

**THE PTC AND WIND ENERGY:
RESTRUCTURING THE PRODUCTION TAX
CREDIT AS A MORE EFFECTIVE INCENTIVE**

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I. INTRODUCTION

As the United States economy tries to gather its composure after the worst financial crisis since the Great Depression,¹ one breath of fresh air appears on the horizon: the wind. "Despite a crippling recession and tight credit markets, the American wind power industry grew at a blistering pace in 2009, adding 39 percent more capacity."²

There is no doubt that this growth is largely attributable to the vast amount of spending provisions and tax incentives aimed towards renewable energies in the American Recovery and Reinvestment Act of 2009 ("ARRA").³ However, the ARRA did not achieve this alone. Since 1992, the Renewable Energy Production Tax Credit ("PTC") has encouraged investment in the U.S. wind-energy market, more than quadrupling domestic production since its inception.⁴

Before enactment of the ARRA, wind power was primarily encouraged by the PTC, the accelerated five-year depreciation of wind energy equipment, and the Renewable Energy Production Incentive, which provides "production incentive to publicly owned utilities and cooperatives that do not incur federal tax liability."⁵ Additionally, several states have renewable energy portfolio standards considered to be "the most powerful mandates of the various incentives."⁶

1. Three Top Economists Agree 2009 Worst Financial Crisis Since Great Depression; Risks Increase if Right Steps are Not Taken, REUTERS, Feb. 27, 2009, available at <http://www.reuters.com/article/idUS193520+27-Feb-2009+BW20090227>.

2. Jad Mouawad, *Wind Power Grows 39% for the Year*, N.Y. TIMES, Jan. 26, 2010, available at <http://www.nytimes.com/2010/01/26/business/energy-environment/26wind.html>.

3. American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115 (2009) [hereinafter ARRA]; Mouawad, *supra* note 2 (quoting Denise Bode, chief executive, American Wind Energy Association: "this is directly attributable to the lifeline that was provided by the stimulus package"); see also BOLINGER, ET AL., LAWRENCE BERKELEY NAT'L LAB., PTC, ITC, OR CASH GRANT, at 2 ("Of the \$787 billion package, more than \$40 billion in spending is appropriated for clean energy initiatives. New and modified tax incentives targeting clean energy are estimated to cost an additional \$20 billion.").

4. Mona Hymel, *The United States' Experience with Energy-Based Tax Incentives: The Evidence Supporting Tax Incentives for Renewable Energy*, 38 LOY. U. CHI. L.J. 43, 75 n.208 (2006) (citing Staff on Joint Comm. on Taxation, 109th Cong., Present Law and Background Relating to Tax Credits for Electricity Production from Renewable Sources, at 14 (Comm. Print 2005)).

5. Steven Ferry, *Tax Aspects of Independent Power Investments*, 1 L. OF INDEP. POWER, § 3:53 (2009).

6. *Id.*; see also Girard P. Miller, *Developers See Green and Neighbors See Red: A Survey of Incentives and Mandates for the Development of Alternative Energy and the Unfolding Challenges*, 3 TEX. J. OF OIL GAS & ENERGY L. 117, 123-28 (2008) (providing a

This note makes a case for the expansion of the PTC to a broader base of taxpayers, as well as encouraging a long-term extension of the credit, which currently set to expire in 2012.⁷ The financial realities of investing in wind energy have consequences in the Internal Revenue Code ("Code") that restrict the PTC's tax savings primarily to large corporate entities. Additionally, the sporadic nature of the PTC's availability has been holding the industry back.

A large amount of the ARRA is devoted to increasing domestic renewable energy production.⁸ However, instead of molding the PTC into a more effective incentive, the ARRA only extends the PTC in its current form and adds a patchwork of other incentives.⁹ These new incentives, like the PTC, are largely unavailable to taxpayers beyond large corporate investors.¹⁰

While explaining that provisions within the ARRA are steps in the right direction, this note analyzes the effects of these incentives and will explore possible avenues in which to increase their benefits and availability to more taxpayers.

This note does not necessarily endorse wind or any other renewable energy over another. It simply takes the desirability of increased production from renewable energies as the PTC's given objective,¹¹ and analyzes from a tax perspective how effective the PTC has been, and could be, at increasing production and building a more sustainable wind industry.¹²

Part I of this note begins with a brief overview of the U.S. wind industry, outlining some of the planning aspects of project development and looks at production potentials in the United States. Part II proceeds by establishing the ability of the PTC to encourage investment and then explains that in the PTC's current form, there are structural deficiencies and limitations

comprehensive list of all state mandates through 2008, including twenty-five states and the District of Columbia).

7. While the PTC is available for other types of renewable energies, see *infra* notes 37-38, this note will only focus on its application wind energy.

8. See *supra* note 3.

9. See *supra* note 3.

10. See *supra* note 3.

11. See U.S. DEPT OF ENERGY, ENERGY EFFICIENCY & RENEWABLE ENERGY, 20% WIND BY 2030 13-20 (2008) (briefly explaining some of the environmental benefits of wind energy), available at http://www.20percentwind.org/20percent_wind_energy_report_rev_Oct08.pdf [hereinafter Twenty Percent by 2030].

12. Also largely ignored in this note are factors other than the PTC necessary to build a sustainable market. For example, a large problem for the industry has been access to the electrical grid and transmission costs. *Id.* at 95-100.

preventing full utilization of the credit's ability to encourage investment.

Part III then discusses the recent effort of the ARRA to provide new renewable energy incentives. These provisions are analyzed regarding their effectiveness in the view of a long-term clean energy policy. Finally, the note explores potential changes to the PTC and applicable tax laws that would help to expand the credit's effectiveness and availability.

II. OVERVIEW OF THE U.S. WIND INDUSTRY

A. *U.S. Wind Capabilities and Market Instability*

Just six percent of U.S. land area could harvest enough wind energy to "supply more than one and a half times the current electricity consumption of the United States."¹³ Despite the country's potential, wind energy accounted for less than two percent of total domestic electricity in 2009.¹⁴ This is due to a number of financial, legal, and practical obstacles currently preventing the U.S. from realizing its full wind energy potential.¹⁵

One such obstacle is that project sites are usually found in rural locations, far from metropolitan areas most in need for the electricity.¹⁶ This creates the additional cost of transmitting the power.¹⁷ When wind facilities are not within range of existing infrastructure, the cost of building additional transmission lines adds to the price of electricity, and often makes a project prohibitively expensive.¹⁸

The historically slow growth of wind is a result of the technology's previous inability to compete with the price of traditional sources.¹⁹ However, the cost of production is slowly

13. U.S. DEP'T OF ENERGY, WIND AND HYDROPOWER TECHNOLOGIES PROGRAM: WIND ENERGY RESOURCE POTENTIAL, http://www1.eere.energy.gov/windandhydro/wind_potential.html.

14. Mouawad, *supra* note 2.

15. *See id.*

16. U.S. DEP'T OF ENERGY, WIND AND HYDROPOWER TECHNOLOGIES PROGRAM: ADVANTAGES AND DISADVANTAGES OF WIND ENERGY (2005), *available at* http://www1.eere.energy.gov/windandhydro/wind_ad.html [hereinafter Advantages and Disadvantages of Wind Energy].

17. *Id.*

18. Twenty Percent by 2030, *supra* note 13, at 95.

19. Susan Perera, *Following Minnesota's Renewable Energy Example: Will Federal Legislation Fly High or Flap in the Wind?*, 9 MINN. J. L. SCI. & TECH. 949, 950-51 (2008).

approaching the cost of energy from traditional sources.²⁰ Additionally, technological advances in turbine and generator efficiency are expected.²¹

Despite these advances, volatility in the market persists, causing the viability of wind projects to vary.²² Consistent competitiveness with traditional fuel prices is needed to provide a stable market for renewable energy.²³ This appears to be the government's main premise for providing tax incentives to the industry.²⁴

B. *Project Economics and Planning*

Another hurdle for the wind market is that, compared to traditional electricity generators, wind power requires a much larger up-front investment.²⁵ Although wind generators have substantially lower maintenance costs, the high initial investment can make wind energy unattractive.²⁶ For this reason in particular, a tax incentive is necessary for the development of a wind-generated electricity market.²⁷

Developers in the wind industry must carefully plan their projects in order to utilize the available tax incentives. The high start-up costs for wind facilities often cause wind developers to rely on equity investors to supply the necessary capital.²⁸ In order to utilize tax credits, complex schemes of ownership have developed not necessarily out of project economics, but out of tax-conscious investment planning.²⁹

There are a number of other important factors which a developer must consider. Developers must secure the use of the

20. John Kaufman, *Federal Income Tax Incentives for Energy from Renewable Sources*, 20 J. OF NAT. RESOURCES & ENVTL. L. 163, 163 (2006); Twenty Percent by 2030, *supra* note 13, at 29.

21. *Id.* at 35-38.

22. Jeffrey S. Hinman, Comment, *The Green Economic Recovery: Wind Energy Tax Policy After Financial Crisis and the American Recovery and Reinvestment Tax Act of 2009*, 24 J. ENVTL. L. & LITIG. 35, 44 (2009).

23. Hymel, *supra* note 4, at 46.

24. *Id.* ("Without federal tax incentives, which make prices competitive with conventional fuels, no markets would exist for alternative energy sources . . .").

25. Advantages and Disadvantages of Wind Energy, *supra* note 16.

26. Hinman, *supra* note 22, at 43 (citing Int'l Energy Agency, World Energy Outlook 2004, at 195).

27. Hymel, *supra* note 4, at 78 ("To be most effective, incentives should be substantial enough to overcome barriers to market entry and target technologies where the primary obstacle to development is the initial cost.")

28. See generally JOHN P. HARPER, ET AL., LAWRENCE BERKELEY NAT'L LAB., WIND PROJECT FINANCING STRUCTURES: A REVIEW & COMPARATIVE ANALYSIS (2007).

