup> American Recovery and Reinvestment Tax Act of 2009, Pub. L. No. 111-5, sec. 1101(a)(1), § 45(d)(1), 123 Stat. 115, 319.

<sup>180</sup> *Id.* sec. 1102(a), § 48(a)(5), 123 Stat. at 319–20.

that the taxpayer would otherwise be able to take under section 1102.<sup>181</sup>

In order to qualify for the thirty percent investment credit for “qualified property” under section 1102 of ARRTA, the taxpayer must (1) “place[] in service”; (2) during tax years 2009, 2010, 2011, or 2012; (3) a “qualified investment credit facility,” which is defined as a wind facility that qualifies for the PTC.<sup>182</sup> If a taxpayer qualifies and elects to take the ITC, the taxpayer relinquishes his right to claim the PTC for the same property.<sup>183</sup> Finally, “qualified property” is defined as property, “with respect to which depreciation (or amortization in lieu of depreciation) is allowable,”<sup>184</sup> that is either (1) “tangible personal property” or (2) “other tangible property.”<sup>185</sup> “Other tangible property” does not include “a building or its structural components” and must be “an integral part of the qualified investment credit facility.”<sup>186</sup>

By definition, commercial wind farms that would otherwise be eligible for the PTC qualify for the ITC in section 1102.<sup>187</sup> The turbines, blades, towers, and other equipment are depreciable property,<sup>188</sup> integral to the production of wind energy, and make up most of the expense of a wind project.<sup>189</sup> Therefore, the developer of a wind project will be able to elect the ITC and take a tax credit up front for much of the cost of the wind project. It may also be possible that the developer will be able to count the cost of construction and installation of the wind facilities in calculating the basis of the qualifying property for the purposes of the ITC.<sup>190</sup>

If a wind project qualifies for the PTC and therefore the ITC in section 1102, it will also qualify for the grants provided under section

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<sup>181</sup> *Id.* sec. 1603(a)–(b), § 48, 123 Stat. at 364.

<sup>182</sup> *Id.* sec. 1102(a), § 48(a)(5)(C)(i), 123 Stat. at 320.

<sup>183</sup> *Id.* sec. 1102(a), § 48(a)(5)(B), 123 Stat. at 320.

<sup>184</sup> *Id.* sec. 1102(a), § 48(a)(5)(D)(ii), 123 Stat. at 320.

<sup>185</sup> *Id.* sec. 1102(a), § 48(a)(5)(D)(i)(I)–(II), 123 Stat. at 319–20.

<sup>186</sup> *Id.* sec. 1102(a), § 48(a)(5)(D)(i)(II), 123 Stat. at 320.

<sup>187</sup> *Id.* sec. 1102(a), § 48(a)(5)(C)(i), 123 Stat. at 320.

<sup>188</sup> I.R.C. §§ 48(3)(A)(i), 168(e)(3)(B)(vi)(I) (2006).

<sup>189</sup> See L. FINGERSH ET AL., U.S. DEP’T OF ENERGY, WIND TURBINE DESIGN COST AND SCALING MODEL 35 (2006), available at <http://www.nrel.gov/wind/pdfs/40566.pdf>; RYAN WISER & MARK BOLINGER, U.S. DEP’T OF ENERGY, ANNUAL REPORT ON U.S. WIND POWER INSTALLATION, COST, AND PERFORMANCE TRENDS: 2006, at 15–16 (2007), available at <http://www.nrel.gov/docs/fy07osti/41435.pdf>.

<sup>190</sup> See Treas. Reg. § 1.46-3(c) (2008); I.R.S. Notice 2008-68, 2008-34 I.R.B. 418.

1603. These grants are available to a taxpayer “who places in service specified energy property” either during 2009 or 2010, or “if the construction of such property began during 2009 or 2010, after 2010 but before 2013.”<sup>191</sup> The amount of the grant is “the applicable percentage of the basis of such property.”<sup>192</sup> For wind, the applicable percentage is thirty percent, and the basis will be the cost of purchasing the wind machine components and other property at the site reduced by any depreciation taken in previous tax years.<sup>193</sup> If a wind energy producer’s grant application is approved, the Secretary of Treasury will release the grant payment either within sixty days of applying for the grant or within sixty days of the energy property being placed in service, whichever is later.<sup>194</sup>

If the property “ceases to be specified energy property,” the Secretary of the Treasury can determine whether there is cause to recapture a portion of the grant.<sup>195</sup> By electing to receive a grant, the taxpayer may not claim a credit for the same wind energy property under the PTC or ITC.<sup>196</sup> Finally, a grant made under section 1603 will not be treated as gross income; it will instead reduce the basis of the qualifying property.<sup>197</sup> However, the reduction in basis will only be half of the credit because the grants will be treated like energy credits under section 50(c)(3) of the Code.<sup>198</sup>

*b. Repeal of I.R.S. Notice 2008-83*

In the early stages of the financial crisis on September 30, 2008, the I.R.S. issued Notice 2008-83.<sup>199</sup> The Notice was aimed at spurring bank consolidation at a time when many banks were faltering.<sup>200</sup> In order to make consolidation more attractive, the Notice excluded losses on loans and bad debts acquired in a bank

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<sup>191</sup> American Recovery and Reinvestment Tax Act of 2009, sec. 1603(a)(1)–(2), § 48, 123 Stat. at 364.

<sup>192</sup> *Id.* sec. 1603(b)(1), § 48, 123 Stat. at 364.

<sup>193</sup> *See id.* sec. 1603(b)(2)(A), § 48, 123 Stat. at 364.

<sup>194</sup> *Id.* sec. 1603(c)(1)–(2), § 48, 123 Stat. at 364.

<sup>195</sup> *Id.* sec. 1603(f), § 48, 123 Stat. at 365.

<sup>196</sup> *Id.* sec. 1104, § 48(d)(1), 123 Stat. at 321.

<sup>197</sup> *Id.* sec. 1104, § 48(d)(3)(A)–(B), 123 Stat. at 321; *see also* I.R.C. § 50(c)(3) (2006).

<sup>198</sup> I.R.C. § 50(c)(3).

<sup>199</sup> I.R.S. Notice 2008-83, 2008-42 I.R.B. 905.

<sup>200</sup> *See* Posting of James Hamilton to Jim Hamilton’s World of Securities Regulation, <http://jimhamiltonblog.blogspot.com/2009/01/house-stimulus-bill-would-repeal-irs.html> (Jan. 15, 2009, 13:59 EST).



merger from the definition of “built-in losses” in section 382 of the Code.<sup>201</sup> By doing so, the I.R.S. effectively ruled that by purchasing one of its competitors, a bank could lock in the target bank’s losses on bad loans and carry those losses forward to offset future income.<sup>202</sup>

Many congressional leaders were angered by the Notice, and it is no surprise that they repealed it in ARRTA.<sup>203</sup> Unfortunately, ARRTA does not make the repeal retroactive, so the banks that consolidated between September 30, 2008, and January 16, 2009, will be able to rely on the Notice and carry forward the acquired banks’ built-in losses.<sup>204</sup> Several major bank mergers occurred during the last months of 2008,<sup>205</sup> and because the repeal was not made retroactive, these mergers may pose a problem for renewable energy producers who rely on bank interest in the PTC to attract financing.

*c. ARRTA’s Impact*

Under ARRTA, a renewable energy developer who builds a project that would normally qualify for the PTC between 2009 and 2013 is now able to select from a menu of options to fit his and his investor’s particular financial situation. If either party involved in the deal has a reliable income that they would like to offset over a period of several years, the PTC might still be the best option. However, as discussed above, monetizing the PTC, such that it qualifies for the safe harbor in I.R.S. Bulletin 2007-45, requires a complex partnership arrangement with high transactional costs that eat into the benefit. If the developer or investor has an immediate appetite for tax credits, they can opt to take the thirty percent ITC and take their tax benefit in one lump sum. Finally, if neither the developer nor the investor has any use for the tax credits, the developer can ask the government to

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<sup>201</sup> See I.R.S. Notice 2008-83, 2008-42 I.R.B. 905; Hamilton, *supra* note 200.