29. *Id.*

land on which to place the wind turbines.³⁰ They must compete with other uses for the land and with resistant communities that may find the turbines too noisy or unsightly.³¹

As explained throughout the note, tax incentives for wind energy are largely limited to corporate investors.³² This makes wind farms a harder sell to landowners whose properties must house the turbines.³³ Although the landowner typically receives a royalty payment for the use of their land, they are not entitled to the tax benefits of the PTC.³⁴ Making tax incentives available to an otherwise hesitant landowner may reduce any initial resistance to the idea.

In all, technological advances in production and the vast amount of the United States' wind resources provide considerable room for growth in the industry. In order to encourage this growth, federal, state and local governments offer a vast array of incentives to invest in wind energy.³⁵ The rest of this note focuses on how these various incentives can be better used to develop this growing industry.

III. THE RENEWABLE ENERGY PRODUCTION TAX CREDIT

Since 1992, the federal government has provided the Renewable Energy Production Tax Credit (PTC) as an incentive to invest in renewable energy.³⁶ Though not a perfect incentive, the PTC has been able to stimulate significant growth in wind energy.³⁷ Although other types of renewable energy are eligible for the PTC, this article will only analyze the PTC with respect to wind energy, which has historically accounted for over ninety percent of PTC claims.³⁸

30. Advantages and Disadvantages of Wind Energy, *supra* note 16.

31. *Id.*

32. See discussion *infra*, Part II.C; see generally, HARPER, ET AL., *supra* note 28.

33. See *supra* note 32.

34. See *infra* notes 186-88 and accompanying text (explaining that the income received from an ownership interest may be two or three times the income received from typical royalty payments).

35. See *infra* Part II.

36. I.R.C. § 45. The PTC was created by the Energy Policy Act of 1992. Pub. L. No. 109-58, sec. 1253(a), § 824a-3(m)(1)(B), 119 Stat. 594, 967-68.

37. RYAN WISER, ET AL., LAWRENCE BERKELEY NAT'L LAB., USING THE FEDERAL PRODUCTION TAX CREDIT TO BUILD A DURABLE MARKET FOR WIND POWER IN THE UNITED STATES, at 3 (2007) ("[W]ith the PTC, wind power is now economically attractive in some regions of the country relative to more-conventional electricity sources. The PTC, coupled with the rising cost of conventional fuels, R&D advances, and a variety of state policies has stimulated significant – though erratic – growth in the use of wind power. . . .").

38. *Id.* at 13. Note, however, that as late as 2005 the PTC has been amended to include other types of energy that may result in a decline in the percentage of total PTC claims for wind energy. See *infra* note 54.

Section 45 of the Internal Revenue Code ("the Code") provides a credit against federal income tax liability for electricity produced by renewable energy facilities.³⁹ The qualifying energies include wind and a number of other renewable resources.⁴⁰ The credit for wind energy lasts for ten years from the date the qualifying facility is placed in service.⁴¹ The PTC is calculated based on the number of kilowatt hours of electricity produced by the taxpayer and sold to an unrelated party in a given year.⁴² The amount of the credit may be proportionally phased out as the national price average of wind-generated electricity exceeds a threshold amount.⁴³ When the PTC is used efficiently, it can "provide[] the equivalent of about \$20/MWh of taxable revenue over a 20 year project life."⁴⁴

39. I.R.C. § 45; *see also* I.R.C. § 38. Under the general business credit of Section 38, taxpayers' credit against their tax for the current year is the sum of their current year's business credit. The general business credit includes the PTC. I.R.C. § 38(b)(8). Taxpayers claim credit under the PTC by attaching Form 8835, Renewable Electricity and Refined Coal Production Credit to their return for the current year. If the taxpayer claims other credits under Section 38, the PTC is also reported on Form 3800 (General Business Credit). Kaufman, *supra* note 20, at 166-67.

40. Originally, only wind, closed-loop biomass and poultry waste (now included as "open-loop biomass" along with other agricultural livestock waste) facilities were included in the PTC. This was expanded in 2004 to include geothermal, solar, small irrigation, municipal solid waste, and refined coal. The PTC was expanded again in 2005 to include qualified hydroelectric and Indian coal facilities. *See* Hymel, *supra* note 4, at 56.

41. A qualified wind facility is any facility owned by the taxpayer that is originally placed in service after December 31, 1993, and before January 1, 2013. The term does not include any qualified small wind energy properties under Section 25D(d)(4) (typically understood to mean small wind facilities used for personal, residential use). I.R.C. § 45(d)(1).

42. *Id.* § 45(a). The PTC is equal to 1.5 cents (adjusted for inflation) multiplied by the number of qualified kilowatt hours produced. In 2009, the inflation adjusted factor was 1.4171; therefore, the credit amount for that year was 2.1 cents per kW hour of electricity sold (1.5 multiplied by 1.4171). Credit for Renewable Electricity Production, Refined Coal Production, and Indian Coal Production, and Publication of Inflation Adjustment Factors and Reference Prices for Calendar Year 2009, 74 Fed. Reg. 162622 (Apr. 9, 2009); *see* I.R.C. § 45(e)(4) (providing definition of an unrelated party).

43. *Id.* § 45(b)(1), (e)(2). The range in which the credit is proportionally phased out is three cents per kW hour of electricity produced. The threshold price is met when the average national price of the electricity exceeds eight cents per kW hour. In 2009, the reference price for wind energy was 4.32 cents per kilowatt-hour. Therefore, as this price did not exceed eight cents, the credit phase-out of Section 45(b)(1) did not apply to such electricity sold during the 2009 calendar year. Credit for Renewable Electricity Production, Refined Coal Production, and Indian Coal Production, and Publication of Inflation Adjustment Factors and Reference Prices for Calendar Year 2009, 74 Fed. Reg. 162622 (Apr. 9, 2009).

44. MARK BOLINGER, LAWRENCE BERKELEY NAT'L LAB., AVOIDING THE HAIRCUT: POTENTIAL WAYS TO ENHANCE THE VALUE OF THE USDA'S SECTION 2006 PROGRAM, at 6 (2006).

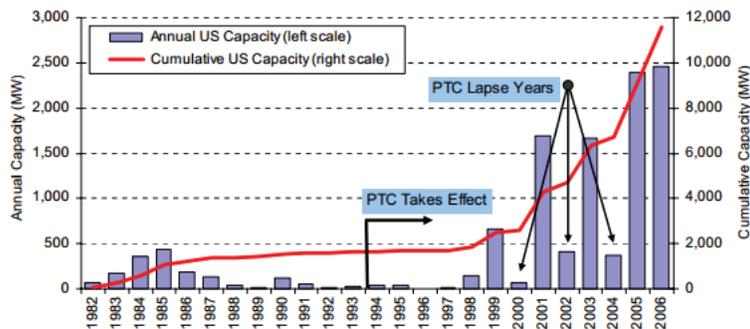
In addition to the credit against income, PTC-eligible projects also benefit from an accelerated depreciation schedule.⁴⁵ Along with depreciation, the tax benefits of the PTC are estimated to equal "approximately 42% of hard project costs" and provide about seventy-five percent of financing.⁴⁶

A. Effectiveness of the PTC

In order to properly make the case for expanding the use and availability of the PTC, it is necessary to establish the PTC's ability to actually encourage the development of wind energy production. The effectiveness of the PTC is illustrated by looking at the history of wind-generated electricity since the PTC's initial enactment in 1992.⁴⁷ Between enactment of the PTC and 2005, annual wind production more than quadrupled.⁴⁸ However, this alone is not dispositive of the PTC's ability to encourage investment.

To date, the PTC has expired three different times only to be renewed the next year.⁴⁹ Comparing production in wind-generated electricity in lapse years with years where the PTC was in effect demonstrates the ability of the PTC to encourage investment in renewable energy.

Table 1:⁵⁰



45. I.R.C. § 168(X) (providing a five-year double declining balance - turbines, generators, power conditioning equipment, transfer equipment, and related parts up to the electrical stage qualify); *see also* HARPER, ET AL., *supra* note 28, at 3 ("A typical rule of thumb is that 90%-95% of the total costs of a wind project qualify . . . , with much of the remaining amount depreciated over 15 years.").

46. Ferry, *supra* note 5, § 3:53.

47. Energy Policy Act of 1992, Pub. L. No. 102-486, § 1914 (1992).

48. Hymel, *supra* note 4, at 75 n.208 (citing Staff on Joint Comm. on Taxation, 109th Cong., Present Law and Background Relating to Tax Credits for Electricity Production from Renewable Sources, at 14 (Comm. Print 2005)).

49. The PTC expired in 1999, 2001, 2003. *See* Hinman, *supra* note 22, at 57 n.137; *see also* I.R.C. § 45(d)(1) (providing the current lapse date of December 31, 2012 as extended by § 1101(a) of the ARRA).

50. WISER, ET AL., *supra* note 37, at 3.

As Table 1 illustrates, production of wind-generated electricity declines substantially in lapse years as opposed to the previous non-lapse years.⁵¹ The numbers, ranging from seventy-three to ninety-three percent drops, show a staggering decline in new production during a lapse year as compared to the previous year.⁵² This indicates that a federal subsidy tied to production does have an impact on a developer's decision of whether or not to enter the marketplace.⁵³

B. *Limitations to the Effectiveness of the PTC*

Despite the fact that the PTC has been shown to encourage investment, analyzing the mechanics of the PTC exposes some structural deficiencies and shows there are changes available to shape the PTC into a more effective incentive. These limitations are taken in turn below.

1. Sunset Provision

The PTC is only available for qualified wind facilities placed in service before its expiration date, currently set for December 31, 2012.⁵⁴ Therefore, without an extension, the "sunset" feature means that a facility placed in service after this date will be ineligible for the PTC, even if construction broke ground on the facility today.⁵⁵ Consequently, the ability for developers to rely on the continuation of the PTC is crucial in their ability to adequately plan a successful, large-scale wind project.

As explained above, developers are mindful of the sunset feature and significantly scale back new facilities once the PTC expires.⁵⁶ However, this sunset provision may effect more than just new production in a post-lapse year.