<sup>202</sup> See Hamilton, *supra* note 200.

<sup>203</sup> See American Recovery and Reinvestment Tax Act of 2009, Pub. L. No. 111-5, sec. 1261(b), § 382, 123 Stat. 115, 343; Hamilton, *supra* note 200.

<sup>204</sup> American Recovery and Reinvestment Tax Act of 2009, sec. 1261(b)(1)(A), § 382, 123 Stat. at 343.

<sup>205</sup> See, e.g., Eric Dash, *PNC Gets National City in Latest Bank Acquisition*, N.Y. TIMES, Oct. 25, 2008, at A4; David Ellis, *Wells, Citi Square Off in Wachovia Bid*, CNN MONEY, Oct. 3, 2008, [http://money.cnn.com/2008/10/03/news/companies/wells\\_fargo\\_wachovia/index.htm](http://money.cnn.com/2008/10/03/news/companies/wells_fargo_wachovia/index.htm).

reimburse him for thirty percent of the cost of the wind machines and other equipment that are part of the wind project.<sup>206</sup>

This new menu of options will help wind energy developers to attract investors because they allow developers and investors to construct a deal that will serve the specific needs of the parties involved. Taken with the unique situation that each individual wind machine in a wind farm is considered a separate qualifying facility under section 45 of the Code, developers and investors constructing multi-facility wind projects should be able to mix and match these new incentives to create even more interesting options. For instance, in a project with one hundred wind machines, the developer and investor could elect a grant for half of the machines and split the other half between the PTC and the ITC. By splitting the project up in such a way, the developer and investor could immediately recoup about fifteen percent of the installation cost of the entire project through government grants, take an immediate tax credit for approximately seven and a half percent of the project, and guarantee a steady stream of tax credits over the next ten years for the energy produced by a quarter of the project's facilities.

As generous as ARRTA's provisions are, because of the short time frame in which they are available, they are not likely to initiate the installation of much new capacity beyond what was already in the works before the recession hit. For instance, to take advantage of the grants, a developer would have to break ground before 2011. If they had not already started working on a project, they would be hard-pressed to get through selecting the site, designing the project, lining up investors, and acquiring the necessary permits in time to break ground before the deadline. In all likelihood, the newly sweetened pot of incentives will serve to jump start languishing projects, help unfinanced projects find investors, and convince developers to dust off old projects that had been shelved. If ARRTA's provisions can accomplish that, it will have succeeded at preventing a collapse of the industry.

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<sup>206</sup> See American Recovery and Reinvestment Tax Act of 2009, secs. 1102(a), 1603, § 48(a)(5)(A)(ii), 123 Stat. at 319–20, 364.

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**III**  
**SUGGESTED POLICIES TO ENCOURAGE A STRONGER WIND**  
**ENERGY INDUSTRY**

The federal government must send a strong signal to the energy industry that it is willing to make a long-term commitment to developing renewable energy. Up to this point, Congress has approved a fair-weather energy tax policy that supports the industry during times of high fossil fuel prices and abandons it as soon as conventional fuels have dropped in price. The uncertainty created by fluctuating energy prices and intermittent government support has stunted the industry's growth, slowed its ability to become competitive with traditional fuels, and prevented the big players in the energy industry from taking seriously the need to reform their business models to include more renewable energy.