51. Id.

52. Hinman, *supra* note 22, at 61 (citing AM. WIND ENERGY ASS'N, WIND ENERGY FOR A NEW ERA: AN AGENDA FOR THE NEW PRESIDENT AND CONGRESS, at 2, 8 (2008), available at http://newwindagenda.org/documents/Wind_Agenda_Report.pdf):

Lapse Year	Percentage drop from previous year
2000	93%
2002	73%
2004	77%

53. The surges and lulls in production not only show the ability of the PTC to encourage investment, but also show the necessity of the credit by illustrating the industry's sensitivity to the availability of the PTC.

54. I.R.C. § 45(d)(1) (as amended by ARRA § 1201); see *infra* Part III(B)(3) for a discussion regarding the meaning of the "placed in service" requirement.

55. See I.R.C. § 45(D)(1).

56. See discussion *supra* Part II.A.

Historically, when the PTC is extended before it expires, it is only done for a short time – typically one to two-year periods.⁵⁷ This has led to a "boom and bust" cycle of wind energy due to a developer's inability to confidently plan for large-scale projects.⁵⁸

Although the PTC may be extended before it expires, the "effective duration" of the PTC does not begin until the extension is made and ends at the new expiration date.⁵⁹ Aside from the most recent three-year extension, the "effective duration" of the PTC has not exceeded twenty-four months since its first expiration in 1999.⁶⁰ Therefore, although the PTC has lapsed only three times, developers can only plan as far in advance as the next expiration date since they do not know if and when the extension will come. With one to two-year extensions, and the time needed to plan large-scale wind farms, developers may often limit themselves to smaller-scale wind farms they are confident can be "placed in service" before the expiration of the PTC.⁶¹

Additionally, any number of mitigating factors in the development process can make a project unable to meet the PTC's in service deadline.⁶² In fact, only a little over half of all renewable energy projects under contract were completed on time in 2006.⁶³

Thus, investor uncertainty concerning the PTC's availability can "undermine rational industry planning, project development, and manufacturing investments, thereby leading to lower levels of new wind project capacity additions."⁶⁴

In addition to the decreased size of wind projects, the cycle of PTC lapses and short-term extensions may also attribute to

57. WISER, ET AL., *supra* note 37, at 2.

58. *Id.* at 5.

59. See *id.* at 2, table 1, for a list of "Effective Duration of PTC Window."

60. *Id.*

61. New development projects can take over two years to fully implement from start to finish. Union of Concerned Scientist, Production Tax Credit for Renewable, *available at* http://www.ucsusa.org/clean_energy/solutions/big_picture_solutions/production-tax-credit-for.html [hereinafter Union of Concerned Scientists]. Note that while this comment focuses on wind energy, the inability to confidently plan a project with the erratic lapse/extension cycle of the PTC is even more problematic for other renewable energies because wind projects have a relatively shorter planning/implementation phase when compared to other PTC-eligible energies. WISER ET AL., *supra* note 37, at 12.

62. Ferry, *supra* note 5, § 3:53 (citing "lead time to manufacture wind turbines, and limited short-term capacity to increase rates of production," as factors in hampering a wind projects ability to meet in-service deadlines).

63. *Id.* (Additionally, "23% of . . . projects under contract were cancelled, nine percent defaulted, 14% were delayed, and a little more than half were on time[]" in 2006.).

64. WISER ET AL., *supra* note 37, at 5.

higher wind supply costs,⁶⁵ greater reliance on foreign manufacturing,⁶⁶ difficulty in rationally planning transmission expansion,⁶⁷ and reduced private research and development expenditures.⁶⁸ Therefore, a long-term extension of the PTC could produce a snow-ball effect, increasing the already expanding pace of U.S. wind-energy production.

2. The Double-Dipping Limitation

The PTC also contains a "double-dipping" limitation that reduces the amount of the credit when a project receives certain other types of government support.⁶⁹ The PTC can be reduced by a maximum of one-half of the dollars received by certain grants, tax-exempt bonds, subsidized energy financing, and other credits.⁷⁰

For some time, there was uncertainty as to exactly what types of other credits would trigger the double dipping limitation.⁷¹ However, in 2006 the I.R.S. issued some guidance and stated that the PTC will not be reduced "on account of state or local tax credit."⁷²

65. *Id.* (arguing that after substantial decreases in project costs between the early 1980s to the early 2000s, the increase of project costs since 2001 has been aggravated by the erratic cycle of PTC extensions and lapses).

66. *Id.* (arguing that uncertainty in the PTC has curbed the investment of U.S. firms in wind energy manufacturing infrastructure and that the U.S. consequently is heavily reliant on turbines and components manufactured abroad. Additionally, according to a survey of industry members, just a ten-year extension of the PTC would increase the share of domestic to foreign manufacturing from thirty percent of total manufacturing to seventy percent.).

67. *Id.* ("[U]ncertainty in the future of the PTC makes transmission planning for wind particularly challenging."); *see also* Twenty Percent by 2030, *supra* note 13, at 93 ("If the considerable wind resources in the United States are to be utilized, a significant amount of new transmission will be required.").

68. WISER, ET AL., *supra* note 37, at 5 (suggesting that willingness to invest in long-term wind technology R&D can be attributed to uncertainty in the technology's profitability, which hinges on the availability of the PTC).

69. I.R.C. § 45(b)(3).

70. *Id.* The amount reduced is the lesser of one-half or by the fraction provided in Section 45(b)(3). The fraction is basically the cumulative amount of funding received by other incentives in a given year divided by the total capital cost of the project to date. Under prior law, the reduction did not include the one-half limitation and was reduced in full by the fraction provided in Section 45(b)(3). However, this was changed in 2004 to include the current one-half limitation. American Jobs Creation Act of 2004, Pub. L. No. 108-357, 118 Stat. 1418, § 710(f)(1) (amending I.R.C. § 45(b)(3)).

71. *See generally* RYAN WISER, MARK BOLINGER & TROY GAGLIANO, BERKELY NAT'L LABORATORY, ANALYZING THE INTERACTION BETWEEN STATE TAX INCENTIVES AND THE FEDERAL PRODUCTION TAX CREDIT FOR WIND POWER (2002); *see also* Ferry, *supra* note 5, § 3:53.

72. Rev. Rul. 2006-09, I.R.B. 519. The confusion was due to whether the reduction was triggered by a state or local tax credit under the language of Section 45(b)(3)(A)(iv): "the amount of any other credit allowable with respect to any property which is part of the

Although the 2006 Revenue Ruling reduced uncertainty as to which types of incentives trigger the double-dipping limitation, a locality's ability to offer additional subsidies to the PTC is still reduced.⁷³ The limitation forces local governments to share lost tax revenue with the federal government while only adding incremental incentives to the taxpayer.⁷⁴ This in turn gives state and local governments a *disincentive* to provide their own subsidies to wind projects. The effects of this are detrimental as "[s]tate policies to support wind power have historically been a critical driving force in the growth of the renewable energy market in the United States."⁷⁵

However, these state and local incentives do still retain some of their value to the developer – generally about sixty percent (while the local government of course bears one hundred percent of the costs).⁷⁶ This and the 2004 amendment to the PTC, which capped the amount of the reduction to one-half,⁷⁷ help to curb the ineffective use of state incentives. However, the fact remains that the double-dipping provisions diminish the effectiveness of state and local incentives.

3. Placed in Service/80% Retrofit Requirement

The language of the PTC essentially limits the credit to newly installed facilities. The PTC requires that a "qualified facility" is only one that was "*originally* placed in service" during a period in which the PTC was available.⁷⁸ While it makes sense not to retroactively award tax credit to facilities brought to market without the incentive, this language precludes most facilities that have been remodeled or retrofitted with new equipment.⁷⁹ This may discourage developers from replacing

project." The I.R.S found that with no reference to states or localities, the offset should not include state or local tax credits.

73. *See id.*

74. These other incentives include: "(i) grants provided by the United States, a State, or a political subdivision of a State for use in connection with the project; (ii) proceeds of an issue of State or local government obligations used to provide financing for the project the interest of which is exempt from tax under section 103; (iii) the aggregate amount of subsidized energy financing provided (directly or indirectly) under a Federal, State, or local program provided in connection with the project. . . ." I.R.C. § 45(b)(3)(A)(i)-(iii).

75. WISER, BOLINGER & GAGLIANO, *supra* note 71, at 2.

76. *Id.* at 1.

77. *See supra* note 4.

78. I.R.C. § 45(a)(2)(A)(ii) (emphasis added).

79. *Id.*

components of existing facilities with more efficient equipment that incorporate the advancing technology of wind power.⁸⁰

As wind turbine and generator technologies advance, production can be increased in older wind-facilities with the installation of retrofit parts.⁸¹ Generators with the latest technology increase turbine efficiency.⁸² Similarly, larger turbines capture more wind.⁸³ In fact, "[r]etrofitted wind turbines could produce as much as 50 percent more power over time"⁸⁴ If the government wants to increase renewable energy production through tax incentives, then a remodeled facility with increased production should be eligible for some sort of a tax benefit. However, the IRS has ruled that a remodeled facility meets the PTC's "placed in service" requirement only when eighty percent or more of the value of a wind facility is made up of retrofits.⁸⁵

A retrofit requirement as high as eighty percent has two problems. First, developers may be less likely to invest in upgrades to existing facilities that would not meet the eight percent requirement. Second, this could alternatively cause a developer to install an excessive amount of new parts in order to meet the eighty percent requirement.⁸⁶ Either way, a requirement tied to such a high, fixed amount of investment is bound to produce inefficient results as developers seek to maximize their use of the PTC.⁸⁷ The requirement that new equipment must equal a fixed amount of value does not encourage retrofitting equipment as it does not address the reason a developer would retrofit a wind facility – increased production.