To be sure, the provisions in ARRTA are a good first step, but ARRTA fails to offer any long-term, comprehensive solution to our energy dilemma. In order to put the industry on notice, Congress must pass a comprehensive renewable energy package that includes: (1) reform and renewal of the PTC for eight years and (2) market and financing solutions that protect the renewable energy industry from swings in traditional energy prices and provide access to capital for renewable energy projects, even during tight credit markets.

***A. Reform the PTC***

Although the PTC is not as beneficial during a recession, it has been a useful tool during better economic times and should not be abandoned. However, the PTC has three main drawbacks that can be addressed by reforming the statute: First, making the wind industry face the possibility of the PTC's expiration every year or two creates inefficiency and instability in its growth and fosters cycles of booms and busts.<sup>207</sup> Second, the PTC only applies to new facilities and does not encourage renovating and upgrading aging facilities. Third, it does not allow companies to combine all federal and state incentives and makes it difficult for states to compete with each other to attract renewable energy companies.

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<sup>207</sup> Union of Concerned Scientists, Production Tax Credit for Renewable Energy, [http://www.ucsusa.org/clean\\_energy/solutions/big\\_picture\\_solutions/production-tax-credit-for.html](http://www.ucsusa.org/clean_energy/solutions/big_picture_solutions/production-tax-credit-for.html) (last visited May 5, 2009).

*1. Extended Extensions and Expanded Definitions*

In order to qualify, a facility must have been placed in service during a specified period of time.<sup>208</sup> If a company misses that specified period and the PTC is not extended, then that company cannot benefit from the PTC even if the facility was nearly completed at the time of the expiration. Because of this risk, wind energy companies anticipate the sunset date of the PTC and only start projects that they are sure can be completed within the specified period.<sup>209</sup> Companies wait for an extension of the PTC if they are unsure whether they can finish before the sunset date, and they also shy away from ambitious, large-scale wind projects that would take several years to develop.<sup>210</sup> Short-term extensions create an incentive to start building early in the year, which creates a cyclical demand for the manufacturing and construction industries that build and install the wind turbines.<sup>211</sup>

To address the numerous issues raised by short-term extensions, Congress should increase the length of the extensions from one or two years to eight years. Also, Congress should borrow the timing criteria in section 1603 of ARRTA by expanding the definition of “qualified facility” in section 45 of the Code to include facilities that were put into production no longer than two years after the sunset date of the PTC so long as those facilities were under construction before it expired.

In the 2008 Bailout Bill, Congress approved an eight-year extension of the PTC for solar energy.<sup>212</sup> While the three-year extension for wind energy in ARRTA is a step in the right direction, an eight-year extension would allow the wind industry to begin projects at a time of the year selected for business reasons rather than tax planning reasons and give the industry time enough to develop larger wind projects.<sup>213</sup>

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<sup>208</sup> I.R.C. § 45(a)(2)(A)(ii) (2006).

<sup>209</sup> AM. WIND ENERGY ASS'N, *supra* note 138, at 1.

<sup>210</sup> *Id.*; see also The Sandbox, [http://www.edn.com/index.asp?layout=blog&blog\\_id=450000245&blog\\_post\\_id=520008252](http://www.edn.com/index.asp?layout=blog&blog_id=450000245&blog_post_id=520008252) (Apr. 9, 2007, 23:26 EST).

<sup>211</sup> AM. WIND ENERGY ASS'N, *supra* note 138, at 1.

<sup>212</sup> Energy Improvement and Extension Act of 2008, Pub. L. No. 110-343, sec. 103(a)(1), § 48(a)(3)(A)(ii), 122 Stat. 3765, 3811.

<sup>213</sup> *Wind Power and the Production Tax Credit: Hearing Before the S. Comm. on Finance*, 110th Cong. 11 (2007) (statement of Ryan H. Wiser, Scientist, Lawrence Berkeley National Laboratory).

However, a long-term extension would be preferable over making the PTC permanent. While a permanent PTC would be an improvement over the current short-term extensions, it could pose a problem when the wind industry no longer needs the PTC to make it competitive with traditional energy because it will become an entitlement held by an entrenched and powerful industry, much like the favorable tax treatment the oil industry receives for new oil exploration.

If Congress retains nonpermanent PTCs and expands the definition of “qualifying facility” to include facilities that are “substantially complete” by the sunset date, it would prevent the slowdowns created in anticipation of the PTCs renewal. “Substantially complete” would be defined as a facility that was under construction as of the sunset date and that was put into production within two years of the PTC’s expiration. Expanding the definition would reduce uncertainty about whether a project could be completed on time and would shrink the window of time near the sunset date when companies avoid starting construction.

## *2. PTC for Upgrades and Renovations*

Upgrading or renovating previously installed capacity that is either using obsolete technology or is nonoperational would be a cost effective and quick way of creating new MWs of wind energy.<sup>214</sup> Replacing nonoperational or obsolete windmills would be a very streamlined process because there would be none of the usual siting issues that exist for new facilities. Additionally, if a wind farm had operated at the location for any period of time, the developer and lender would be able to evaluate the performance at the site and make an educated decision regarding its potential for consistent production of wind energy.

Unfortunately, the PTC limits eligible facilities to those *originally* brought online during the eligibility period.<sup>215</sup> While it is helpful that the IRS allows a facility containing twenty percent or less used materials to qualify anew for the PTC,<sup>216</sup> it creates an incentive for developers that are looking to upgrade to scrap much of an existing wind machine in order to meet the twenty percent requirement. Upgrading wind energy producing facilities is an excellent means of

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<sup>214</sup> GIPE, *supra* note 77, at 474.

<sup>215</sup> I.R.C. § 45(a)(2)(A)(ii) (2006).

<sup>216</sup> Rev. Rul. 94-31, 1994-1 C.B. 16.

adding new MWs of electricity to the grid, and the government should encourage developers to do so while reusing as much of the existing facility as possible.

Congress could easily expand upon the IRS's ruling on the definition of "in service" and create an "upgrade PTC" to cover new wind energy brought online by improvements to existing infrastructure (for example, more efficient turbines and higher carrying capacity electrical grids). The upgrade PTC would be limited to the amount of new electricity produced as a result of the upgrade, thereby preventing wind energy companies from renewing their full PTC for installing frivolous upgrades. To determine the amount of production attributable to the upgrade, the taxpayer would subtract the average annual output during the pre-upgraded years of the wind machine from the annual output of the wind machine after the upgrade. This amount would be calculated annually, and the taxpayer would be eligible for the PTC for ten years beginning in the tax year when the upgraded or renovated wind machine was placed in service.

For sites where the developer replaces nonoperational wind machines, the PTC would be available again in full. However, the replacement PTC would require that the machines had been offline for several years so that the allure of renewing the PTC for a functioning wind farm would not compel a wind farm owner to shut down in order to qualify for the full replacement PTC.

### *3. Allow Federal and State Incentives to Work Together*

The federal government should encourage state level policies that provide incentives for building new wind capacity. If the PTC is reduced dollar-for-dollar based on state level support, then no additional incentive is provided to renewable energy companies, and the burden of promoting renewable energy is merely shifted from the federal to the state budget. This restriction in the PTC creates disincentives for state legislatures to provide certain types of support to renewable energy producers and ties legislators' hands from using tax policy to compete with other states to attract green economic development. The federal government should welcome state level support and amend the PTC to allow businesses to combine the PTC with tax incentives on the state and local levels.

### ***B. Creating a Market for Wind Energy***

Congress must pass legislation that curbs the market forces that make the wind industry's success dependent on high energy prices. Past legislation, like PURPA, has focused on developing alternative energy as a means of lowering short-term electricity costs. New legislation should take a more long-term view by recognizing that the price of electricity produced through high emission sources of energy does not fully reflect the actual cost to society and that, by avoiding this cost, wind energy provides a benefit to society not reflected in its price. Additionally, any new policy aimed at creating a market for wind energy should recognize that increased wind energy capacity helps dampen the price fluctuations created by fossil fuel demand. The goal of this legislation would be to create a market for wind energy, no matter what the cost of traditional energy, and make installing new wind capacity profitable during times when it would be financially cheaper to rely on traditional power plants.