80. *See id.*

81. See Retrofit Motors Improve Wind Turbine Performance (Apr. 26, 2005), <http://www.renewableenergyworld.com/rea/news/article/2005/04/retrofit-motors-improve-wind-turbine-performance-27457>, for an example of wind farms being retrofit to increase production (By retrofitting generators on existing facilities, the hope is "to increase turbine efficiency to over 31 percent.").

82. *Id.*

83. Twenty Percent by 2030, *supra* note 13, at 42. ("Without changing the location of the rotor, energy capture can . . . be increased by using longer blades to sweep more area. A 10% to 35% increase in capacity factor is produced by 5% to 16% longer blades. . .").

84. Steven Ashley, *Efficient Power in Any Wind*, SCIENTIFIC AMERICAN, Mar. 2009 (citing ExRo Technologies CEO, John McDonald), available at <http://www.scientificamerican.com/article.cfm?id=efficient-power-at-any-wind-speed>.

85. Rev. Rul. 94-31, 1994-1 C.B. 16.

86. Hinman, *supra* note 22, at 71-72.

87. *See id.*

C. *Availability of the PTC to the Taxpayer*

Development and implementation of any sized wind farm incurs significant start-up costs.⁸⁸ The capital intensity of a wind project and the structure of the PTC typically require developers to seek some sort of third party financing.⁸⁹ Therefore, they must either elicit outside investment or seek financing from a bank. For a variety of reasons, financing a wind farm with debt is not all that commonplace.⁹⁰ Instead, the market practice norm is to find an equity investor.⁹¹

The tax advantages of the PTC make wind farms an attractive option to an equity investor. However, the passive income rules of the Code effectively limit the number of taxpayers eligible to receive the full benefit of the PTC.⁹² This has led to the fact that the majority of wind farm investment comes from either large corporate entities or wealthy individuals with sufficient passive income to utilize the PTC.⁹³ The passive income rules of the Code and the resulting ownership complications are explained below.⁹⁴

1. *Passive Income Rules of the Code*

The passive income Rules of the Internal Revenue Code were included as part of the Tax Act of 1986.⁹⁵ These rules were meant to curb the creation of tax shelters formed to generate taxable losses in order to offset taxable income.⁹⁶ As a result, passive activity losses (and credits) can only be used to offset passive activity income.⁹⁷ These rules apply to individuals, estates, trusts, closely-held C corporations, and personal service

88. WINDUSTY, HOW MUCH DO WIND TURBINES COST?, <http://www.windustry.org/how-much-do-wind-turbines-cost> ("Most of the commercial-scale turbines installed today are 2 MW in size and cost roughly \$3.5 installed. Wind turbines have significant economies of scale. Smaller . . . turbines cost less overall, but are more expensive per kilowatt of energy producing capacity.")

89. HARPER, ET AL., *supra* note 28, at S-i ("most wind project developers lack sufficient . . . tax liability to use the Tax Benefits efficiently").

90. *Id.* at S-v.

91. *Id.*

92. See discussion *infra* Part II.D.i.

93. See *supra* note 88.

94. See discussion *infra* Part II.D.i.

95. Pub. L. 99-514, Title V, § 501(a).

96. JOSHUA D. ROSENBERG & DOMINIC L. DAHER, *THE LAW OF FEDERAL INCOME TAXATION* § 14.05 (2008); I.R.C. § 469.

97. I.R.C. § 469.

corporations.⁹⁸ A passive activity is broadly defined as an activity in which the taxpayer does not "materially participate."⁹⁹

In the context of the PTC, taxpayers subject to the passive income rules must "materially participate" in the management of a qualified wind facility or else the passive income restrictions apply.¹⁰⁰ Because most equity investors will not meet participation requirements, the benefits of the PTC can only be utilized if the investor is not subject to the passive income rules or has a sufficient amount of passive income with which the credit can offset.¹⁰¹ Otherwise, the benefits of the PTC may never be realized.

Realistically, a wind project may take a few years before production begins.¹⁰² Even then, unless the investor has other sources of passive income, the project may not yield enough income to fully utilize the PTC. In certain instances, the credits can carry forward.¹⁰³ However, depending on the investor's total future passive income, they may never be fully realized. Additionally, any delayed tax benefits cut at the value of the PTC.

In practice, this has meant investors typically fall into one of two categories: (1) investors who are not subject to the passive income rules, or (2) investors subject to the rules, but have enough passive income from other activities that the PTC can offset.

Therefore, unless the developer fits into one of these two categories, he will seek an outside equity investor who does. Once a developer finds an equity investor who fits the bill, they typically form a partnership to own and operate the wind farm.¹⁰⁴

98. *Id.* § 469(a)(2).

99. *Id.* § 469(c)(1). Material participation is also broadly defined in the passive income rules as involvement that relates to operations and is on a "regular, consistent, and substantial basis." *Id.* § 469(h)(1). Treasury Regulations, issued pursuant to Section 469(l) of the Code, further explain "material participation" and the applicability of the passive income rules. *See generally* Temp. Treas. Reg. § 1.469-5T(a)(1)-(7). For example, material participation can be met if the taxpayer participates for at least five hundred hours in that year.

100. *See* Rev. Proc. 2007-65, 2007-45 I.R.B. 967 (as revised by Announcement 2007-112, 2007-50 I.R.B. 1175 (Nov. 19, 2007)).

101. *Id.* ("Generally, a taxpayer subject to § 469 may utilize passive activity credits from qualified wind facilities only to the extent of their tax liability allocable to passive activities, whether from qualified wind facilities or other source.")

102. Union of Concerned Scientists, *supra* note 61.

103. I.R.C. §§ 469(b), 35.

104. HARPER, ET AL., *supra* note 28, at 25 (noting that this has become the most frequent structure for developers seeking third-party financing); *see id.* at X (explaining that an outright corporate form of ownership is the most frequent of all types of

In such a partnership, the equity investor will ideally receive the lion's share of the tax credits. However, the Code provides that the distributions of tax credits must be in relation to a partner's partnership interest.¹⁰⁵ Basically, this requires that the distribution of tax credits must be in proportion to the partners' distribution of partnership gross income and loss.¹⁰⁶ These rules could leave a significant portion of the available tax credit unused because a developer without the appropriate appetite for the credits will still want to receive his fair share of partnership revenue.

To help combat the underutilization of the PTC, the IRS has issued a "Safe Harbor" that provides "the requirements . . . under which the Service will respect the allocation of § 45 wind energy production credits by partnerships in accordance with § 704(b)."¹⁰⁷ The IRS now allows a partnership to allocate up to ninety-nine percent of gross income and loss (and the associated credits) to the investor while allowing all cash distributions to go to the developers.¹⁰⁸ When followed, the "Safe Harbor" provides that a partnership's allocation of the PTC will be respected as conforming to the partners' interest in the partnership.¹⁰⁹

This allows the developer and the investor to say when, how much, and to whom the PTC shall be allocated, within the parameters set forth in Section 4 of the Safe Harbor.¹¹⁰ Without the Safe Harbor, similar types of arrangements may not meet the

ownership). Note that corporations are not subject to the passive income rules of the Code. I.R.C. § 469.

105. I.R.C. § 704. Section 704(a) provides that a partner's distributive share of income, gain, loss, deduction, or credit is determined by the partnership agreement. However, under Section 704(b), if the agreement fails to allocate one of those items, or an allocation lacks "substantial economic effect," a partner's distributive share will be determined by their interest in the partnership. Treasury regulations state that allocations of tax credits are not reflected by adjustments to the partners' capital accounts, and therefore do not have economic effect. Treas. Reg. § 1.704-1(b)(4)(ii). Thus, the tax credits must be allocated according to the partners' interests in the partnership as of the time the tax credit arises. *Id.*; I.R.C. § 704(b).

106. Treas. Reg. § 1.704-1(b)(4)(ii).

107. Rev. Proc. 2007-65, 2007-45 I.R.B. 967 (as revised by Announcement 2007-112, 2007-50 I.R.B. 1175 (Nov. 19, 2007)).

108. *Id.*

109. *Id.*

110. These require that at all times a minimum of one percent of each material item of income, gain, loss, deduction, and credit must be held by the developer, and an interest in each of the same material items equal to five percent of their largest potential interest must be held by the investor. *See, e.g.*, Examples 1 & 2, Rev. Proc. 2007-65, 2007-45 I.R.B. 967 (as revised by Announcement 2007-112, 2007-50 I.R.B. 1175 (Nov. 19, 2007)). The remaining safe harbor requirements such as a minimum unconditional investment on the part of the investor, and certain limitation on purchase and sale rights can be found in Section 4 of Rev. Proc. 2007-65, 2007-45 I.R.B. 967 (as revised by Announcement 2007-112, 2007-50 I.R.B. 1175 (Nov. 19, 2007)) as well.

ownership requirements of the PTC,¹¹¹ or partnership distribution requirements under the Code.¹¹²

While there are a few variations, the "flip partnership" is the predominately used financing structure in accord with IRS's Safe Harbor.¹¹³ In a flip partnership, as much as ninety-nine percent of taxable income or loss (and thus ninety-nine percent of the PTC) is allocated to the institutional equity investor, while cash distributions to partners occur at a different ratio. After a specified period of time, usually the length of the PTC, partners' interests "flip" with the developer typically receiving a much larger portion of the partnership income.¹¹⁴ This process benefits both the developer and the investor: developers are allowed to recover most of their equity investment through cash distributions in the early life of a project while the investor is recovering their investment through the tax savings of the PTC.¹¹⁵ However, the process is exceedingly complex to the unfamiliar wind developer and often quite expensive to implement.

In order to encourage development of wind energy, the transactional barriers should not be so cumbersome. By doing so, it ensures that those who are left to benefit from the PTC are only large corporate entities and individuals with abundant passive income looking for a tax break.¹¹⁶

2. The Alternative Minimum Tax

Although not explored in depth, there are limitations to the PTC in regards to the Alternative Minimum Tax ("AMT") that

111. I.R.C. § 45(d)(1).

112. *Id.* § 704.

113. John C. Lorentzen, et al., *Stimulus Act Expands Renewable and Alternative Energy Tax Incentives*, BUSINESS ENTITIES (March/April 2009), at 9-10. This model is also referred to as the "Minnesota Flip." See AMERICAN WIND ENERGY ASSOCIATION, COMMUNITY WIND TOOLBOX, CHAPTER 12: THE MINNESOTA FLIP BUSINESS MODEL, available at <http://www.windustry.org/your-wind-project/community-wind/community-wind-toolbox/chapter-12-the-minnesota-flip-business-model>.

114. Lorentzen, et al., *supra* note 113, at 9-10; see also Rev. Proc. 2007-65, 2007-45 I.R.B. 967 (as revised by Announcement 2007-112, 2007-50 I.R.B. 1175 (Nov. 19, 2007)) (stating the developer's "post-flip" allocation is not to exceed 95.05%).

115. Lorentzen, et al., *supra* note 113, at 9.

116. Publicly traded companies are not subject to the passive income rules, neither are C corporations (other than closely held C corporations, defined by the Code as any C corporation where more than fifty percent of the stock is owned by 5 or fewer individuals during the first half of the taxable year, I.R.C. § 465(a)(1)(B)). See generally, HARPER, ET AL., *supra* note 28.

cannot go without mentioning.¹¹⁷ The AMT imposes an alternative tax base on taxpayers who, through significant use of deductions and credits, would otherwise avoid significant tax liability.¹¹⁸ The AMT, taxed at a twenty percent rate, is computed and then compared to the taxpayer's regular tax liability, the larger of the two is the amount paid.¹¹⁹

Currently, the PTC is only available to taxpayers subject to the AMT for the first four years of the credit.¹²⁰ In 2005, the AMT affected less than one percent of firms.¹²¹ However, those firms accounted for twenty-three percent of corporate assets.¹²² Therefore, it is not insignificant that the PTC is cut short by six years to firms with almost one-fourth of corporate assets. Although the decision to impose the AMT on taxpayers using a significant number of credits and deductions is clearly a legislative choice, it nevertheless undermines the ability of the PTC to provide an incentive to invest in wind energy.

IV. LEGISLATIVE EFFORTS TO INCREASE DOMESTIC RENEWABLE ENERGY

Recent legislative efforts have been significant in providing additional incentives to increase investment in alternative energy sources.¹²³ In the context of wind energy, recent legislation provided an extension of the PTC,¹²⁴ as well as adding the availability of an Investment Tax Credit (ITC) and government grants to be taken in lieu of the PTC.¹²⁵ While these

117. See generally Curtis Carlson & Gilbert E. Metcalf, *Energy Tax Incentives and the Alternative Minimum Tax*, 61 NAT'L TAX J. 477 (1 in internet version) (Sept. 2008) (providing a full overview of the effects of the PTC on the AMT).

118. *Id.*

119. *Id.*

120. The General Business Credit of Section 38 "cannot exceed the excess of the taxpayer's net income tax over the greater of (i) the taxpayer's tentative minimum tax for the taxable year or (ii) 25% of the excess of the taxpayer's net regular tax liability over \$25,000. [I.R.C. § 38(c)(1)] . . . For facilities with respect to which [the PTC] is claimed placed in service after October 22, 2004, the taxpayer's tentative minimum tax is treated as \$0 for the four-year period beginning on the date when the facility was originally placed in service. [I.R.C. § 38(c)(4)(B); American Jobs Creation Act of 2004, Pub. L. No. 108-357 § 711(a).]" Kaufman, *supra* note 20, at 174.

121. Kaufman, *supra* note 20, at 174.

122. *Id.*

123. Most notably, the ARRA, *supra* note 3; BOLINGER, ET AL., *supra* note 3, at 2 ("Of the \$787 billion package, more than \$40 billion in spending is appropriated for clean energy initiatives. New and modified tax incentives targeting clean energy are estimated to cost an additional \$20 billion.").

124. ARRA, *supra* note 3, § 1201.

125. See *id.* § 1102 for the ITC. See *id.* § 1603 for the Treasury grant in the same amount as the ITC.

incentives may serve a short-term goal of immediate investment into the industry, both the ITC and Treasury grant programs fall short in terms of long-term value to the taxpayer and both are insufficient in providing a sustainable wind energy market.

A. *Investment Tax Credit in lieu of the PTC*

A taxpayer may now irrevocably elect to take an Investment Tax Credit (ITC) in lieu of the PTC for wind facilities.¹²⁶ The ITC is limited to thirty percent of the property's basis and is set to expire on the same date as the PTC.¹²⁷ Additionally, wind facilities electing to use the ITC must reduce the property's depreciable basis by one-half of the credit amount.¹²⁸

In light of the discussion earlier about the passive loss requirements, the ITC necessitates that the investor have an even greater and immediate appetite for tax credits as the benefits of the ITC are realized in the first year of the project.¹²⁹ While this could be attractive for taxpayers uncertain about their projected tax base over the next ten years, the same investor will need a subsequently larger tax base in a project's "first year in order to fully absorb the ITC."¹³⁰

While the need for a tax equity investor is not removed, an available alternative under the ITC, not allowed under the PTC, is the use of a sale-leaseback transaction as a financing mechanism.¹³¹ A special rule for the ITC provides that "if the facility is sold and leased back no later than three months from

126. *Id.* § 1102 (amending I.R.C. § 48 to include wind and other PTC eligible energies). For wind facilities, the ITC is available for projects put into service between January 1, 2009 and December 31, 2012. Note that the ITC was previously available for other types of renewable energies, including "qualified small wind energy property." I.R.C. § 48(a)(3)(A)(vi). The ARRA also repealed a previous \$4,000 investment tax credit limitation on qualified small wind energy property. I.R.C. § 48(c)(4)(B).

127. ARRA, *supra* note 3, § 1102. Available for qualified wind facilities placed in service between January 1, 2009 and December 31, 2012. See *id.* § 1202 for expiration date of PTC.

128. I.R.C. § 50(c)(3)(A).

129. See discussion *supra* Part II.D.i.

130. MARK BOLINGER, ET AL., *supra* note 3, at 11.

131. The PTC requires that the person receiving the credit must own the facility and be responsible for the production of electricity. I.R.C. § 45(a). These requirements would not be met under a sale-leaseback agreement (the ownership and production requirements would be separated between the owner/lessor and the producer/lessee). On the other hand, the ITC is available to the person who owns the facility when it is first placed in service. There is no requirement that the production of electricity be attributed to the person receiving the credit.

after the placed-in-service date, the owner under the sale-leaseback agreement will be entitled to the credit."¹³²

In a basic sale-leaseback transaction, the developer sells the project to an equity investor and immediately receives a long-term lease on the property.¹³³ Similar to the safe harbor provisions for "flip partnerships" with the PTC,¹³⁴ the IRS has issued guidelines as to what will be considered a "true lease" for tax purposes.¹³⁵ A true lease is necessary for tax ownership (and thus the associated ITC) to be moved to the lessor-investor.¹³⁶ In the end, the sale-leaseback arrangement is, just like the PTC flip partnership, a complicated creature of necessity due to the limited availability of these tax credits.

1. Relative Value of the ITC Compared to the PTC

Now that owners of a wind project have the ability to choose between the PTC and ITC, there have been recent efforts to compare the relative present values of each incentive. Analyzing these studies, in view of one's own wind project, will help investors make an informed decision when deciding which credit to receive. In one of these studies, a cash flow analysis determined the present values of the PTC and ITC across a wide range of possible project costs and wind capabilities.¹³⁷ The study found that across the range of possibilities evaluated, the PTC provided more value to the taxpayer in about two-thirds of all cases.¹³⁸ The types of projects in which the ITC was more valuable are those with higher project costs in relation to wind

132. LAURA ELLEN JONES & DAVID B. WEISBLAT, LJN'S EQUIPMENT LEASING NEWSLETTER, RENEWABLE ENERGY LEASING OPPORTUNITIES: SOLAR AND BEYOND (Feb. 2009).

133. *See id.*

134. *See supra* notes 100-14 and accompanying text.

135. Rev. Proc. 2001-28.

136. Lorentzen, et al., *supra* note 113, at 12. However, in contrast to the Safe Harbor for PTC partnerships, the IRS specifically requires a pre-tax profit to be expected in sale-leaseback transactions.

137. BOLINGER, ET AL., *supra* note 3, at 4. The study did incorporate depreciation deductions, but did not conduct separate analysis on the relative value of the treasury grant. *See* discussion *infra* Part III.B. This was done because the ITC and cash grant, each equal to thirty percent of the facility's basis, should theoretically yield equal values. However, as the authors of the study point out, time value of money principles may have a negligible effect favoring the grant as it is received immediately and the ITC cannot be claimed until the end of the taxable year.

138. BOLINGER, ET AL., *supra* note 3, at 4. While the range of possibilities examined highly affects the proportional result, the authors of the study express confidence in the range as one in which only encompasses factors that would provide for a viable wind project. Indeed, a separate study using a difference range of possibilities found the number to be closer to seventy percent. Shaffer, et al., *infra* note 139, at 1.

capabilities of the particular facility site.¹³⁹ However, in these situations, it may be proper to determine how desirable a higher-cost, lower-production wind facility is to the industry.¹⁴⁰

There is an important caveat to these studies. The value comparisons only focused on which credit the investor should take, not what they will take.¹⁴¹ In the current period of financial constraint, an investor that would yield more tax savings under the PTC may feel pressured to elect the ITC (or cash grant) in order to receive the benefits up front.¹⁴² In fact, if too many wind projects elect the ITC over the PTC for this reason, the wind industry could be leaving almost \$2 billion "on the table."¹⁴³ Additionally, although the ITC can serve as an advantage to the financially constrained project, an even smaller number of investors will be able to realize the full benefit of the ITC, as they must have a larger amount income in initial year of the project. Therefore, this result seems somewhat unlikely in the context of the ITC, but could very well happen with developers electing to use the Treasury cash grant program.¹⁴⁴

Another consideration for investors deciding between the PTC and ITC is that using the ITC makes the project a more illiquid investment.¹⁴⁵ Once the ITC is claimed in the initial year of the project, the credit is unavailable to potential buyers.¹⁴⁶ On the other hand, projects that use the PTC can be sold while the new owners are able to claim the PTC for any remaining years.¹⁴⁷ This is due to the fact that the owner of the facility claims the PTC in the year the electricity is produced.¹⁴⁸

139. Bud Shaffer, et al., *Best Among Equals? Choosing Tax Incentives for Wind Projects*, Renewable Energy World North America Magazine (Jan. 7, 2010). The area of the country seen most fit to elect the ITC over the PTC are potential sites in the northeast where construction costs are higher and wind capacity is lower. ("Some 30 percent of the total wind capacity expected to be added through 2012 . . . is expected to occur in regions that favor the ITC.") *Id.* at 5.