The two most common solutions that have been discussed in policy circles in the United States are carbon taxes and cap-and-trade, the latter of which was a major part of President Obama's campaign platform.<sup>217</sup> In Europe, many countries have approached this problem using feed-in tariffs, which set the price buyers must pay for renewable energy, and then slowly reduce that price.<sup>218</sup> Another potential way to create a market for renewable energy is to put in place a national renewable portfolio standard (RPS) that requires electricity in the United States to be derived from a set percentage of renewable sources by a certain date (for example, twenty-five percent renewable energy by 2025). A full discussion of carbon taxes, cap-and-trade regimes, feed-in tariffs, and RPSs is outside the scope of this Note, but the merits of each of these policies are discussed and compared in numerous scholarly works.<sup>219</sup>

Minor tweaks to the PTC and a few billion dollars of government support will not be enough to effect a drastic change in U.S. energy production. In order to create a lasting market for and ensure the

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<sup>217</sup> Jeff Zeleny, *Obama Proposes Capping Greenhouse Gas Emissions and Making Polluters Pay*, N.Y. TIMES, Oct. 9, 2007, at A24.

<sup>218</sup> Bent Ole Gam Mortensen, *International Experiences of Wind Energy*, 2 ENVTL. ENERGY L. & POL'Y J. 179, 198–200 (2008).

<sup>219</sup> See, e.g., Roberta Mann, *Waiting to Exhale?: Global Warming and Tax Policy*, 51 Am. U. L. Rev. 1135 (2002) (discussing market-based solutions, including tradable permits and carbon taxes).

long-term viability of renewable energy, Congress must implement one of these major shifts in energy policy. This will be no easy task because during the recession there will be little political will to move forward on something so drastic for fear that these policies could hamper the economic recovery. Despite the likely political challenges, President Obama renewed his commitment to institute a cap-and-trade regime during his first address to a joint session of Congress, asking members of Congress to send him “legislation that places a market-based cap on carbon pollution.”<sup>220</sup> While Congress has not passed cap-and-trade legislation as of the time of this writing, the 2010 budget—approved in April 2009—included a revenue stream from cap-and-trade in anticipation of the passage of such legislation.<sup>221</sup> It is an excellent sign that President Obama and a majority of the Democrats in Congress support moving forward with such legislation. However, cap-and-trade will likely face a stronger challenge than did either the Bailout Bill or ARRTA from the Republican opposition and even some moderate Democrats.

#### IV CONCLUSION

While the economic crisis of 2008 and the ensuing recession have threatened to halt the historic rise of the U.S. wind energy industry, they have also created an unprecedented opportunity for the United States’ new Democratic leadership to pass sweeping legislation that drastically changes the country’s economic and energy future. In fashioning his vision for renewed American prosperity, President Barack Obama must make a strong commitment to realizing the promise of a new green economy and pass legislation that will allow the wind industry to be a part of the solution to the current recession rather than one of its symptoms. The patchwork of energy legislation found in the Bailout Bill and ARRTA will only temporarily stop the bleeding. Comprehensive energy reform is necessary to lay the groundwork for a strong, stable, and sustainable economy built on renewable energy.

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<sup>220</sup> President Barack Obama, Address to the Joint Session of Congress (Feb. 25, 2009), available at [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=lll\\_cong\\_documents&docid=f:hd001.lll](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=lll_cong_documents&docid=f:hd001.lll).

<sup>221</sup> Lori Montgomery, *Congress Approves Budget: \$3.5 Trillion Spending Plan Paves Way for Obama Goals*, WASH. POST, Apr. 3, 2009, at A01.