140. While these types of projects do not encourage an industry that is sustainable independent of government subsidy, overall higher costs of electricity in the Northeast mean that, although they will produce less power, projects in the region "will receive an average 68 percent more revenue for the power it produces." Shaffer, *supra* note 139, at 6.

141. BOLINGER, ET AL., *supra* note 3, at 10; Shaffer, et al., *supra* note 139, at 5.

142. Shaffer, et al., *supra* note 139, at 5 (explaining that in some particular regions, developers "would forego on average \$157/kW if the ITC were selected rather than the PTC . . .").

143. *Id.*

144. *Id.*

145. BOLINGER, ET AL., *supra* note 3, at 11.

146. *Id.* (noting as well that "because the ITC . . . vests linearly over a 5-year period, the investor must hold on to the project for a least five years in order to fully realize its value").

147. *Id.*

148. I.R.C. § 45(a).

One benefit of the ITC to the PTC is that the ARRA removed the "double-dipping" penalties from the ITC, but not the PTC.¹⁴⁹ Therefore, a wind facility that can secure any other "subsidized energy financing" may find the ITC more attractive than the PTC which reduces the PTC up to a maximum of one-half of the value of certain other energy subsidies.¹⁵⁰ However, unless the size of the subsidy is substantial, the effects of this may not be too severe.¹⁵¹

In the end, the ITC only provides an upfront tax benefit to the investor that is less valuable than the PTC in the majority of circumstances. Furthermore, when the ITC is more valuable than the PTC, the resulting wind facility produces less and costs more than projects that favor the PTC. It is important to consider the implications of a credit that encourages investment over production in view of the long-term goal of a sustainable industry, free of government subsidy. Of course, in the current economic climate, the ITC does have some benefit over the PTC.¹⁵² Therefore, as the economy recovers, the ITC for wind energy should be allowed to expire at the end of 2012.

B. *Cash Grant in lieu of PTC or ITC*

The ARRA created a new program, governed by the Treasury Department, which allows taxpayers the opportunity to receive cash grants in lieu of the PTC or ITC.¹⁵³ The owner of a qualified wind facility that is eligible under either credit may now apply for a grant covering up to thirty percent of the cost basis of the project.¹⁵⁴ This grant is excluded from gross income and the depreciable basis of the property is reduced by one-half of the grant amount.¹⁵⁵ The taxpayer can only apply for the grant once

149. ARRA, *supra* note 3, § 1202 (repealing I.R.C. § 48(a)(4) which reduced the amount of the ITC for property with subsidized energy financing and industrial bonds); I.R.C. § 45(b)(3) (reducing PTC to a maximum of fifty percent of subsidized energy financing).

150. I.R.C. § 45(b)(3).

151. *See supra* Part III.B.ii.

152. *See supra* note 126 and accompanying text.

153. ARRA, *supra* note 3, § 1603. The program is available for wind and other qualified renewable energy projects.

154. *Id.* The facility must be placed in service in 2009 or 2010, or commence construction within that time and be placed in service before 2013. Grant applications must be submitted by October 1, 2011, and the Treasury is required to make payments within sixty days of application receipt or when the facility is placed in service, whichever is later. See I.R.C. § 1102 for eligible cost basis.

155. ARRA, *supra* note 3, § 1104, § 48(d)(3)(A)-(B), 123 Stat. at 321; *see also* I.R.C. § 50(c)(3).

the facility is placed in service or is under construction.¹⁵⁶ Certain recapture provisions may apply if the grant applicant sells the property to a disqualified person or the property no longer meets the definition of a qualified facility within five years of the placed in service date.¹⁵⁷ The amount the applicant must repay equals one hundred percent of the grant if the disqualification occurs in the first year and decreases by twenty percent in each of the following years.¹⁵⁸

During the years in which the recapture provisions apply, the Treasury will not take a security interest in the project or project company.¹⁵⁹ This will allow developers "to avoid complex inter-creditor agreements as well as the need to provide additional security to indemnify lenders against the possibility of recapture."¹⁶⁰

In the case of leased property, the lessor may elect to pass the proceeds of the grant through to the lessee.¹⁶¹ However, the lessee must include fifty percent of the amount of the grant as gross income ratably over the five-year recapture period.¹⁶² Additionally, the basic sale-leaseback rules applicable to the ITC will be applied to the grant program.¹⁶³

One significant advantage of the grant program to the ITC is that the need for an equity investor with an appetite for passive tax credits is removed.¹⁶⁴ The incentive is therefore available to a larger group of potential investors. Additionally, the current economic climate and "[t]he fact that 'cash is king' might drive

156. Treasury Guidelines dictate that the requisite construction date occurs when the applicant incurs or pays (depending on whether they are an accrual or cash basis taxpayer) more than five percent of the total cost of the property. Payments for Specified Energy Property in Lieu of Tax Credits under the ARRA, Program Guidance, at 7 (Jul. 2009), available at <http://www.trea.gov/recovery/docs/guidance.pdf> [hereinafter Treasury Guidance]. Some of the required documentation required at with a submitted application include: (i) engineering design documents certified by a licensed professional, (ii) a commissioning report by a third party certifying that the facility is capable of being used for its intended purpose, and (iii) an interconnection agreement for properties interconnected with a utility. *Id.* at 8-9.

157. *Id.*

158. *Id.*

159. STOEL RIVERS, LLP, ENERGY LAW ALERT: TREASURY ISSUES GUIDANCE ON APPLICATIONS FOR GRANTS IN LIEU OF THE ITC AND THE PTC (Jul. 9, 2009), available at <http://stoel.com/showalert.aspx?Show=5682>.

160. *Id.*

161. Treasury Guidance, *supra* note 156, at 17.

162. *Id.*

163. See *id.* at 17-18 for the three requirements of a proper sale-leaseback under the grant program. See also *supra* note 131 and accompanying text (providing the requirements of a proper sale-leaseback under the ITC).

164. BOLINGER, ET AL., *supra* note 3, at 11 (noting however, tax equity investors "may still be needed in order to make efficient use of allowable depreciation deductions").

some PTC-eligible projects towards the . . . grant . . . , even if the PTC promises a higher expected value."¹⁶⁵ Furthermore, where the tax savings of the PTC are dependent on the amount of electricity actually produced, the cash grant (as does the ITC) reduces some of the investment risk that a project may not perform as well as expected.¹⁶⁶ However, just as with the ITC, it is important to consider whether investment-based incentives are preferable to those that reward performance.¹⁶⁷

Either way, there is no indication that the grant program will be made available on a long-term basis.¹⁶⁸ Therefore, while the grant program is currently an attractive option for some developers, it does not appear to be a long-term fix to any of the PTC's structural shortcomings.

C. *Why The ITC and Cash Grant May Be Deficient in Providing a Sustainable Market for Wind*

As mentioned above, tying federal incentives to investment rather than production may have some shortcomings.¹⁶⁹ A look at past experiences with investment-tied subsidies in wind is helpful in evaluating this concern. The Energy Tax Act of 1978 (ETA) provided tax incentives for investments in renewable energy technology, among which was an investment tax credit equaling up to a total of twenty percent of investment in wind and other non-traditional energies.¹⁷⁰ This, among other factors, contributed to a "wind boom" in the early 1980s in California.¹⁷¹

The generous tax incentives during this time resulted in "many projects [that] were built primarily for the tax credits and without concern for how successful the project would be."¹⁷² Thus, when traditional energy prices fell in the mid-to-late 1980s, the wind boom was cut short as many producers found it

165. *Id.* at 10.

166. *Id.* Of course, in the case of a project that out-performs expectations, the potential for reward is limited as well.

167. *Id.*

168. Treasury Guidance, *supra* note 156, at 3 ("It is expected that the Section 1603 program will temporarily fill the gap created by the diminished investor demand for tax credits."). Additionally, lawmakers may be more willing to provide tax credits, in which the government forgoes tax revenue, as opposed to actually handing out cash from the Treasury.

169. *See supra* note 140 and accompanying text.

170. Pub. L. No. 95-618, § 301(a)(1), 92 Stat. 3174 (codified as amended in scattered sections of 26 U.S.C.).

171. *See generally* Hinman, *supra* note 22, at 48-54; *see also id.* at 50 (providing that total federal and state tax incentives in California at this time "totaled a tax-write off of nearly fifty percent of the installation costs for new wind projects").

172. *Id.* at 52 (citing Robert W. Righter, *Wind Energy in America*, 225 (1996)).

was no longer profitable to run their businesses.¹⁷³ Basically, "[g]overnment tax incentives dried up before the industry had evolved to a point where it was profitable without government support"¹⁷⁴

Insulation from the volatility of fossil fuel prices is necessary to foster growth in the renewable energies market while prices become more competitive.¹⁷⁵ While a subsidy tied to investment may encourage entrance into the market, it may do less to ensure the long-term viability of a wind project. A subsidy tied to production appears more likely to achieve this goal.

Furthermore, a subsidy tied to production is more likely to advance the technology of wind turbines and facilities. A production-linked credit will force manufacturers to provide the most cost-effective machinery to developers who at the same time are trying to maximize production. An investment-linked subsidy, however, somewhat reduces the incentive to produce the most cost efficient machinery.¹⁷⁶

Another problem of the wind boom of the 1980s was that a number of experimental wind facilities were installed that were either "inefficient or completely unworkable."¹⁷⁷ Production-linked subsidies act to stop this type of problem, as developers will only want to install technologies with proven production capacity.

Thus, while the ITC and cash grant program (both investment-linked incentives) may encourage immediate investment in a period of financial constraint, they appear to lack the ability to encourage long-term growth. Consequently, as the economy recovers, it may be wise to let the ITC and cash grant programs for wind expire at their currently scheduled dates.

173. *Id.* at 52-53 (explaining shortcomings within the California Energy Commission and the Public Utility Regulatory Policies Act of 1978 as additional contributing to the short-comings of the wind boom).

174. *Id.* at 54.

175. Hymel, *supra* note 4, at 45.

176. Moreover, if and when an investment-tied subsidy is removed, there could be a gap between what manufacturer can provide and what a developer may be able to pay. See Qualified Advanced Energy Manufacturing Project Credit, I.R.C. § 48C (providing a thirty percent investment tax credit for establishing or expanding existing manufacturing facilities for equipment used in PTC and ITC eligible projects, as well as other types of energy projects).

177. Hinman, *supra* note 22, at 52 (citing Robert W. Righter, Wind Energy in America, 227-28 (1996)).

V. PROPOSED REFORMS TO THE PTC

Now that the structural deficiencies and alternatives to the PTC have been explored, a few proposed reforms to the PTC are outlined below. The proposed reforms do not address the ITC or cash grant program and focus solely on potential ways to enhance the efficiency of the PTC.

A. Amend the Passive Income Rules to Expand the PTC.

As discussed above, the passive income rules of the Code limit investment in wind projects to corporate entities and taxpayers with significant passive income from other sources.¹⁷⁸ Additionally, these investors must meet strict requirements as they often form complex partnership agreements in order to fully utilize the PTC's tax benefits.¹⁷⁹ While a larger amount of PTC claims are to be expected from larger firms with more capital available to invest, the numbers add to the supposition that the availability of the PTC is too narrowly focused on large firms and unavailable to too many taxpayers.¹⁸⁰ In 2005, just three percent of PTC claims were made by firms with assets less than \$50 million.¹⁸¹

This disparity lead to the proposal of a bill intended to expand the PTC's availability, the Wind Energy Promotion Act of 2009 ("WEPA").¹⁸² The enactment of WEPA would exempt investors in qualified wind facilities from the passive income requirements of the Code and allow individuals to offset up to \$40,000 of ordinary income with the PTC.¹⁸³ The Act would help spread the tax benefits that are now enjoyed only by a small number of large firms.¹⁸⁴

178. See discussion *supra* Part II.C.i.

179. *Id.*

180. See Carlson & Metcalf, *supra* note 117 (at 2 in internet version) (Sept. 2008) (explaining that while firms with assets in excess of \$1 billion claimed seventy-one percent of all general business credits, it appears that energy-related credits are more even more highly concentrated in large firms).

181. *Id.* Furthermore, the credits tend to be fairly concentrated in a small number of firms. In the same year, "five firms out of 282, . . . accounted for over 60 percent of the [PTC]." *Id.*

182. Wind Energy Promotion Act of 2009 (WEPA), H.R. 3135, 111th Cong. (2009).

183. *Id.* (amending I.R.C. § 469(l)).

184. John Moore, Environmental Law and Policy Center Senior Attorney, from Policies the Key to Experiencing Full Benefits of Wind Development in Rural America, National Ass'n. of Farm Broadcasting News Service (Dec. 15, 2009), available at http://www.windpoweringamerica.gov/filter_detail.asp?itemid=2485 ("I think tax reform is . . . important. Less than a dozen large investment companies really have enough tax appetite to use the [PTC] and make it worthwhile. And so we have a situation where we've seen large investment companies like Goldman Sachs actually owning wind farms.

The bill is meant to encourage farmers and rural landowners to invest in the wind farms that will be placed on their land.¹⁸⁵ Presently, income from wind energy accounts for less than one percent of total farm income and less than one percent of utility-scale wind facilities are owned or partly owned by farmers.¹⁸⁶ This may be due in part to the fact that since farmers are unable to utilize the tax benefits of the PTC, they limit their involvement to the leasing of their land. However, an ownership interest in a wind facility may double or even triple the income of a landowner when compared to the typical lease.¹⁸⁷

Of course, even if the availability of the PTC's benefits is expanded, farmers may still decide to execute a lease instead of taking an ownership interest in a wind facility.¹⁸⁸ They could also decide to allow no development on the land at all. Either way, the current structure of the PTC does not give the farmer the ability to choose. Without the availability of the PTC's tax benefits, the typical farmer does not have a reasonable opportunity to have an ownership interest.

Additionally, increased community involvement in the profits of wind farms may act to reduce many of the siting issues that occur with zoning and local permitting. Resistant local communities may try and prevent a developer from acquiring any required permits for their project.¹⁸⁹ These resistant community members are often worried about the noise and visual impacts of large wind farms.¹⁹⁰ There are also concerns about potential declines in property values.¹⁹¹

While helping to move wind power forward in general, that kind of policy makes it really hard for local owners, local developers and other investors to take advantage and invest in renewable energy projects.").

185. See David Phelps, *Inside Track: Wind Energy Promotion Act*, MINNEAPOLIS-ST. PAUL STAR TRIBUNE, Jul. 26, 2009.

186. GAO, REPORT TO THE RANKING DEMOCRATIC MEMBER, COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY, U.S. SENATE, WIND POWER'S CONTRIBUTION TO ELECTRIC POWER GENERATION AND IMPACT ON FARMS AND RURAL COMMUNITIES 6 (Sept. 2004).

187. *Id.*

188. Along with the possibility of increased income, an ownership interest increases the risk the landowner would be taking. *Id.*

189. As many siting and permitting issues are done at the county level, local elected officials may be responsive to any adverse community pressure. See Twenty Percent by 2030, *supra* note 13, at 119.

190. *Id.* at 116-18; see also Robert Bryce, *The Brewing Tempest Over Wind Power*, WALL ST. J., Mar. 1, 2010 (exploring increasing reports of sleep deprivation, headaches and vertigo by people living near turbines while the wind lobby says there is no proof).

191. Studies conducted on the impacts wind farms have on the values of surrounding properties values have been inconclusive as to whether a rise or decline can be expected. Twenty Percent by 2030, *supra* note 13, at 118.

While increased ownership within the community would not likely eliminate all local resistance, it would hopefully mitigate some of the opposition. Providing landowners with the opportunity to receive the tax benefits of ownership may help to increase community acceptance or at least to inform communities of the potential benefits of wind energy - whether or not they ultimately decide to invest. For example, an increase of wind production to five percent by 2020 could "add \$60 billion in capital investment in rural America, provide \$1.2 billion in new income for farmers and rural landowners, and create 80,000 new jobs. . . ."192

Of course there is an argument to be made against this type of special treatment for a particular industry. Exempting taxpayers from the passive income requirements of the Code for this particular investment will only prompt other industries to ask for the same. However, if the U.S. is truly committed to expanding renewable energy production, and intends to do so by use of the PTC, this type of special treatment is seemingly warranted. Additionally, similar special treatment already exists for the oil and gas¹⁹³ and real estate industries.¹⁹⁴

Furthermore, there is an argument to be made that amending the passive income rules for only for wind energy will unduly hamper the development of other PTC-eligible technologies. However, wind facilities have relatively lower start-up costs and are almost maintenance-free once installed.¹⁹⁵ This would seem to make wind the technology most suitable for the investment from smaller firms and individuals that WEPA intends to encourage.¹⁹⁶

192. GAO, *supra* note 186, at 2-3.

193. I.R.C. § 469(c). Owners of working interests in oil and gas property are exempt from the definition of "passive activity," and only required to either hold the ownership interest directly or through an entity that does not limit their liability in that interest.

194. *Id.* § 469(i). Much like the proposed amendments in WEPA, this Code section allows an individual to offset \$25,000 of ordinary income with passive activity loss (or the deduction equivalent) from rental real estate activities in which the taxpayer "actively" participates. Active participation requires at least a ten percent interest in the building. *Id.* § 469(i)(6).

195. *See supra* note 26.

196. Keep in mind as well that over ninety percent of PTC claims are done by wind facilities. *See supra* note 37 and accompanying text. Additionally, while the author would not reject the idea of amending the passive income rules for other types of renewable energies, a lack of research into those other energies explains the absence of a formal endorsement.

B. *Modification to the Double-Dipping Limits of the PTC*

The "double-dipping" limitation of the PTC reduces state and local government's ability to provide additional incentives.¹⁹⁷ However, the one-half maximum reduction of the PTC has somewhat eased this problem. Additionally, state and local governments can offer their own, non-offsetting tax credits to avoid the PTC's "double dip."¹⁹⁸

Therefore, while easing a few of the double-dipping rules would enhance the PTC's efficiency, it is certainly not the most imperative structural shortcomings of the PTC that needs to be fixed.

C. *Long-Term Extension of the PTC*

A long-term extension of the PTC could have the greatest potential impact on increasing wind-generated electricity. While predictions of the ultimate impact of a long-term extension vary from study to study, it is clear that significant growth should be expected. One estimate shows that even just a five-year extension of the PTC for wind would increase production by forty percent in 2030.¹⁹⁹ Furthermore, "a permanent extension of the PTC would more than triple wind generation by the same date."²⁰⁰ In another study, an extension through 2020 could possibly "stimulate enough wind power to serve as much as 17% of the nation's electricity supply by 2030."²⁰¹

The longest extension wind energy has received under the PTC, is three years.²⁰² Compared with the recent eight-year extension of the ITC for solar energy,²⁰³ it would seem politically feasible to have a similar extension granted for wind.

Of course, any extension of the PTC causes a loss in the form of foregone federal tax revenue. The treasury impacts of such an extension must be evaluated in terms of the benefits the PTC is meant to provide. In doing so, some suggest it would be improper

197. See discussion *supra* Part II.A.i.

198. See Rev. Rul. 2006-09, I.R.B. 519.

199. WISER, ET AL., *supra* note 37, at 4 (citing ENERGY INFORMATION ADMINISTRATION, RESPONSE TO JANICE MAYS, CHIEF COUNSEL OF THE U.S. HOUSE COMMITTEE ON WAYS & MEANS, 2007).

200. *Id.*

201. *Id.* (citing Walter Short, et al., "Modeling the Penetration of Wind Energy Into the U.S. Electric Market," Presented at the CNLS 26th Annual Conference (Aug. 16, 2006)).

202. ARRA, *supra* note 3, § 1101(a) (extending the PTC for wind to December 31, 2012).

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

to extend the PTC indefinitely in order to avoid an entrenched federal entitlement such as ones that are presently in place for the oil industry.²⁰⁴ However, of the nearly \$75 billion in federal energy subsidies for 2006, "over 85% . . . [went] to fossil fuels (\$49 billion), nuclear energy (\$9 billion), and ethanol (\$6 billion)."²⁰⁵ When compared with the estimated \$850 million in PTC renewable energy claims for 2007,²⁰⁶ it is not quite clear that there is an immediate need to worry about the PTC becoming similarly entrenched.

However, when considering a long-term extension of the PTC, it could be helpful to develop an understanding of what has kept oil and gas subsidies, initially meant to encourage development of a then-developing market, in place today.²⁰⁷ Evaluating the causes and effects of this entrenchment will help legislators determine whether this is a desirable outcome for renewable energy, and if not, what can be done to avoid the same result.

D. *Modify the "Placed in Service" Limitation to Encourage Efficient Upgrades of Old Equipment*

As discussed above, a wind facility must be retrofit with new parts equal to at least eighty percent of the facility's fair market value in order to meet the "placed in service" requirement of the PTC.²⁰⁸ A high requirement for retrofit equipment in order to reset the clock on the full amount provided by the PTC makes sense. However, creating a smaller "upgrade PTC" for the amount of any increased production from retrofits would provide an incentive to upgrade non-operational or inefficient equipment without having to meet the eighty percent retrofit requirement.²⁰⁹

Providing incentive based on the amount of increased production instead of a certain level of investment allows a

204. Hinman, *supra* note 22, at 70-71; *see generally*, Hymel, *supra* note 4 (evaluating the U.S.'s past experiences with energy subsidies as well as the long-term cost-benefits of such programs).

205. WISER, ET AL., *supra* note 37, at 13 (citing DOUG KOPLow, forthcoming, ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT, SUBSIDIES IN THE US ENERGY SECTOR: MAGNITUDE, CAUSES, AND OPTIONS FOR REFORM).

206. *Id.* (citing FRED SISSINE, CONGRESSIONAL RESEARCH SERVICE, RENEWABLE ENERGY: BACKGROUND AND ISSUES FOR THE 100TH CONGRESS (2007)).

207. *See generally* Hymel, *supra* note 4, Part III (explaining the United States' experience with energy tax incentives).

208. *See discussion supra* Part II.B.iii; Rev. Rul. 94-31, 1994-1 C.B. 16.

209. Hinman, *supra* note 22, at 71-72 (additionally explaining how this would avoid the siting issues often encountered in new facilities).

developer to upgrade facilities based on what will be best for overall production, not on whether they meet a threshold amount of investment. Providing some sort of "upgrade PTC" would encourage the renovation of aging facilities and help to create a more sustainable industry, one that improves on existing facilities instead of abandoning them when tax incentives dry up.²¹⁰

For example, wind farms of the 1980s used smaller diameter machines than the wind farms of today.²¹¹ Those farms had less production capabilities and were more unreliable than today's facilities.²¹² Installing larger turbines or new generators to these existing facilities would increase production and avoid the siting issues involved with new wind farms.²¹³ In addition to increased production, new technologies have "achieved reductions in life-cycle cost of energy."²¹⁴ Encouraging the upgrades of these and other existing wind farms could be done without having to meet the eight percent requirement currently imposed.²¹⁵ Additionally, it is not just the wind farms of the 1980s that could increase production with new technologies. Wind farm capacities rose from an average of twenty-two percent in 1998 to thirty-six percent in 2005.²¹⁶ Moreover, there are a number of innovations currently underway "that are expected to increase productivity through better efficiency, enhanced energy capture, and improved reliability."²¹⁷ Providing incentives for the wind farms of today to increase production with the technologies of tomorrow should also be considered.

An alternative to an "upgrade PTC" could be the use an "upgrade ITC." This type of credit may be more appropriate given the potential administrative headache a credit based on percentage increases of production levels would be. An investment-tied upgrade credit would probably end the potential

210. *Id.*

211. Twenty Percent by 2030, *supra* note 13, at 28 ("A 50 kW machine, considered large in 1980, is now dwarfed by the 1.5 MW to 2.5 MW machines being routinely installed today.").

212. *Id.*

213. See *supra* notes 81-84 and accompanying text for discussion of increased production from new technologies; see generally Twenty Percent by 2030, *supra* note 13, at 105-26 (discussing siting issues involved when building new wind farms).

214. Twenty Percent by 2030, *supra* note 13, at 29. Additionally, "[a]nnual [operating and maintenance] costs are . . . as high as \$30-50/MWh for wind power plants with 1980s technology, whereas the latest generation of turbines has reported annual [operating and maintenance] costs below \$10/MWh." *Id.* at 34.

215. *Id.*

216. *Id.* at 26.

217. *Id.* at 35; see *id.* at 35-38 (discussing these developments which includes improvements to a facility's rotor, blades, active controls, tower and drive trains).

for unnecessarily installed retrofits the current eight percent requirement elicits, especially if the credit were limited to a percentage similar to the thirty percent of the ITC. Taxpayers will still only invest what they think will be profitable (i.e., what will cost effectively enhance production) for the facility because they will receive the tax credit on thirty percent of what they invest, no matter how large or small the investment. Providing a tax credit in these cases will simply act to create more instances in which these types of upgrades will be profitable.

An "upgrade ITC" would also eliminate many of the technical questions an "upgrade PTC" would pose.²¹⁸ A simple, investment based credit would likely solve these disputes. However, the potential drawback for allowing an upgrade ITC would be that developers could be more likely to invest in riskier technology that may not actually increase production.²¹⁹ An incentive tied to production would likely cause a developer to upgrade wind facilities with technologies actually proven to increase production. Balancing this concern with the above-mentioned questions about the possible parameters of a production-based incentive would have to be fully considered before providing an "upgrade credit" of any kind.

VI. CONCLUSION

Overall, the current tax incentives to invest in wind and other renewable energies are numerous. However, concerns persist about the availability of these incentives, and whether or not they are adequately developing a sustainable market. Availability of these incentives should be expanded in order to let more Americans benefit from this clean, renewable source of domestically generated energy – especially the landowner whose property will house these massive wind turbines.

Sustainability in the market must be considered when implementing these tax incentives in order to one day wean the industry off the government subsidy. Although the ARRA may accomplish its goal of spurring immediate investment into the industry to help the fledgling economy, only time will tell if these incentives were appropriate for long-term development in the market.

218. Is the credit based on increased production over the previous year or average production levels? What is an appropriate length for the upgrade PTC? What should be the amount of the credit per kilowatt-hour of electricity? These questions and more leave considerable room for debate in what the appropriate amount of upgrade credit should be.

219. See, e.g., *supra* note 142 and accompanying text.

Among the most important changes that have been promoted by this article is the need for a long-term extension of the PTC. Such an extension will allow the industry to grow with full confidence in its ability to receive the credit. The PTC helps to determine the feasibility of future wind projects; therefore, the industry's ability to rely on its availability is necessary for long-term goals of increasing production.

The other important change needed to the PTC is expanding its availability to a broader base of taxpayers. Although the proposed changes to the passive income requirements of the Code may do less to increase production of wind energy than an extension of the PTC, the opportunity to invest in this domestic resource should be available to anyone who wants to.

Apart from the incentives discussed in this note, a number of other institutional changes must happen in order to provide long-term, sustainability for renewable energies. Without these changes, the federal government is forgoing significant amounts of tax revenue in the present for what could result in a worthless investment in the future. Of chief importance among these changes is accessibility to the power grid.²²⁰ Tax incentives may produce all the electricity in the world but without access to the power grid, it does us no good.²²¹ Even still, once wind plants have access to the grid, the intermittency of the wind may cause trouble for utility companies.²²² If there is an abundance of excess capacity due to the inability to access large metropolitan areas, vast amounts of money, both in foregone tax revenue and privately invested capital, will have been spent in vain.

While this note focused only on the tax consequences of the PTC, it is important to realize that it is just one piece of the puzzle. For instance, even by simply promoting the installation of energy efficiency upgrades, the United States has the potential to reduce electricity consumption by as much as thirty-five percent by 2020.²²³

Expanding the PTC and the resulting loss of tax revenue can only be justified within a larger, comprehensive scheme of clean

220. Twenty Percent by 2030, *supra* note 13, at 95 (explaining that it is often more efficient to place a project in a remote, higher wind capacity location and build the extra transmission lines than it is to build the project closer to existing lines in lower wind capacity locations).

221. Wind-generated electricity cannot be stored.

222. See, e.g., Russell Gold, *Natural Gas Tilts at Windmills in Power Fued*, WALL ST. J., Mar. 2, 2010, available at http://online.wsj.com/article/SB10001424052748704188104575083982637451248.html?mod=WSJ_Commodities_LeadStory.

223. Hymel, *supra* note 4, at 76 n.215. Additionally, the cost to the government to implement these tax incentives is far less than the realized energy efficiency. *Id.* at 77 n.221.

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energy and energy independence. Review and analysis of energy programs should be a constant process in order to determine whether or not the federal government is on track to achieve overall policy goals of energy independence.

Mitchell Ward